

The Role of Instagram Social Media in Changing Student Perceptions of the Dangers of E-Waste

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Abstract:- Electronic waste or referred to as e-waste has a bad impact on the aquatic environment, soil life cycle, air cycle, and human health. The cause is that e-waste contains hazardous substances which are classified as toxic hazardous materials (B3), components, or parts made of hazardous substances (such as lead, mercury, cadmium, copper, tin, and others) that require special handling in management, collection flow. to the recycling process. The method used is quantitative research with an experimental approach "One Group Pretest-Posttest Design". This experimental research method can also be interpreted as a research method used to find comparisons before being treated with after being treated. analysis of the data and the submission of these hypotheses, it can be concluded that the role of Instagram social media in changing students' perceptions of the dangers of e-waste is urgently needed for this time. there is a significant difference in the role of social media between before and after the treatment of periodic uploads about e-waste through social media Instagram.

Keywords:- *Electronic Waste, Environment, Waste Management.*

I. INTRODUCTION

Indonesia is currently one of the countries that have a high dependence on the use of electronic devices. The high dependence of the Indonesian people is seen from the high use of gadgets and laptops, one of which is the WFH (work from home) policy during the pandemic [1]. In the last decade, the increase in electronic devices has increased sharply in terms of the number of users. Not only increasing the quantity but also increasing the variety with all kinds of advantages offered [2]. The higher the value of an area's income, the value of the level of electronic device users increases. Currently, a global issue that is no less severe is the burden of all parties, not only solid waste (plastic) which is difficult to decompose but also e-waste (electronic waste) [3]. The convenience of features on cellular phones and laptops that are offered increasingly makes the number of users and connoisseurs high. The convenience offered by the device in various models of technological tools makes it easier for consumers to learn about it [4].

Waste electric and electronic equipment or Waste electric and Electronic Equipment (WEEE) including the widespread increase, the increasing variety of electronic devices is marked by the increase in large domestic devices such as refrigerators, air conditioners, mobile phones, personal

computer devices that have been rejected by end-users [5]. Electronic waste or commonly referred to as e-waste has a bad impact on the aquatic environment, soil life cycle, air cycle, and human health [6]. The reason is that e-waste contains hazardous substances which are classified as toxic hazardous materials (B3).). There are 60 elements on the periodic table that can be found in complex electronic devices and many of them can be technically recycled. Some compounds such as metals, which include precious metals such as gold, silver, platinum, copper, and palladium, are used as raw materials informing components that make up an electronic product, components or parts made of hazardous substances (such as lead, mercury, cadmium, copper). , tin and others) so that it requires special handling in the management, collection flow to the recycling process [7]. But in reality, E-Waste/electronic waste also has some valuable materials such as pieces of precious metal (gold) and also rare earth elements. In the Basel Annex VIII Convention, electronic waste as toxic material (B3) or also called hazardous waste by the characteristics mentioned can damage the atmosphere, hydrosphere, lithosphere, and biosphere. There is a 2% contribution to the increase in global warming, namely by cyber warming the CO2 element from information technology and the computer industry [8].

The electronic waste collection stage is the most difficult thing to do in a reverse supply chain scheme, especially household electronic waste. The electronic waste management system is divided into four stages, namely:

1. Collection of electronic waste, either through a take-back system or the informal sector as in the scenario described previously.
2. Dismantling or manual dismantling where hazardous components and components that still have material value are separated.
3. Sorting or separation is done mechanically or manually. For example, using eddy current separators and optical sensors to separate ferrous and non-ferrous materials. Such as separating aluminum, copper with glass or plastic.
4. Recovery or recovery for materials and energy through smelting.

Instagram is an application that is used to share photos that allow users to take photos, apply digital filters and share them again by adding notes/descriptions/stories to various other social networks such as Facebook, Twitter, or Instagram itself. Indonesians use Instagram social media to find inspiration, share travel experiences, the latest trends/fashion clothes, and the mobile-first community also drives business results large and small in Indonesia [9].

Perception is the process of judging or opinion from someone on an object that exists and has been observed based on the ability to recognize the object from the characteristics of the object. External factors that influence perception is as follows:

1. The size of an object and the placement of the object. In this case, this factor states that the greater the relationship between an object, the easier it is to understand.
2. The color of the objects displayed. More colorful objects will have a greater Attractiveness than objects that have only a few colors
3. The uniqueness and contrast of the stimulus. This stimulus from the outside of the object's appearance is observed from the background and surroundings. This will attract the user's attention.

Internal factors that affect perception are the intensity and strength of the stimulus. The stronger the stimulus and the stronger the intensity of the stimulus, the greater the attraction of the object.

Research conducted by Dino Rimantho and Siti Rohana Nasution, entitled "The Current of E-waste Management Practices in DKI Jakarta" resulted in the conclusion that Electrical and Electronic Equipment has continued to grow exponentially in the last few decades. In general, the population in Jakarta has more than one electronic device such as a fan, telephone, television, refrigerator, and/or air conditioner. This study also estimates that the amount of electronic waste in DKI Jakarta in 2025 will be around 124,568,613.3 kg [10]. In the research conducted by Edi Pranoto, Desy Diana, Eka Sally in 2020 with the title "Effectiveness of Social Media Versus Electronic Media in the Implementation of Disseminating Information on the Hazards of Plastic Bag Waste" resulted in the conclusion that to analyze the effect of new sharing on social media and electronic media on the recognition of the dangers of plastic bags seen from the perspective of consumers as users [11]. The test results show that the spread of news about the dangers caused by plastic bags on social media has a significant effect on the occurrence of eco-literacy, while new sharing in electronic media such as radio and TV or government websites has no effect. The results of this study have implications for environmentalists and the government needs to make public education programs or massive campaigns about the dangers of plastic bags by utilizing social media.

II. RESEARCH METHOD

The method used in the form of quantitative research with an experimental approach "One Group Pretest-Posttest Design". This experimental research method can also be interpreted as a research method used to find comparisons before being treated with after being treated. This research was conducted on two classes, namely the experimental class and the control class. Before being given treatment, both classes were given a pretest.

The data collection used by the survey method to the e-waste community located in Ciputat as an e-waste drop zone, the library method by reading journals and articles related to e-

waste around the world because the issue of e-waste has become a problem such as a snowball effect, a method of documentation of the experimental process on the-waste RJ Instagram account during discussions, periodic posts for 5 consecutive days.

The pretest or trial was used to test the perception, understanding, prior knowledge of Geography education students of the 2018 S-1 UNJ class about the dangers of e-waste. This treatment technique was carried out after conducting a pretest and classifying students into 2 groups. The group includes understanding about e-waste and other groups that do not understand e-waste so that they will be given treatment. The treatment given to these 2 groups was different. The post-test technique was assessed on students' perceptions of understanding e-waste and the role of social media Instagram used during treatment. The post-test is an instrument of questions that must be answered by Geography S-1 students majoring in Education Force 2018, then ranks the posttest results and the results can be compared with the posttest results.

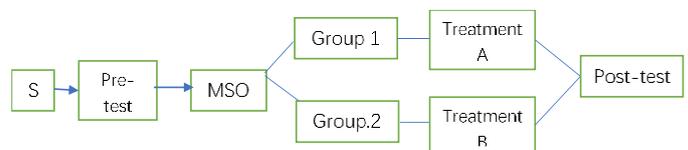


Fig. 1. Research design

Description:

S : sample

Pre-test : initial test of students' perception and understanding of e-waste

MSOP : matched subject ordinal pairing

Group 1 : experimental group 1 (Geography Education student class A)

Group 2 : experimental group 2 (Geography Education student class B)

III. RESULTS AND DISCUSSION

Analysis of research results through normality test, homogeneity test, and hypothesis testing are as follows:

A. Normality test

At this stage of the pre-test and post-test normality test, the frequency distribution of pre-test and post-test scores has been known as shown in Tables 1 and 2.

TABLE I. FREQUENCY OF PRE-TEST SCORE

No.	Score Interval	Frequency	Category
1	126-150	5	Very Understand
2	102-125	27	Understand
3	78-101	9	Understand enough
4	54-77	2	Not understand yet
5	30-53	0	do not understand
Total		43	

TABLE II. POST-TEST SCORE FREQUENCY

No.	Score Interval	Frequency	Category
1	126-150	23	Very Understand
2	102-125	19	Understand
3	78-101	1	Understand enough
4	54-77	0	Not understand yet
5	30-53	0	do not understand
Total		43	

From the two frequency tables, the minimum, maximum, median, and standard deviation values are found as shown in table 3.

TABLE III. VALUE DISTRIBUTION

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test Role of Social media (X1)	43	18.00	48.00	36.17	6.18
Post-test Role of Social media (X1)	43	31.00	48.00	41.14	3,83
Pre-test Student Perception (X2)	43	19.00	50.00	36.72	6,46
Post-test Student Perception (X2)	43	30.00	50.00	42.14	4,20
Pre-test E-Waste Danger (Y)	43	27.00	50.00	38.26	6.86
Post-test E-Waste Danger (Y)	43	30.00	50.00	40.90	5.28
Valid N (listwise)	43				

Then the normality test was carried out using the Kolmogorov-Smirnov method using SPSS. Normality test results for Pre-Test data are shown in table 4 and for Post-Test data are shown in table 5.

TABLE IV. POST-TEST DATA NORMALITY TEST

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.093	43	.200*	.985	43	.842

TABLE V. PRE-TEST DATA NORMALITY TEST

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.099	43	.200*	.966	43	.255

From the results of the Normality Test on the Pre-Test and Post-Test data, Sig = 0.200 for Pre-Test data and Sig = 0.200 for Post-Test data. Because the Sig value is greater than 0.05, it can be stated that the Pre-Test and Post-Test data are normally distributed.

B. Homogeneity Test

The homogeneity test of the data in this study used the Levene method and used the SPSS application in its calculations. The distribution of Pre-Test and Post-Test data can be said to be homogeneous if the Sig value is greater than 0.05 and not homogeneous if the Sig value is less than 0.05.

TABLE VI. PRE-TEST DATA HOMOGENEITY TEST RESULTS

Levene Statistic	df1	df2	Sig.
1.306	2	126	.275

In table 6, the value of Sig = 0.275 is greater than 0.05 from the results of the homogeneity test on the pre-test data variables, namely the role of social media (X1), student perceptions (X2), and the dangers of e-waste (Y).

TABLE VII. POST-TEST DATA HOMOGENEITY TEST RESULTS

Levene Statistic	df1	df2	Sig.
2.008	2	126	.139

Then, in table 7 the Sig value obtained is 0.139 which is also greater than 0.05 from the distribution of Post-Test data with the same variables. From the two test results, it can be concluded that the distribution of data for each variable in the Pre-Test and Post-Test is homogeneous.

C. Hypothesis testing

Hypothesis testing in this study used Paired Sample T-test which was tested using the SPSS application. The basis for deciding on the Paired Sample T-test is if the significance value is less than 0.05 then there is a significant difference between the initial variable and the final variable and if the significance value is more than 0.05 then there is no significant difference between the initial variable and the final variable.

TABLE VIII. PAIRED SAMPLE T-TEST RESULTS

	Paired Differences						t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1 PreTest Peranan Media Sosial (X1) - PostTest Peranan Media Sosial (X1)	-4.977	6.556	1.000	-6.994	-2.959	-4.978	42	.000	
Pair 2 PreTest Persepsi Mahasiswa (X2) - PostTest Persepsi Mahasiswa (X2)	-5.419	7.212	1.100	-7.638	-3.199	-4.927	42	.000	
Pair 3 PreTest Bahaya E-Waste (Y) - PostTest Bahaya E-Waste (Y)	-2.651	7.637	1.165	-5.002	-3.01	-2.276	42	.028	

In table 8, the results of the Pre-Test and Post-Test T-test for the Social Media Role variable (X1) are obtained with a value of 0.000. This shows that there is a significant difference in the Role of Social Media between before and after the treatment of periodic uploads about E-Waste through social media Instagram.

Furthermore, in the Pre-Test and Post-Test T-test for the Student Perception variable (X2), a significance value of 0.000 is obtained which is smaller than 0.05 so it can be concluded that there is a significant difference in Student Perception between before and after the provision of periodic upload treatment about E-Waste through social media Instagram.

In the end, from the results of the Pre-test and Post-Test tests for the E-Waste Hazard variable (Y), a value of 0.028 was obtained, so it can also be concluded that there is a significant difference in knowledge and information about E-Waste Hazards before and after treatment. periodic uploads about E-Waste through social media Instagram.

IV. CONCLUSION

Based on the results of the research obtained by analyzing the data and submitting the hypothesis, it can be concluded that the role of Instagram social media in changing students' perceptions of the dangers of e-waste is very much needed at this time. Because Instagram social media has become the main consumption of people of all ages, Instagram social media has become a self-extension in socializing and communicating for now. However, to change students' perceptions of the dangers of e-waste, more socialization is needed using simple language that is easily understood by young people today, by also showing examples that are seen directly using posters or pictures. Where posters or images are very easy to spread through Instagram social media without using any conditions and all Instagram users will easily access or view the image or poster.

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