Environmental Literacy for Sustainable Household Utility hrough Social Media

Gabriella Sagita Putri and Adhi Murti Citra Amalia H and Nisrin Husna
Public Relations Department
Faculty of Digital Communication and Hotel & Tourism
Bina Nusantara University, Jakarta, Indonesia, 11480
gabriella.putri004@binus.ac.id, adhimurti.amalia@binus.ac.id, nisrin.husna@binus.ac.id

Ida Bagus Ananta Wijaya
Interior Design Department
School of Design
Bina Nusantara University , Jakarta, Indonesia 11480
ida.wijaya@binus.ac.id

Abstract

Environmental literacy about how to manage that can be accessed through digital media is the object of research need for information is the main reason for respondents to access content in the educational videos on waste management through social media. Research goals is to find out whether the educational movement through social media can influence housewives to manage their kitchen waste better. This is quantitative research to examine more deeply the behavior of housewives in managing their kitchen waste, as well as what their needs are related to social media content that contains information about kitchen waste management. Furthermore, the results of this study can be used to develop a social media content model to educate housewives in utilizing kitchen waste as an environmental sustainability movement.

Keywords
Household waste, video literacy, digital, behavior

1. Introduction
Human waste that continues to accumulate from time to time is one of the causes of environmental damage. Dr. Costas Velis of the University of Leeds said that 1.3 billion tons of plastic waste was expected to pollute the world's lands and oceans by 2040 if people do not take global action to prevent it (Gill). In a press release, the Minister of Environment and Forestry, Siti Nurbaya said that the national waste stockpile in a year reached 67.8 tons, and it will continue to increase in line with population growth (Nugraha).

Household waste is no exception, which is often become a problem because it is not managed properly from upstream to downstream. Referring to the Indonesian Environmental Statistics data released by BPS (Central Bureau of Statistics), only 1.2 percent of households recycle their waste, while another 66.8 percent handle their waste by burning it, even though this method can interfere with health and pollute the environment. The remaining 32 percent of households choose other ways to handle their waste, such as being buried or disposed of in the TPA (Final Disposal Site)

The results of a survey on Waste Management in the Household Environment in five cities, namely Jakarta, Bandung, Semarang, Yogyakarta, and Surabaya in 2019 from KIC (Katadata Insight Center) showed that as many as 50.8 percent of households did not sort their waste because they did not want to feel bothered. Meanwhile, 49.2 percent of households sorted their waste, 59.2 percent categorized their waste into wet-dry and 18.4 percent categorized their waste into organic-inorganic (Wulandari). This data explains that there are still many people who do not have awareness of managing their household waste.

The waste management system in Indonesia still depends on the role of the central government and local governments. Quoted from the website of the Ministry of Finance of the Republic of Indonesia, household waste will first be taken to a Temporary Shelter (TPS) to be processed or recycled. Furthermore, it will be transported by garbage trucks to the Final Processing Site (TPA) to be processed and returned to the environment. Because Indonesia implements a regional autonomy government system, the waste management process can vary depending on the policies of each local government (Siagian 2022) (https://www.djkn.kemenkeu.go.id/kpknl-lahat/baca - article /14891/Waste Management-in-Indonesia.html).

The low level of public awareness coupled with the unequal waste management system in Indonesia makes environmental literacy important, before causing more severe environmental damage. This environmental literacy should begin from the bottom, namely among households first. The community needs to know how to manage waste that is more environmentally friendly, as well as the technical details so that it is easy to practice in everyday life. Information related to environmental literacy, especially the household waste utility needs to be collected and disseminated through integrated channels that can be easily accessed by the public.

Social media can be an alternative because it is easily accessible anytime, anywhere. In addition, social media can also contain visual content such as infographics, photos, videos, or animations, so that information related to environmental literacy related to the use of household waste can be conveyed to the public more attractively. This is supported by data from NapoleonCat.com which states that the largest Instagram social media users in Indonesia in 2019 were women, and some of them had entered the age of marriage and became housewives, 16.1 percent by the age of 25-34 years old and 5.8 percent by the age of 35-44 years old [8].

Therefore, this research is needed to find out whether the educational movement through social media can influence housewives to manage their kitchen waste better. In addition, this study also needs to examine more deeply the behavior of housewives in managing their kitchen waste, as well as what their needs are related to social media content that contains information about kitchen waste management. Furthermore, the results of this study can be used to develop a social media content model to educate housewives in utilizing kitchen waste as an environmental sustainability movement.

1.1 Objectives

Find out whether the educational movement through social media can influence housewives to manage their kitchen waste better.

2. Literature Review

Sutton (2004) defined sustainable environment as ability to maintain valued quality in the physical environment. Environmental sustainability programs include actions to reduce the use of physical resources, adopting recycle everything or buy recycled approach, using renewable resources instead of just being used up, redesigning production processes and products to eliminate production. toxic materials, as well as the protection and restoration of natural habitats and environments valued for their viability or beauty.

Environmental literacy has components, and some important ones to pay attention to include the following:(1) Knowledge namely understanding of environmental issues and how they are influenced by various institutions such as politics, education, economy, and government, (2) Skills, namely the ability identify, choose appropriate strategies and actions, create, implement, and evaluate environmental problems (3) Behavior, as active participation aimed at solving or resolving environmental problems. Actions can be through an eco-friendly lifestyle, using personal or interpersonal means to promote environmentally friendly practices, or supporting environmentally friendly policies (Ashtab)

Garcia-Garcia (2017) offered sustainable waste management methods which are divided into reduce, reuse, recycle and disposal categories, as shown in Figure 1.1 ;

Figures 1.1

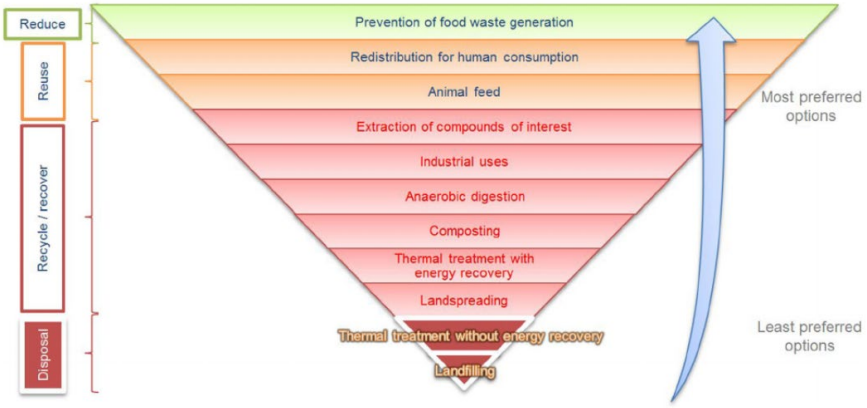

FIGURE 2.1. Categorization of Waste Management

Reduce means to minimise the amount of waste we create, reuse is to distribute waste into things that can be consumed again by humans or animals. Recycling is turning used materials into new materials for industrial use, composting, anaerobic digestion which produces biogas, energy, or land distribution. Last, disposal is just throw garbage in a landfill, then burning process (Garcia-Garcia).

Consumer behavior is a dynamic process that include the behavior of individuals or groups, and community members in carrying out consumption activities. Definition of consumer behavior refers to the behavior displayed by consumers in searching for, purchasing, using, evaluating, and disposing of goods and services that they expect will satisfy their needs (Suryani). Activities in consumption behavior are not limited to looking for goods and or services needed, but also looking for information related to the goods needed and desired. Processing household goods into routines carried out by housewives is a pattern of behavior that can be analyzed by consumer behavior concept. Consumer behavior could not be separated from the stimulus provided by the activity of exposure to information around. Stimulus from within a person that drives an activity, while a response in an activity that a person does.

3. Methods

The following is the framework for this research as shown in Figure 1.2;

Figures 1.2

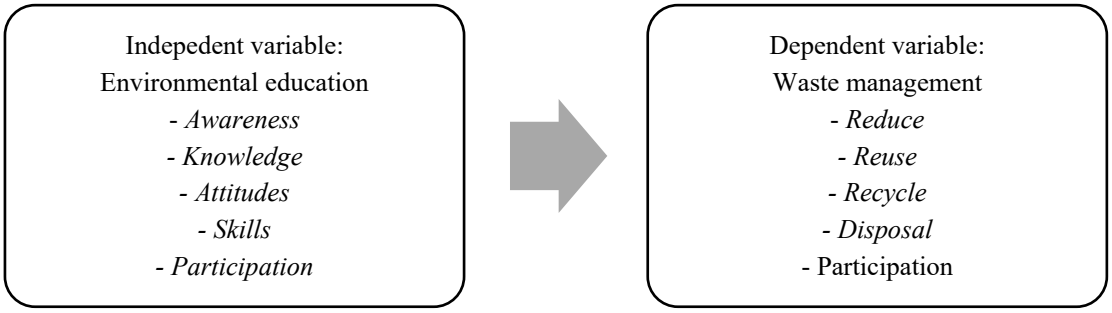

FIGURE 1.2. Research Variables

In this study, this framework made up of two variable; environmental education as independent variable has five dimension to measure how significant environmental education is received by respondent; awareness, knowledge, attitudes, skills and participation. Waste management as dependent variable has four dimensions; reduce, reuse, recycle, dan disposal.

This is quantitative research to measure the hypotheses about the environmental education can influence significantly waste management. Then researcher identified which one attributes in environmental education most impactful.

4. Data Collection

The data were collected and processed from 90 respondents chosen by purposive technique with criteria as followed; (1) Citizen of Indoneia (2) female, age 20-60 tahun (3) housewives (4) live in Desa Tirtomoyo Kecamatan Pakis, Kabupaten Malang permanently. Total population in this study was 12,023 and using a sample error rate of 10%, the number of samples obtained was calculated as follows:

$$n = \frac{N}{1+N(e)^2}$$

Note n = Total sample
N = Total population
e = Sampling eror

$$n = \frac{12023}{1+12023(0.1)^2}$$

$$n = 99.17$$

$$n \approx 100$$

To ensure the data are suitable simple regression technique, sampling was carried out through the process of converting data from ordinal to interval, test of validity, reliability, normality, linearity, heteroscedasticity, and linear regression analysis. In addition, to test the research hypothesis, the coefficient of determination test and T-test was carried out to test and calculate the effect between variables.

5. Results and Discussion

5.1 Validation test

Figures 1.3

Correlations

		X1	X2	X3	X4	X
X1	Pearson Correlation	1	,723**	,677**	,675**	,855**
	Sig. (2-tailed)		,000	,000	,000	,000
	N	48	48	48	48	48
X2	Pearson Correlation	,723**	1	,797**	,790**	,922**
	Sig. (2-tailed)	,000		,000	,000	,000
	N	48	48	48	48	48
X3	Pearson Correlation	,677**	,797**	1	,793**	,909**
	Sig. (2-tailed)	,000	,000		,000	,000
	N	48	48	48	48	48
X4	Pearson Correlation	,675**	,790**	,793**	1	,905**
	Sig. (2-tailed)	,000	,000	,000		,000
	N	48	48	48	48	48
X	Pearson Correlation	,855**	,922**	,909**	,905**	1
	Sig. (2-tailed)	,000	,000	,000	,000	
	N	48	48	48	48	48

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Y1	Y2	Y3	Y4	Y
Y1	Pearson Correlation	1	,785**	,746**	,663**	,885**
	Sig. (2-tailed)		,000	,000	,000	,000
	N	48	48	48	48	48
Y2	Pearson Correlation	,785**	1	,845**	,735**	,933**

	Sig. (2-tailed)	,000		,000	,000	,000
	N	48	48	48	48	48
Y3	Pearson Correlation	,746**	,845**	1	,750**	,923**
	Sig. (2-tailed)	,000	,000		,000	,000
	N	48	48	48	48	48
Y4	Pearson Correlation	,663**	,735**	,750**	1	,871**
	Sig. (2-tailed)	,000	,000	,000		,000
	N	48	48	48	48	48
Y	Pearson Correlation	,885**	,933**	,923**	,871**	1
	Sig. (2-tailed)	,000	,000	,000	,000	
	N	48	48	48	48	48

**. Correlation is significant at the 0.01 level (2-tailed).

FIGURE 1.3. Validirty Results

Based on table above, it can be seen as that each item has sig value below 0.05 so it can be concluded that all items used in this study are valid.

5.2 Reliability Test

Figures 1.4

Reliability Statistics

Cronbach's Alpha	N of Items
,920	4

FIGURE 1.4. To format a figure caption, use the Microsoft Word template style: *Figure Caption or Times New Roman Font: 9 pt, Centered*.

Based on reliability test above, it can be concluded that each item has a Cronbach's alpha value above 0.70 and reliable.

5.3 Normality test

Figures 1.5

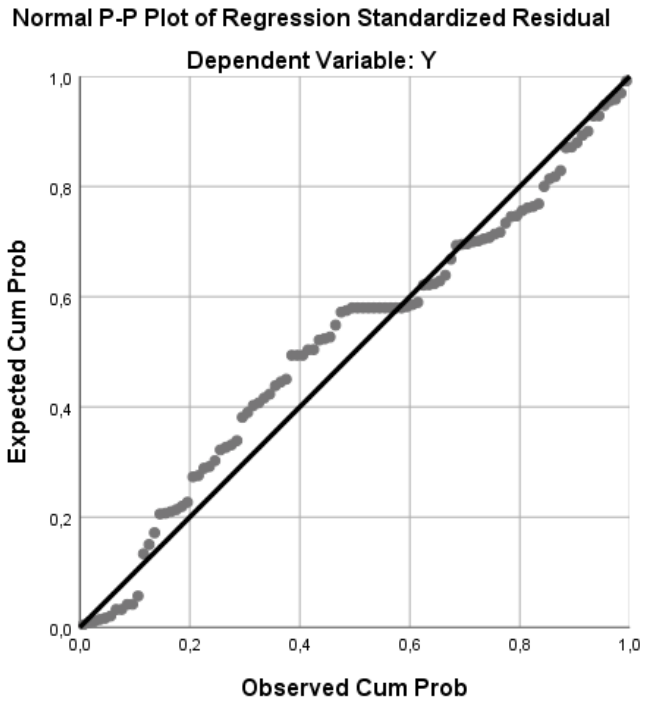

FIGURE 1.5. Normality Results.

It can be seen that the respondents' answers are around the diagonal line, so this data distributed normally.

Multikolonierity test

Figures 1.6

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	1,132	,775		1,461	,151		
	X1	,902	,267	,252	3,378	,002	,438	2,283
	X2	,974	,368	,254	2,647	,011	,265	3,768
	X3	,765	,326	,217	2,346	,024	,286	3,491
	X4	1,175	,325	,329	3,616	,001	,295	3,391

a. Dependent Variable: Y

FIGURE 1.6. Multikolonierity results

Independent variable has a tolerance value above 0,1, and VIF value above 10 so can be conluded there are no symptoms of multicollinearity.

Autocorrelation test

Figures 1.7

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,946[a]	,895	,885	1,156	1,727

a. Predictors: (Constant), X4, X1, X3, X2
b. Dependent Variable: Y

FIGURE 1.7. Autocorrelation test

Based on the table above, it can be seen that Durbin Watson value is 1.727 which means it is between the values of -2 and +3 so it can be concluded that the research model does not show autocorrelation symptoms.

Double Linear Regretion Analysis

Figures 1.8

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	X4, X1, X3, X2[b]	.	Enter

a. Dependent Variable: Y
b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,946[a]	,895	,885	1,156

a. Predictors: (Constant), X4, X1, X3, X2

FIGURE 1.8. Regretion Analysis

R Square value 0.895 can concluded Environmental education as independent variable influencing waste management

Simultant Hypotheses test

Figures 1.9

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	489,968	4	122,492	91,585	,000[b]
	Residual	57,511	43	1,337		
	Total	547,479	47			

a. Dependent Variable: Y
b. Predictors: (Constant), X4, X1, X3, X2

FIGURE 1.9. Hypothesis test

Based on the anova test above, it can be identified as follows;

1. As significance value obtained btained a value of 0.000 which means it is smaller than 0.05 so it can be concluded that environmental education can improve about waste management behavior.

Partial Hypotheses test

Figures 1.10

Coefficients[a]

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.

1	(Constant)	1,132	,775		1,461	,151
	Awarness (X1)	,902	,267	,252	3,378	,002
	Knowledge (X2)	,974	,368	,254	2,647	,011
	Attitude (X3)	,765	,326	,217	2,346	,024
	Participation (X4)	1,175	,325	,329	3,616	,001

a. Dependent Variable: Pengelolaan Sampah (Y)

FIGURE 1.10. Hypotheses test.

Based on the tahle test above, multiple linear regression equations can be arranged as follows;
$Y = c + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$
$Y = 1,132 + 0,902X_1 + 0,974X_2 + 0,765X_3 + 1,175X_4$

Based on these results, it can be conluded there is correlation between environmental education and waste management behavior. There are four action that mentioned in this research; reduce, reuse, recycle disposal. Based on descriptive analysis showed that majority of respondents agreed (50%) and strongly agreed that (45.8%) regarding the effect of environmental education on waste management behavior. Among the four ways in managing ways, respondents agree that reuse and recycle are effective ways of waste management to maintain environmental sustainability.

These results indicates the level of knowledge about waste management is quite high (95%), from these results respondents state that they know how to manage kitchen waste through educational content. Based on each components in environmental education, awareness and knowledge about ways of waste management, showed that there is stimuli from within a person that drives an activity. In consumer behavior context, waste management activity is the result of a stimulus-response process that appears when a person is exposed to information. Response shown that information as content was consumed give some behavior impact in waste management. Environmental literacy as information that shared in some various platform being information source that determines the behavior in waste management. Based on research finding state that respondent have basic knowledge about waste management, such as reduce, reuse, recycle and disposal. Among the four ways of waste management, respondent stated that they know and understand how to process kitchen waste said that there some education content show how to process kitchen waste. Some myriad digital platforms, such as TikTok and Instagram are content sharing platform are the most widely by respondent, so they become sources of educational information to share about waste management.

Based on research result, showed that respondent mostly (60%) carry out waste recycling activities as waste management behavior. Based on these data, it concluded that they looking for educational information that help them to have acknowledge in waste management. The need of educational information to provide knowledge about waste management, makes the importance of educational literacy in the form of content found on several digital platform. Shapiro and Hugdes (1996) speak about information literacy in a board context by stating that information is a component of knowledge, the human mind and human communication. To adding knowledge about waste management, information literacy obtained by respondent such as video content posted in digital platform (Instagram, tiktok, facebook, etc). Video content has component of knowledge that acceptable as human communication process. Education video can be categorized as environmental literacy that have consumed content on social media platform. Instagram, Youtube and Tiktok are most social media platform where can find video about waste management through utilize household waste.

Social media became platform that accessed by respondent regularly because social media allowing for all the users see educational content about waste management. This is one of the things that shape consumer behavior in waste management. Consumer behavior refers to the behavior displayed by consumers in searching for information, so consumers's preference about sustainable waste management.

6. Conclusion

Sustainable environment could be define as concept about ability to maintain valued quality in physical environment. There are some action to show consumer preference and behavior in waste management; reduce, reuse, and recycle. To develop knowledge about waste management, there is source information as literacy that already followed by

consumer such as Instagram and tiktok as content sharing platform. Based on content characteristic, video tutorial categorized as media literature to educate environmental literacy.

Consumer behavior showed that recycle is the most ideal and effective way to manage household waste. They stated that knowledge about how to manage household waste in recycle way through social media platforms. Instagram and Tiktok became content sharing platform often sharing viral video about waste management. Research finding showed that social media content as literacy educate in utilizing kitchen waste as an environmental sustainability movement. Further research about implementation about content model that works to educate consumer about waste management. Additionally, the result of this research can also be used to add reference about sustainability environment and digital literacy should an interested study to implement the strategy.

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Biography

Gabriella Sagita Putri is a faculty member in public relations study **Eflina. N.F. Mona** is a faculty member in public relations study program at Bina Nusantara University. She has research focus in branding and marketing communication strategy on social media.

Adhi Murti Citra Amalia H is a faculty member in public relations study program at Bina Nusantara University. She has research focus in branding and marketing communication strategy.

Ida Bagus Ananta Wijaya is a faculty member in interior design study program at Bina Nusantara University. He has research focus

Nisrin Husna is a faculty member in public relations study program at Bina Nusantara University. She has research interest in tourism branding, city branding, and relationship management