Comparison of Digital Literacy-Based Preparedness Between State Elementary School Students and Private Elementary School Students in Bidara Cina Village

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Abstract: Digital media plays a role in providing information about disasters, often information through digital media is first obtained by the public, so there is a need for skills in absorbing information. This proficiency is known as literacy. Anticipatory steps in the face of floods require preparedness, especially in education. Elementary schools are a place that can prepare students from an early age to face disasters and are supported by digital literacy as part of improving flood preparedness. This study aims to compare the preparedness of state and private elementary school students in the face of digital literacy-based floods located in flood-prone areas of Bidara Cina Village, Jatinegara District, East Jakarta. The method used is a quantitative method with a survey approach. The data collection technique used observation and dissemination of questionnaires with the same population as the sample in the students of SD Negeri Bidara Cina 05 totaling 109 and SD Swasta Assadah totaling 65 students. Based on the results of the study, the normality test showed that the two data were normally distributed with a value of Sig.> 0.05 with a value of 0.200 each. Homogeneity test with known Sig values. (based on mean) > 0.05 with a value of 0.619 at the preparedness value. Sig Value. (2-Taled) of Equals Variances Assumed is known to be > 0.05 (with a value of 0.066) which means that there is a difference in preparedness scores in state and private schools with an average score of 53.11 in state elementary schools and 50.03 in private elementary schools. The results of this study show that preparedness in the face of floods based on digital literacy in state elementary schools is higher than that in private elementary schools.

Keywords: Disaster, Flood, Preparedness, Digital Literacy, School

Introduction

Floods as disasters have a special location in natural disaster events (Gashaw & Legesse, 2016). Floods include destructive natural disasters (Perdana et al., 2019) which have the potential to cause property destruction, threaten human life (Tambunan, 2017), loss of

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property, and disrupt the course of social and economic activities. Urban areas are that most often experience flood events. Floods in urban areas are increasingly becoming the focus of studies, and caused losses by floods are increasing globally (Mobini et al., 2021).

DKI Jakarta the capital of Indonesia is one of the urban areas that often experience floods, which include major floods that occurred in the range of 1997 -2020, namely floods in 1997, 2002, 2007, 2013, 2018, and 2019 (Lassa et al., 2022) and the latest in 2020. DKI Jakarta is located in a lowland area with an average height of 7-8 meters above sea level. The topographical formations found in the DKI Jakarta area are generally gentle to flat (Tambunan, 2017). However, its southern region has hilly land formations with high rainfall intensity (Yusya et al., 2020). Jakarta is passed by 13 rivers, one of which is the Ciliwung river which is the longest river with its location in the middle of the city of Jakarta (Yusya et al., 2020).

Bidara Cina Village is one of the villages in the DKI Jakarta area which is part of the Jatinegara District, East Jakarta Administrative City with an area of 126.3 km^2 spread to 16 RW. Geographically, Bidara China Village is bordered by Kampung Melayu village in the north, Cipinang Cempedak Village in the East, Cawang Cikoko Village in the South, and Ciliwung River and Kebon Baru Village in the West (Profile of Bidara Cina Village, 2021).

Bidara Cina Village is included in the 18 villages in Jakarta that are passed by the Ciliwung river so it is included in the ciliwung watershed area. Over the last 30 years from 1970 to 2000, it was noted that the undeveloped area contained in the Ciliwung watershed has decreased very drastically (Saut, 2013). Land use changes are caused by an increase in population and infrastructure development, thereby reducing the rate of water infiltration into the soil (Mobini et al., 2021b).

Land use in Bidara Cina Village is dominated by settlements, this is in line with the high population density of 35,080 people / km^2 with an overall number of households of 15,115 households based on data in October 2021, so that it is included in areas with high population density. Bidara Cina village is included in the village that often experiences floods. Recorded based on historical data on flood events, the flood height that occurs in Bidara Cina Village can reach 3 meters (Data from Bidara Cina Village, 2021). This flood occurs more often in the RW area nearest or directly adjacent to the Ciliwung river. As a step to reduce the risk of flood disasters, preparedness behavior is needed in the face of disasters, especially flood disasters.

Preparedness is included in the disaster management process and is an important part of disaster risk reduction (LIPI-UNESCO/ISDR, 2006).

As a step to plant preparedness in the community, it can be done through the realm of education. Disaster education in schools is stated in the Minister of Education and Culture number 33 of 2019 concerning the Implementation of the Disaster Safe Education Unit Program as a disaster knowledge center to prevent and overcome the impact of disasters in the Education Unit. Schools as public spaces have the highest vulnerability in experiencing disaster risk (Aprilin, 2018). The government must facilitate because the implementation of disaster education can be carried out through learning activities in schools (Suprapto et al., 2019).

Literacy is the most important part of education and learning in schools (Herlina et al., 2020). The existence of digital media currently facilitates the passage of information access to facilitate the process of learning activities (Setyaningsih et al., 2019). Disaster literation is proved to give effects on public preparedness in West Java Province and students at State Senior High School 1 Klaten in 2011 (Marlyono & Pasya., 2016; Kesumaningtyas et al., 2022). This triggers a thought about the importance of digital literacy, however, digital literacy is not widely used as a step in improving flood preparedness.

Methodology

This research was conducted in State Elementary School 05 Bidara Cina and Assadah Private Elementary School, Bidara Cina Village, Jatinegara District, East Jakarta. The instrument in this study used a questionnaire that was distributed to respondents directly. The LIPI-UNESCO and Independent Simple T-Test formulas are used to calculate the preparedness of state and private elementary school students in the face of floods based on digital literacy. The data collection technique used observation and distribution of questionnaires with the same population as the sample in students of State Elementary School 05 Bidara Cina which amounted to 109 students and Assaadah Private Elementary School which amounted to 65 students. Technical data analysis to determine the comparison of preparedness levels in this study was carried out in two ways, namely using the LIPI-UNESCO formula and conducting different tests using the SPSS application.

Comparison of Preparedness Levels Using the LIPI-UNESCO Formula

In this study, each question and statement in the parameter has the same weight (worth one) so using the join index is not weighed. Determination of the index value for each parameter using the following formula:

$$Index : \frac{Total\ real\ value\ of\ parameter}{Max.value\ of\ parameter} \times 100$$

The total real value is obtained from the results of combining respondents' values in answering questions and statements of each relevant parameter. While the maximum value of the parameter is obtained from the sum of the maximum values (overall) in the indexed parameter. The index is in the range of values 0-100, the higher the index value, the higher the level of preparedness. The level of community preparedness is classified into five categories, which are as follows:

a. Score 80-100 category very ready
b. Score 65-79 category ready
c. Score 55-64 category almost ready
d. Score 40-54 category less ready
e. Score < 39 category not ready

Comparison of Preparedness Levels Using T-Tests

The purpose of the different tests was to find out whether there were significant differences between the two elementary schools. In this study, testing was performed using the help of *IBM SPSS 26.0 for windows*. The conditions that must be met in the T-test are that

the data must be normal by conducting normality testing and homogeneous by conducting homogeneity testing.

Findings & Discussion

Table 1

Respondent's Characteristics

Characteristic	Classification	Frequency	Percentage
Gender	Man	88	50.6 %
	Woman	86	49.4 %
Total		174	100%
Age	9 Years	1	0.6 %
	10 Years	59	33.9 %
	11 Year	64	36.8 %
	12 Year	48	27.6 %
	13 Years	1	0.6 %
	14 Year	1	0.6 %
Total		174	100%

Source: processed by the researcher (2022)

The difference in the number of male and female respondents is not so far only the difference of 2 and frequency is 88 each for the number of men and 86 for the number of women. According to age characteristics, respondents were dominated by the 11-year-old age group which amounted to 64 (36.8%).

LIPI-UNESCO Index Value Calculation Results

The results of the CALCULATION of the LIPI-UNESCO index value show that state elementary schools get an index value of 79.19 ready categories while private elementary schools get an index value of 75.66 ready categories. Based on the classification compiled by LIPI-UNESCO, the level of literacy-based preparedness in the two elementary schools falls into the ready category.
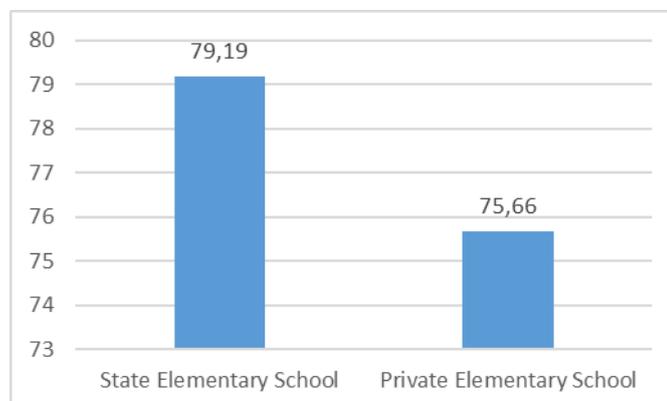

Fig. 1. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

T-Test Value Calculation Results

In conducting different tests, several conditions are needed that must be met, namely:

1. Normality Test

Tests of Normality

	Sekolah	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Nilai	Negeri	,069	109	,200[*]	,978	109	,069
	Swasta	,087	65	,200[*]	,974	65	,178

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Fig. 2. *Result Calculation of SPSS*
(processed by researcher, 2022)

Based on the table, it is known that the value of Sig. > 0.05 with a score of 0.200 each in State Schools and 0.200 in Private Schools. This shows that both data are normally distributed.

2. Homogeneity Test

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Nilai	Based on Mean	,442	1	172	,507
	Based on Median	,452	1	172	,502
	Based on Median and with adjusted df	,452	1	171,391	,502
	Based on trimmed mean	,455	1	172	,501

Fig. 3. *Result Calculation of SPSS*
(processed by researcher, 2022)

Based on the table, it is known that the value of Sig. (based on mean) > 0.05 with a value of 0.507 in the preparedness value. This suggests that the data is homogeneous.

3. Different Independent T Test

After the data is declared normal and homogeneous, then the next step is to conduct a different test.

Group Statistics

	Sekolah	N	Mean	Std. Deviation	Std. Error Mean
Nilai	Negeri	109	52,27	6,785	,650
	Swasta	65	49,94	6,324	,784

Fig. 4. *Result Calculation of SPSS*
(processed by researcher, 2022)

The value of N in the table is the sum of the data, while the mean is the average value. In State Schools, there were 109 data with an average score of 52.57 while private schools were 65 data with an average score of 49.94.

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Literasi	Equal variances assumed	,442	,507	2,245	172	,066	2,328	1,037	,281	4,374
	Equal variances not assumed			2,285	142,279	,064	2,328	1,019	,314	4,341

Independent Samples Test

Fig. 5. *Result Calculation of SPSS*
*(*processed by researcher, 2022)

The table is known to have a calculated t value (equal variances assumed) of 2,245. The positive score indicates that the average score of State Schools is higher than the average of Private Schools. Meanwhile, the Mean Difference column (equal variances assumed) shows the difference in the average score of State Schools with Private Schools, which is 2. 328 On the value of Sig. (2-Taled) of Equals Variances Assumed it is known > 0.05 (with a value of 0.066) which indicates that there is no difference in grades in state and private schools. Although the calculated t-grade and the average difference are known, it is statistically assumed that these two schools have the same score.

Comparison of Digital-Based Preparedness of State Elementary School Students with Private Elementary School Students in Bidara Village, China

The results showed that state elementary school students (SDN Bidara Cina 05 Pagi) and private elementary school students (SDS Assaadah Bidara Cina) have similarities regarding the value of digital-based preparedness. Students in these two schools have received digital-based disaster education in thematic learning in the elementary school curriculum. Most students can understand the environment and have skills in seeing and recognizing their environment and can read maps.
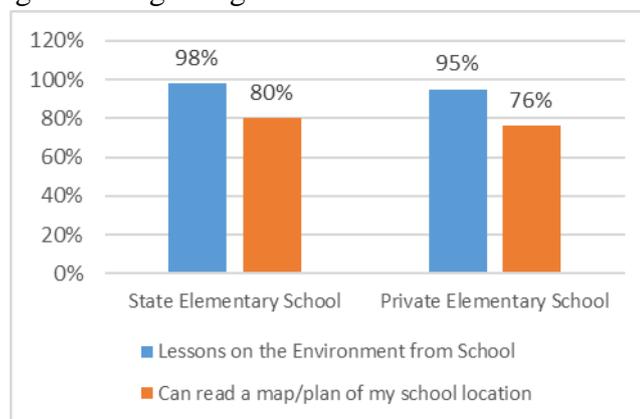
Fig. 6. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

Process of school disaster management is described as followed by assessments and plans, actual and environmental protection, resilience development, drills, monitoring, and improvement (Wang, 2016). Assessment and plans are important aspect to establishing school disaster management, this also including student response for the disaster. Related to the occurrence of floods, it is important to know the water cycle in life and the signs of flood disasters. More than 50% students in state elementary schools and private elementary schools know the meaning of flood disasters, signs of flood disasters, and the causes of floods. As many as 89% of state elementary school students and 91% of private elementary school students agree that flooding is a condition of the water that overflows from rivers and waterways because it exceeds capacity. As many as 85% of state elementary school students and 86% of private elementary school students admitted that they had received material related to signs of flooding from lessons at school. Students' understanding of the causes of flooding in state and private elementary schools is good. When stated one of the causes of the flooding was heavy rain that fell over a long time, most students agreed with the statement. More details can be seen in the diagram in figure 7.
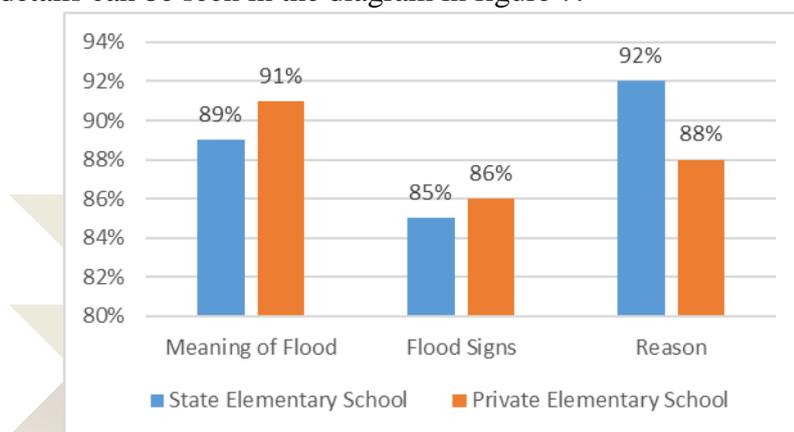

Fig. 7. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

State Elementary School 05 Bidaracina and Assaadah Private Elementary School are in flood-prone areas because they are close to the Ciliwung and have a low topography. Most students have experienced flooding while at school and home so when the school was flooded, only a few students took part in helping clean up the school after the flood. The school admitted that they rarely held flood preparedness training at the school. At Sekolah Negeri 05 Bidara Cina, the last training was conducted in 2021 by the KKN (Kuliah Kerja Nyata/Real Work Lecture) team of Jakarta State University students after more than 5 years of this school not conducting training activities. Meanwhile, at Assaadah Private Primary School, preparedness training was last held upon the arrival of ACT (Aksi Cepat Tanggap) a few years ago, and as many as 33% of students admitted to conducting preparedness training held in their homes by disaster-dealing agencies.

There are several components of school emergency and disaster preparedness plan that must be provided by school, such as complete contact information including

fire departments, hospitals, police, radio, and television stations, school must have a maps and floor plan to identify shelter area, evacuation plan, and locate chemical storage areas (Davis Langdon & Everest, 2020). From this research found that as many as 83% of students of SD Negeri 05 Bidara Cina and 73% of SD Assaadah received directions from schools regarding flood disaster management efforts, such as establishing solid embankments, building drainage system, preparing preparedness facilities such as water pumps, and normalizing rivers.
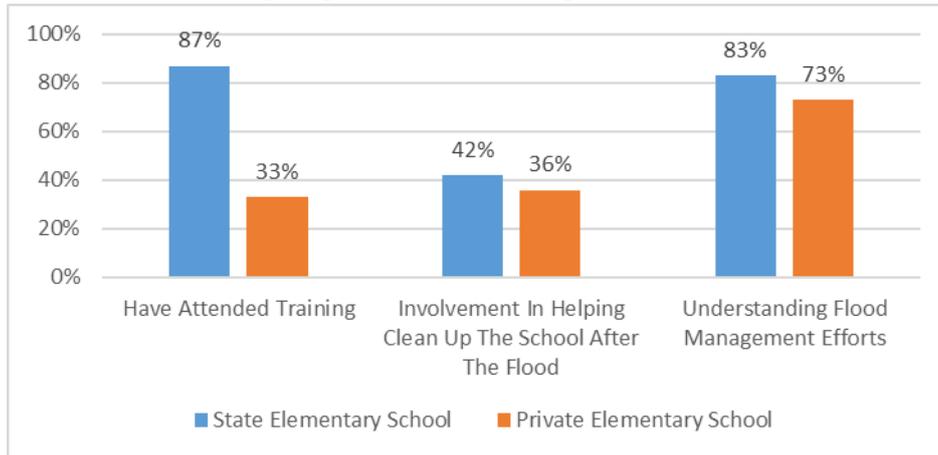

Fig. 8. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

Based on We Are Social's report shown that internet users in Indonesia reach 204.7 million population that is showed in February 2022 that internet users reach 73.7% of Indonesia's population and 191.4 million are active social media users (Mutch, 2014). Social media is considered more effective in obtaining information about disasters (Roswanto, 2022). Based on the data we found that almost all students actively use social media, such as Instagram, TikTok, and Facebook. Based on the results of the study, Instagram and TikTok are most popular with state elementary school students while private elementary school students use TikTok social media the most.
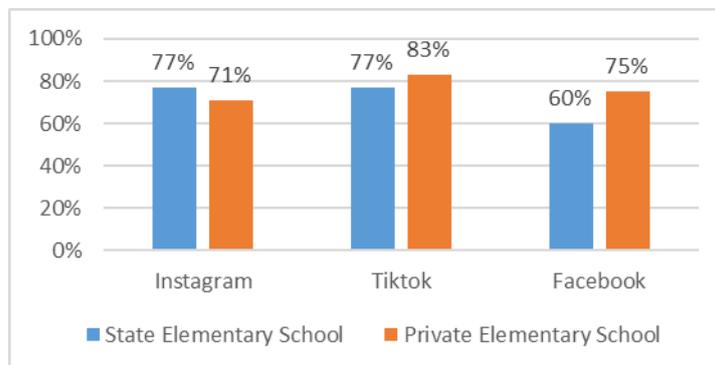

Fig. 9. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

Although students actively use social media related to flood disaster information, students get this information more often through the news on TV than through the social media they use. As many as 93% of state elementary school

students and 83% of private elementary schools received flood information through television. Information about flooding is not too much from teachers or social media used by students. This shows that students do not access flood disasters very often through their social media but get them directly through the mass media. Although students do not all get flood information through teachers, the role of teachers in providing lessons through learning videos about floods has been given to students. It is shown that more than 50% of students have received learning videos about flooding through their teachers.

An interesting finding in this study also showed that more than 50% of students accessed flood information correctly through trusted websites such as BPBD (Regional Disaster Management Agency). This shows that most of the students of SD Negeri 05 Bidaracina have the skills to access information correctly through reliable sources. This can be seen in the picture.
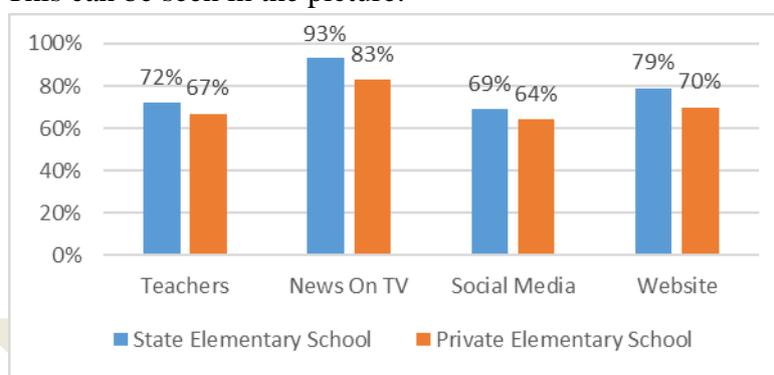

Fig. 10. *Result Calculation of LIPI-UNESCO Index*
*(*processed by researcher, 2022)

Natural disaster education right now in community by using the newest technology can be used by anyone, such as digital literacy, in this era community as a user of technology utilize their gadget as their media to get information about natural disaster (Suprapto et al., 2019). The role of schools in informing flood disasters is seen in more than 70% of students who agree that their schools always inform early warnings about flood disasters. This indicates that SD Negeri 05 Bidaracina and SD Swasta Assaadah have preparedness in dealing with floods, one of which is by informing about early warnings about floods, namely by announcing information about inundation that enters schools to the existence of learning activities at home during floods through class Whatsapp.

Based on this research comparison between state elementary school, SD Negeri 05 Bidaracina, and private elementary school, SD Swasta Assaadah showed that level of preparedness in both of the school in ready category. The difference is in the school of preparedness literacy and digital media literacy. Facing the flood with the preparedness literacy and media literacy in State elementary school is higher than private elementary school. As the results showed that state elementary school still in higher score for level of digital-literacy preparedness for facing the flood.

This difference can be influenced by the habits of pupils who prefer to see news about the overthrow of flood disasters through television and prefer to play

games on smart phones. in addition, there are differences in the number of smartphone ownership as a door to access digital media.

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