

[OT 2] PLASTIC RECYCLING AWARENESS AMONG STUDENT IN CAMPUS

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ABSTRACT

Plastic is a synthetic material that people use it on daily basic. The user of plastics is increasing day by day, therefore, recycling is important to reduce the waste of plastics that has been used. Student lives surrounded by plastics materials like in the classroom, office, cafe and student accommodation. The level of awareness among UUM students towards plastic recycling is still unknown and no empirical evidence. The aim of this study is to identify the perception of Universiti Utara Malaysia (UUM) students towards plastic recycling and to determine the level of awareness about the recycling of plastics that has been used through awareness activities and further contribute to the sustainable development of society, which requires some planning to implement best practices. This study has selected UUM students as respondents. The study employs quantitative approach in which the questionnaires are distributed among students. The focus of this study is about the environment, by recycling the plastic is linked to the environment. The benefit that regarding this topic is student can personally play an important role in reducing plastic pollution and increasing recycling rates for a healthier environment in student life.

Keywords: *plastics, recycling, environment*

INTRODUCTION

Every day, people use plastics in various applications. In the last 50 to 60 years ago, the use of plastics has grown to infiltrate almost every aspect of life. Because of how versatile this material, and how affordable it can be, it has taken the place of other products such as wood and metal. The used plastic has been rising every day, thus recycling back the plastic is more important to reduce plastic waste (Hopewell et al., 2009). Recycling is a standout amongst the most essential right now to decrease the effect of this and is a standout amongst the most element territories in the plastics business today. Plastic recycling is the way toward recouping scrap or waste plastics and reprocessing the material into valuable items. Since plastic is not biodegradable, recyclable it is a piece of a worldwide push to decrease plastic in the waste stream, particularly around eight million tons of plastic waste entering the Earth's seas consistently. This will help to decrease the levels of plastic pollution (Wilcox, 2015). The plastics industry has grown significantly since the creation of the various routes for the production of polymers of petrochemical resources. Plastics have their own special benefits in terms of low weight, durability and lower cost compared with many other types of materials (Andrady & Neal, 2009). The percentage of plastic that can be recycled, rather than downcycled or vanity can be improved when packaged goods

manufacturers to reduce packaging materials mixing and eliminate contaminants. Besides, we should increase the use of biodegradable plastic. Plastics are the fastest growing part of municipal solid waste nowadays. From 22.4 million tons of plastic are produced in 1999, only about 5.6% has been recycled.

Plastic packaging purchase by individual consumers has increased four times faster than plastic recycling by users. Using recycled plastic to manufacture new plastic products can reduce the energy needed for the production of about 80%. In an effort to improve plastic recycling, while environmental attitudes and awareness of recycling must be regarded as an obstacle. The aim of this study is to determine the level of awareness among UUM student towards plastic recycling and to identify the perception of UUM students about the important of plastic recycling. The remaining part of this paper is organized as follows: Section II expose overview of the literature review, section III presents the problem statement and section IV represents the subsequent research questions and research objectives. The methodology is being explained in section V. Expected limitation of this study is stated in section VI. Section VII is about findings of the study. Section VIII is about discussion and implication. The final conclusion of the research is presented in section XI.

LITERATURE REVIEW

Plastic

The plastics manufacturing industry is one of the most active and dynamic growth sectors in Malaysia. Since 11 years ago, the growth rate was 15% due to a stable economic growth of Malaysia (National Solid Waste Management Department Ministry of Housing And Local Government Malaysia, 2011). Malaysia's plastics industry has produced a variety of products in various sectors such as automotive components, electrical and electronic parts, and components for the telecommunications industry, construction materials, household appliances products, packaging materials and toys. Within a year, it was reported that approximately 2 million tons of resin for plastic industry generated locally (MPMA, 2010). However, information about plastic waste and plastic recycling activities of the manufacturing industry is limited. This is because of most of the solid waste in a study focusing on the Municipal Solid Waste (MSW). In general, plastic waste tons of waste is the third largest after putrescible waste and paper. In order to further investigate the existing plastics manufacturing and recycling industries in Malaysia, the Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) under the Ministry of Housing and Local Government (MHLG) had initiated "A Study on Plastics Management in Peninsular Malaysia"(hereinafter refer to as Study). This report presents the findings of the study which was carried out by Golden Ecosystem Sdn Bhd (GESB) throughout Peninsular Malaysia from April to December 2011 (National Solid Waste Management Department Ministry of Housing And Local Government Malaysia, 2011). Generally, plastic Malaysia still in a state of optimum levels of efficiency compared with other developed countries.

Recycle of plastic is seen to be worrying to the public even to global. Total consumption of plastic is increasing and the implications to the environment like the occurrence of the landfill as a result of the irrational in the disposal of food and beverage. Students are the next generations that will development our country in the future. Students should

be truly educated so that they can develop the country. The level of awareness of students about plastic recycling is important to improve their knowledge (Manuel, Jincy, et al, 2015).

Threats and impact of plastic pollution

Nowadays, among the most widely and frequently people used in their everyday lives are made of plastic goods. Just see our home appliance, starting from the kitchen, the bathroom up to the living room area and a courtyard outside the house, almost mostly produced from plastic as it is a material that's more convenient.

However, behind the plastic advantages, hidden threats that we do not even know. For example, a mineral water bottle. It is light, easy to carry anywhere and it is easy to use by repeatedly, it also will save consumers money especially in times of economic crisis, the easy way to save is to use the bottle repeatedly. Plastic water bottles can be used if washed often, but the reuse plastic bottles can lead to bacterial contamination (Chan, 2016).

An estimated one million birds are injured and die every year because of inedible and snared a plastic bag and many turtles die due to ingestion of plastic bags drifting floats on the surface of the sea turtles that resemble human food, the jellyfish (Crowley, 2013). The plastics are discarded will not be destroyed in a short time because of the very long lifespan of up to approximately 10 centuries to disintegrate or decompose. In addition, the discarded plastics can also block the flow of water so that the water can cause drainage and river flooding during heavy rain near. Caused by a relatively long period of decay, then it will meet most of the waste disposal site. More troubling, plastic can release toxic and dangerous compound when it decayed (Bernstein, 2009). Should this occur the pollution of land, rivers and water resources below the ground surface is not impossible to happen?

As a result, environmental quality, health, and welfare of the community will be affected. Following the disadvantages of plastic on human health and the environment, some countries have taken steps to avoid plastic packaging with uncontrolled. There are a number of countries have abolished by law the use of plastic bags in shops and supermarkets. Some countries still have a residual charge on plastic bags. Therefore, not surprising that the theme for the celebration of World Environment Day was 'Kick the Habit- Reduce the Use of Plastic Bags, Towards A Low Carbon Economy' (Change Attitude! Reduce Use of Plastic Bags For Creating A Low Carbon Economy). The aim of this campaign is held to invite us to change attitudes towards the use of plastic. This campaign was also held in Malaysia at Ipoh and Penang. Malaysia is one of the countries involved in this campaign from 100 countries around the world (World Environment Day, 2008).

What can we do about it?

Reduce

- Avoid to use a bottled drinks altogether. You can save resources by drinking from glasses or water fountains whenever possible when you are out.
- Do the research. Don't fall for advertising that tells you that bottled water is purer or safer than tap. If you are concerned about your tap water you can obtain a water quality report for your area and buy a water filter if necessary.

Reuse

- Invest in a free refillable bottle. Carry a reusable, free refillable bottle when you are on the go, and reuse it whenever the option is increasing. [This guide](#) looks at some of the options on the market.

Recycle

- Productively. The municipality should organize and encourage people to recycle plastic that has been used.

PROBLEM STATEMENT

Since it's unearthing, the plastic has been increasing to be an important role in modern society. From bottles to clothes, it has begun to replace many traditional materials nowadays. Durable plastic and endurable plastic, the quality that makes it seem like the perfect material for a variety of uses in daily life. But these factors, combined with other increasing the studied, turn out to be some of the primary problems of plastic.

Sustainability has been a key phrase in the environment discussion recently. Sustainable resources are the ones that can continue to be used and still be available for the next generations. They may include an energy source such as wind and sunlight or biological sources such as plants. Plastic is made from oil and coal, both of which are not sustainable and cannot be recycled. These sources also causes environmental damage when mined, transported, and used in the production process for the production of plastics contribute to problems such as oil spills, toxic emissions, and global warming through greenhouse gas emissions.

After the plastic container is used, it can be disposed of or recycled. But even if the second step has been taken for each piece of plastic, and no bigger quantity of plastic required, non-recyclable resources still need to be used to produce more. This is because when the plastic is not reprocessed, it can be converted into a lower grade or quality. For example, plastic bottles such as those used for cold drinks Coke cannot be recycled into new Coke bottle. The little plastic recycling, which may be a new bottle should be added to new plastic. In addition, it is feared that contaminants surviving the recycling process will be able to leach into food from containers. Thus, while the plastic is "recycled", it is not "sustainable recyclable".

If plastic is not recyclable, it can either go to a landfill or incinerated. Plastic can take up to 10,000 years to biodegrade, making filling a bad solution for large quantities produced. There are also many troubles that can be with the practice of burning, especially when plastic is burned. Dioxins and furans are two highly toxic chemicals created by accident in this process.

Based on preceding studies (Desa et al., 2012; Tiew et al., 2013), awareness about recycling among students on campus is low. In the next generation, this situation will be more disturb. Because of students are young people who will be an example for next generations, if the student does not ensure the environmental awareness, the environment may be more contaminated as a result of the attitude of the younger generation who do not know how to keep environment awareness. Environmental awareness should be applied and practiced so that the environment is not polluted and guaranteed in the future.

Plastic awareness among UUM student is still unknown and no empirical evidence. This research is to investigate about their awareness of UUM student about this topic. They only know how to use plastic in their daily life without knowing that someday the used plastic will contaminate the environment. As a student, we should be aware of the bad effect of using the plastic if we use it too much today and we need to recycle plastic that has been used so that we will secure our surroundings in universities and ensure that our environment clean.

RESEARCH OBJECTIVES

This study aims to answer the following research questions: (1) what is the level of awareness among UUM student towards plastic recycling? And (2) how UUM student identify their perception about the important of plastic recycling? Based on these questions, follows are the research objectives are contained in the study:

1. To determine the level of awareness among UUM student towards plastic recycling.
2. To identify the perception of UUM students about the important of plastic recycling.

METHODOLOGY

This study focused on to determine the level of awareness among UUM students towards plastic recycling and to identify the perception of UUM students about the important of plastic recycling. The population consists of UUM students who have used plastics on campus. A sample of 50 UUM students' needs to be collect to represent a whole population. The individual student is the unit of analysis of the study. The method to be used is quantitative research approach in the form of a questionnaire to obtain data and information about plastic recycling. The data will be collected through the survey which will be conducted surrounded in the campus. Since the study employs convenience random sampling, the sample will be pickup randomly. Questionnaires were distributed to students UUM by hand or by email. Data was analyzed using the program Statistic Package for Social Science (SPSS).

LIMITATION OF THIS STUDY

Although the research has reached its aim, there were some unavoidable limitations. First, because of time limit, this research was conducted only on a small size of population which is only fifty students and majority is final year students. Secondly, as indicated by this, the information and consequence of this review may not be precise on the campus that the quantity of sample in a small size however it might exact in light of the fact that all students in UUM live in campus and consequently have a similar domain about the plastic recycling contrast with another university which practically of their students not live in the campus and have distinctive environment to contemplate and do day by day schedule.

FINDINGS OF THE STUDY

Table 1
General information of UUM students

		Frequency	Percentage (%)
Gender	Male	23	46
	Female	27	54
Age	18-20	5	10
	21-23	28	56
	Greater than 24	17	34
Race	Malay	26	52
	Chinese	12	24
	Indian	8	16
	Other	4	8
College	COB	16	32
	CAS	16	32
	COLGIS	18	36

The number of respondents who answered the questionnaire is 50 students. Consist of 23 males and 27 females. Respondent's background and characteristics are as shown in Table 1 above.

Table 2
Descriptive statistics

	Gender	Race	Age	College
Mean	1.54	1.82	2.22	2.02
Median	2.00	1.50	2.00	2.00
Mode	2	1	2	2
Std. Deviation	.503	.983	.616	.820
Range	1	3	2	2
Minimum	1	1	1	1
Maximum	2	4	3	3

In the Table 2 above shows the information about the values of mean, median and mode between the gender, race, age and college.

Table 3
Cross tabulation

		GENDER		RACE				COLLEGE		
		MALE	FEMALE	MALAY	CHINESE	INDIAN	OTHER	COB	CAS	COLGIS
DO YOU RECYCLE PLASTIC	YES	Count 16 69.60%	24 88.90%	20 80.00%	11 84.60%	6 75.00%	3 75.00%	12 75.00%	14 82.40%	14 82.40%
	NO	Count 0 0.00%	1 3.70%	1 4.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1 5.90%
	MAYBE	Count 7 30.40%	2 7.40%	4 16.00%	2 15.40%	2 25.00%	1 25.00%	4 25.00%	3 17.60%	2 11.80%
HOW OFTEN DO YOU RECYCLE PLASTIC	DAILY	Count 1 4.30%	1 3.70%	0 0.00%	0 0.00%	1 12.50%	1 25.00%	0 0.00%	1 5.90%	1 5.90%
	WEEKLY	Count 1 4.30%	4 14.80%	1 4.00%	4 30.80%	0 0.00%	0 0.00%	2 12.50%	2 11.80%	1 5.90%
	MONTHLY	Count 7 30.40%	14 51.90%	15 60.00%	4 30.80%	1 12.50%	1 25.00%	8 50.00%	5 29.40%	8 47.10%
	NOT SURE	Count 14 60.90%	8 29.60%	9 36.00%	5 38.50%	6 75.00%	2 50.00%	6 37.50%	9 52.90%	7 41.20%
WHAT KIND OF PLASTIC DO YOU RECYCLE	BOTTLE	Count 17 73.90%	17 63.00%	20 80.00%	7 53.80%	4 50.00%	3 75.00%	14 87.50%	9 52.90%	11 64.70%
	CARRIER BAG	Count 6 26.10%	10 37.00%	5 20.00%	6 46.20%	4 50.00%	1 25.00%	2 12.50%	8 47.10%	6 35.30%
IF THERE WERE CLEAR GUIDELINESS ON WHAT/ HOW TO RECYCLE PLASTIC, WILL YOU RECYCLE MORE	NATURAL	Count 5 21.70%	4 14.80%	3 12.00%	5 38.50%	1 12.50%	0 0.00%	1 6.30%	3 17.60%	5 29.40%
	AGREE	Count 11 47.80%	9 33.30%	10 40.00%	4 30.80%	5 62.50%	1 25.00%	5 31.30%	9 52.90%	6 35.30%
	STRONGLY AGREE	Count 7 30.40%	14 51.90%	12 48.00%	4 30.80%	2 25.00%	3 75.00%	10 62.50%	5 29.40%	6 35.30%

Is the perception of recycle plastic related to gender of student? Results for question one show a total of 24 female students (88.9%) will recycle plastic and 16 (69.6%) of male students say so. None of male student says no with question, but one female student will not recycle plastic. Meanwhile, 7 (30.4%) of male students were maybe recycle plastic and 2 (7.4%) of female students say so. Overall, there are more female students will recycle plastic than male. It appears that gender determines the perception of recycle plastic. Refer the Table 3 above for more information about cross tabulation expects gender.

As the survey data indicated, the results showed that 60% of the students had positive perception about the important of plastic recycling, but, however, there are still 40% of them which showed the negative perception. Recycling awareness is still poor among the UUM student despite the fact that most of these plastics are recyclable and easy to process.

DISCUSSION AND IMPLICATIONS

In recent years, the production of plastic has been falling, however, it does not decrease and will increase in the future. Plastic is a material that will damage the soil microbial activity and when the plastic is eaten, can kill animals. Plastic bags also can contaminate foodstuffs caused by leaching of toxic dyes and transfer pathogens. It should be emphasized and it is important to educate students about the method of disposal of plastic waste. For example, the separation and recycling of plastic and keep a clean ecosystem. The level of students' awareness on plastics recycling can be improved by practicing how to properly dispose of their plastic.

CONCLUSIONS

The results of this study, I recommend that an education program about recycling should be held. The university can develop many programs to inculcate awareness among students towards plastic recycling. The level of awareness of students about plastics recycling cycle is seen to be low. The lower level of student's awareness that may be caused by lack of disclosure regarding the awareness of recycling plastic. Future studies should focus on the effectiveness of students' awareness on recycling plastic because plastic is important for the future. Using result from this study, the university can develop many programs to inculcate awareness among students towards plastic recycling.

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