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## A Study on the Knowledge, Attitudes, Awareness Status and Behaviour Concerning Solid Waste Management

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### Abstract

In Malaysia, the government is currently spending up to 40-70% of taxpayer's money annually for solid waste management. Less than 5% of all waste is being recycled, whereas up to 70% can actually be recycled or re used in some way. The aim of this study was to assess the knowledge, attitudes, awareness status and behaviour concerning SWM among first year students (n= 589) using questionnaire survey. Results showed, the students' knowledge, attitudes, awareness status and behaviour concerning SWM were moderate. So attempt to encourage, through education and awareness on managing solid waste in the campus and programs to promote attitude change and sustainable environmental practices must be carry out.

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### 1. Introduction

Environmental problems have attracted the attention all over the world. People are becoming increasingly conscious of variety of problems like global warming, air, water and land pollution. Most of the environmental problems could be caused by manmade pollution which not only damage natural resources, but also its effect is also dangerous. Human activities create waste, and it is the way these waste are handled, stored, collected and disposed of which can pose risks to the environment and public health ( Zurbrugg 2003). Waste disposal is an immediate and critical issue for the community now and ineffective or irresponsible disposal of solid waste pollutes the environment and pose health risk to public. Waste management technologies like land filling and incineration are not a complete solution to this problem. No one wants a waste management site in his or her neighbourhood.

It is a common knowledge that waste is nothing but useful material at wrong place. There is no material in this world, which is not useful in one-way or the other. Also there is no material, which is created out of nothing. It is man's ignorance that he considers certain things as waste and certain other thing as useful. Just as types of wastes are changing, so must the attitude of people towards waste must change. People must realize that the solution lies in using waste as a resource rather than to be destroyed.

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The World Bank (1992) identified solid waste as one of the three major environmental problems faced by most municipalities in Malaysia. The amount of waste generated continues to increase due to growing population and increasing consumption. The amount of solid waste generated went up from 17,000 tons per day in 2002 to 19,100 tons in 2005, an average of 0.8 kilogram per capita per day. The generation of solid waste is expected to reach 30,000 tons per day in 2020. In Kuala Lumpur waste generation is about 3,000 tons a day and forecasts show that this will increase further in coming years. Modern lifestyle has led to more acute waste problems, convenience products generally require more packaging, careless habits associated with greater affluence lead to greater quantities of waste, as demonstrated by discarded wrappers from the inevitable fast food outlet, and the modern day waste contains a higher proportion of non-degradable materials such as plastics. The waste consists of 45% food waste, 24% plastic, 7% paper and 6% iron. Approximately 95-97% of waste collected is taken to landfill for disposals. The remaining waste is sent to small incineration plants, diverted to recyclers/re-processors or is dumped illegally. Today 5 % of the waste is being recycled, but the government aims to have 22% of the waste recycled by 2020 (Malaysia Environment-Current issues-Geography, 2010).

Environmental awareness is building up within the Malaysian government as well as in consumers' minds. The government has adopted a National Strategic Plan for Solid Waste Management with emphasis on the upgrading of unsanitary landfills as well as the construction of new sanitary landfills and transfer stations with integrated material recovery facilities. A new Solid Waste Management Bill was adopted by parliament in June 2007. The bill is to drastically change the structure of solid waste management in Malaysia and to open up for the development of a completely new business sector. New concessions on domestic waste management will be introduced, as well as recycling, and handling of specific types of solid waste like plastic, paper etc. is highlighted. Solid waste management is a priority area under the 9th Malaysian Plan, as can be seen by the government setting up a Solid Waste Department which is entrusted to enforce the Solid Waste Management Bill.

However our earth suffers from many environmental problems which need to be tackled at the individual level, requiring individuals to develop those attitudes which will guide them to environmentally supportive behaviour (Ahmed & Mohammed Al-Mekhlafi, 2009). Formation and change of attitude are interwoven. People are always adopting, modifying, and relinquishing attitudes to fit the ever changing needs and interests. Attitude cannot be changed by simple education. Acceptance of new attitude depends on who is presenting the knowledge, how it is presented, how the person is perceived, the credibility of the communicator, and the conditions by which the knowledge was received. Research in social sciences has shown that knowledge on a topic may increase; people may even change attitudes, but that the step to improved behaviours and practices is depending on a complex set of social and psychological factors.

Behavioural scientists, such as Gagne and Skinner (Curzon, 2003), tell us that behaviours, opinions, and attitudes that are rewarded and reinforced are likely to be repeated and, ultimately, incorporated into our personal value set and routine behaviour. The wise use of rewards and reinforcements increases the chance that the recognized individual will repeat the desirable attitude and may serve also as an incentive for others to adopt the attitude as well. Often our attitudes about the environment or politics come from information and persuasive communications (Johnston, 2010).

Components of environmental awareness can be classified into two aspects: perception and behaviour, that is, the perception of environmental problems and the behavioural inclination to protect the environment. The perception of environmental problems involves people's objective knowledge, perception and environmental realities. It includes two major aspects:

1. Perception of environment protection (EP), which includes the perception of EP efforts and scientific knowledge of EP
2. Perception of environmental conditions, which includes the perception of general and local environmental conditions and perception of various specific environmental problems

### *1.1. Issues and Problems*

With the increasing number of students in the universities the amount of waste produced every single day also shows the escalating growing pattern. The generation of waste typically originates from the residential college, cafeterias, faculties and administration blocks. Students, staffs from academic and non academic divisions and visitors are predominantly the generator.

Solid waste is a cleanliness and hygiene issue. The scenery of overloaded bins and uncollected in waste bins created just not foul aroma but insightful too. Sometimes we can see litter at the roadside, drains clogged up with rubbish and rivers filled with filthy garbage definitely indicate that solid waste is a major environmental problem not only in the universities but also in Malaysia. Rapid development, population increase and changes in consumption pattern directly (and indirectly) resulted in the generation of enormous amount of waste, ranging from biodegradable to synthetic waste.

As of the year of 2008, 23,000 tonnes of waste is produced each day in Malaysia, with less than 5% of the waste is being recycled. In Selangor alone, waste generated in 1997 was over 3000t/day and the amount of waste is expected to rise up to 5700t/day in the year 2017. An alarming 19% of waste ends up in our drains, which then causes flash floods and drainage blockage. This situation has been and will be reducing our environmental capacity to sustain life.

Despite the massive amount and complexity of waste produced, the standards of waste management in Malaysia are still poor. These include outdated documentation of waste generation rates and its composition, inefficient storage and collection systems, disposal of municipal wastes with toxic and hazardous waste, indiscriminate disposal or dumping of wastes and inefficient utilization of disposal site space.

Furthermore, the lack of awareness and knowledge among Malaysian community about solid waste management (SWM) issues, and being ignorant about the effect that improper SWM has to us has definitely worsened the problem.

Taking note of the seriousness of solid waste disposal the aim of this research is to identify the knowledge, attitudes, awareness status, behaviour and practice concerning solid waste management (SWM) among first year students in UKM.

## **2. Method**

### *2.1. Research Design*

A self-administered questionnaire was used to assess students' knowledge, attitudes, awareness and practices towards the solid waste problem.

### *2.2. Instrument*

In this study, a binary scale was used. The questionnaire consisted of 18 items distributed into four dimensions: attitude (7 items), awareness (4 items), knowledge of SWM (1 item) and behavior or practices towards solid waste problem (6 items).

### *2.3. Sample*

The sample of this research were 589 first year students from eight faculties in UKM Bangi.

### *2.4. Data analysis*

Data was analyzed using the Statistical Package for Social Science (SPSS) software.

### 3. Results

Results showed that the students' knowledge, attitudes, awareness status, behavior and practice concerning SWM were moderate (Refer to Table 1-4).

Table 1. Knowledge concerning SWM

Knowledge	% subject
Yes	63.8
No	36.2

The classification made concerning the knowledge was based from the question: do you know about the Program *Kampus Lestari* and solid waste management in UKM.

Table 2. Attitudes towards SWM

Attitude	% subject
Positive	34.1
Negative	65.9

The positive attitude was measured by looking at the mean score. Subjects having mean score above 10.04, (SD= 1.12) was considered as having positive attitude and below the score considered as having negative attitude.

Table 3. Awareness status concerning SWM

Status	% subject
High	64.0
Low	36.0

For the awareness status concerning SWM, the subjects were considered showing high awareness status if they have mean score of 5.65 and above, (SD =1.20). Low awareness status showed when their mean score was below 5.65.

Table 4. Behaviour and practice level concerning SWM

Level	% subject
High	42.8
Low	57.2

Lastly for the aspect of behaviour and practice level concerning SWM, the classification made also depend on the mean score. For those subjects having mean score above 7.59 (SD= 0.93), they were said to have high behaviour and practice level concerning SWM, and those below that score was considered having low level.

### 4. Discussions

Although quite a number of the students (63.8 %), have knowledge concerning SWM, but it is not consistent with their attitude. The results of this study showed that more than half of the students (65.9%) have negative attitudes towards SWM. This findings reflect the growing urgency to educate the students on SWM, since they are first year students. This shows that students' attitudes were affected by their education, which supports the idea that education plays, or can plays, a role in developing people's attitudes towards the environment (Ahmed & Mohammed Al- Mekhlafi 2009). Although there some studies that suggest that there is no relation between education and attitude to the environment ( (Al-Najede 1990; Lyons & Breakwell 1994).

Results also showed that 64 % of the respondents perceive that if the solid waste problem is not effectively managed it will bring about water- and food-borne diseases that can heighten the cases of morbidities and mortalities affecting their respective communities. Furthermore only 16.6% respondents strongly agree that instituting proper and sustainable waste management is a practical way to maintain the cleanness of the campus and the health of the students. From the results it has become clear that there is still a need to educate the students about the problem of solid waste as this helps in raising their awareness about the problem and their support in instituting waste management measures essential to help clean the university's environment. Public support towards helping in alleviating the impacts of the problems particularly on solid waste can only be possible if the public is knowledgeable about the problem and the management goals of the government.

More than half (52.6%) of respondents surveyed strongly agree that the facilities available in the campus were enough in order to institute proper and sustainable waste management in a practical way to prevent the piling up of solid waste. But majority of the respondents greatly perceive that the initiation and the responsibility of resolving their campus's solid waste problems lies in the hands of the university's administration and its members. Respondents also strongly agree that discipline is needed to effectively implement programs and schemes that will deal with the university's solid waste.

Despite the high status of awareness expressed by the students concerning SWM, their behavior and practice and willingness to act towards the alleviation of those problems varied (high level= 42.8% and low=57.2%). This result support the findings of previous studies (Dunlap, Gallup & Gallup 1993; Inglehart 1995 & Olli, Grendstad & Wollebaek 2001). This results also support the findings of Hines, Hugerford and Tomera (1986), that the level of consistency between environmental attitudes and behavior is affected by a person's knowledge and awareness, public verbal commitment and his/her sense of responsibility. The transfer from attitudes to behavior can also be affected by lifestyle; many people, while professing to "correct" attitudes to the environment, are not ready to change their lifestyle in ways that might mean sacrificing certain forms of leisure and comfort for the sake of the environment. Other study has also found a weak and inconsistent relationship between environmental attitudes and behavior; usually attributable to a reluctance to give up the comforts of modern life (Diekmann & Preisendorfer 1998).

## 5. Discussions

The study examined the knowledge, attitudes, awareness status and behaviour and practice concerning solid waste management (SWM) among first year students. The study showed that the respondents' behaviour and practice they engage in waste management is because they value cleanliness and they want to mitigate the possible disease occurrences. However, it is apparent that there is the necessity to develop student's attitudes and willingness to reduce problems related to SWM. Respondents recognized that attaining a sustainable waste management is a joint responsibility of the government and its community members. The major recommendations of the study are the needs to put more effort into raising students' awareness by awareness campaigns that can bring about considerable changes in the attitude and perception of them towards SWM.

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