THE LEVEL OF ENVIRONMENTAL KNOWLEDGE, AWARENESS, ATTITUDES AND PRACTICES AMONG UKM STUDENTS

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ABSTRACT

Environmental education is considered essential to ensure the environmental quality for sustainable development. By providing knowledge to students, it is expected to promote awareness and develop positive attitude towards environment. This is expected that students demonstrate practices on the environmental care. The study was conducted at Universiti Kebangsaan Malaysia (UKM) to reveal knowledge, awareness, attitudes and practices towards environment among students. The survey employed a quantitative approach using questionnaires involving 375 respondents (n=375). Research findings indicated that students had the knowledge, awareness and attitudes towards environment at a high level but the practices of environment was at a moderate level. Based on gender, there were no significant differences in terms of knowledge, awareness and practices towards environment. However, there were significant differences in terms of attitudes which female students had higher attitude to environment as compared to male students. In terms of disciplines, there was a significant difference in knowledge by students from professional discipline. They had the lowest level of knowledge as compared to students from other disciplines. The Pure Science students had the highest level of awareness as compared to students from other disciplines. In terms of attitudes and practices, there was no significant difference between students from different disciplines of study. There was a significant relationship between knowledge, awareness and attitudes to the practices of environment. Thus, Environmental Education in UKM should be more "*hands-on*" to form more consistent behavior in protecting the environment.

Keywords: *environment, knowledge, awareness, attitudes, practices*

INTRODUCTION

Concept of "human development" given by United Nations Development Programme (UNDP) in Human Development report on 1990 stated that the main objective of the development was "…an environment which is able to let human live long, healthy and creative..". It also protects the options for future generations and emphasizes on the more friendly sustainable development (Mozaffar Qizilbash 1996).

Sustainable development has been given serious attention as the environmental problems had come to the chronic level from time to time. Sustainable development is referred to as development which must be carried out continuously without damaging the rights of future generations. In other words, sustainable development can be explained by development that meets the needs of present without compromising the ability of future generations to meet their own needs (Wahida et al. 2004). To achieve a balance need between environmental elements and claims held by people living along, cooperation between the community and society are required and must act collectively. Unification of thought and opinion is needed to implement sustainable development as it involves not only the government institutions but also require support from professional groups, public sectors, environmental organizations and all individual in the society (Hamidi et al. 2003).

To ensure success in the sustainable development, environmental education has been introduced in the educational system from primary school to tertiary level. The purposes of environmental education are to produce people who are knowledgeable about biophysical and its association with environmental problems, awareness of how to help in solving these problems and motivating people to work towards solutions (Stapp 1969).

In UKM, Environmental Education was given serious attention. The program is applying the subjects and offering related courses to produce a professional group in terms of environment management. Among the courses offered at the undergraduate students related to environmental and directly with the environmental management program are Environmental Science and Environmental Engineering. Environmental courses are offered from faculty or from the center of general studies. Among them is the Environment and Health (ZT 2323), Global Ecology and Sustainable Development (ZT 2333), Environmental Philosophy (ZT 3133), Economic and Environmental Management (EX 2453), Environmental Management System and Industrial Organization (EX 3483), Trade and Environment (EX 3473), Analysis of Cost Benefit and the Environment (EX 3493) and Environment and Its Sustainability (GR 6223).

Environmental quality in the future is depending on the students at present because they are future leaders and most qualified people in managing the environment. Therefore, this study aims to examine the knowledge, awareness, attitudes and practices towards the environment among students in UKM. Results of this study can provide useful input in designing better environmental education in the future.

METHODOLOGY

This paper is about a study using quantitative method reviews. Questionnaire form was distributed to UKM's students (Bangi Campus). Number of samples in this study 375 persons. This number based on 14,286 that is the total number of Bachelor students registered at UKM from 8 faculties. These 8 faculties were divided into 4 disciplines which are Pure Science (Faculty of Science and Technology), Social Science (Faculty of Education, and Faculty of Social Science and Humanity), Professional (Faculty of Engineering and Built Environment, Faculty of Economics and Business, Faculty of Law, and Faculty of Information science and Technology) and Islamic Studies (Faculty of Islamic Studies). The method of sampling used for

this study was stratified random sampling and simple random sampling to enable them to represent each independent variable, namely the area of studies and gender.

RESEARCH FINDINGS

Table 1 Profile of Research Respondents

Profile of Respondents	Frequency	Percentage (%)
Gender:		
Male	174	46.4
Female	201	53.6
Disciplines:		
Pure Science	63	16.8
Social Science	123	32.8
Professional	108	28.8
Islamic Studies	81	21.6

Distribution of the number of samples involved in this study was 174 (46.4%) male students, while 210 (53.6%) students representing female students. In terms of disciplines, the total of 63 (16.8%) students were representing Pure Science, 123 (32.8%) of Social Sciences, 108 (28.8%) Professionals and 81 (21.6%) from the Islamic Studies. Profiles of respondents are showed as in Table 1.

Results of descriptive study showed that UKM students had high level of knowledge, awareness and attitudes towards environment. However, the level of practices towards environment was moderate. All aspects studied in knowledge, awareness and attitude constructs were at high level but each aspect indicated different level in the construct of practices. Aspect that was at a low level was an "action involving law". On the other hand, the construct in the aspect of practices that was at the level of the medium was on "reduce waste", "being a responsible users" and "improve the knowledge to protect the environment". Only one construct had indicated to be at a high level which was "preservation of natural resources". Descriptive research findings are shown as in Table 2.

T-test results showed that there was no significant difference in the aspect of knowledge, awareness and practices among male and female students. However, there were significant differences between male and female students in terms of attitudes which female students' (mean = 4.152) attitudes toward the environment were higher compared to male students (mean = 4.014) (Table 3).

Table 2 Level of knowledge, awareness, attitudes and practices towards environment.

No	Construct	Item	Std Deviation	Mean	Percentage (%)	Mean Interpretation
1	**Knowledge**	Solid waste disposal	0.760	3.677	73.54	High
		Toxic waste disposal	0.729	3.909	78.18	High
		Excessive exploitation of natural resources	0.887	3.936	78.72	High
		Contamination of fresh water	0.645	3.944	89.44	High
		Marine pollution	0.642	3.949	78.98	High
		Global warming	0.698	4.005	80.10	High
		Logging	0.762	4.072	81.44	High
		Extinction of species of flora and fauna	0.848	4.077	81.54	High
		Air pollution	0.743	4.131	82.62	High
	Total Mean		**0.526**	**3.986**	**79.72**	High
2	**Awareness**	Science and technology in environment	0.579	3.529	70.58	High
		Interaction of human and environment	0.454	3.913	78.26	High
		Environmental protection	0.533	3.949	78.98	High
		Excessive exploitation of natural resources	0.541	3.969	79.38	High
		Environmental quality	0.562	4.221	84.42	High
	Total Mean		**0.368**	**3.916**	**78.32**	High
3	**Attitudes**	Commitment to environmental protection	0.497	3.892	77.84	High
		Nature	0.417	4.053	81.06	High
		Environmental problem	0.607	4.106	82.12	High
		Environmental education	0.407	4.301	86.02	High
	Total Mean		**0.390**	**4.088**	**81.76**	High
4	**Practices**	Actions involving law	1.080	2.364	47.28	Low
		Reduce waste	0.876	2.978	59.56	Moderate
		Being a responsible user	0.759	3.049	60.98	Moderate
		Improve knowledge to protect the environment	0.940	3.224	64.48	Moderate
		Preservation of natural resources	1.269	3.661	73.22	High
	Total Mean		**0.697**	**3.000**	**60.00**	Moderate

Table 3 Level of knowledge, awareness, attitudes and practices towards environment based on gender

Variables	Gender	No. of sample	Mean	Std. Deviation	T-value	Level of significant
Knowledge	Male	174	4.021	0.549	1.223	0.285
	Female	201	3.955	0.504		
Awareness	Male	174	3.951	0.366	1.735	0.909
	Female	201	3.886	0.367		
Attitude	Male	174	4.014	0.360	-3.458	0.043
	Female	201	4.152	0.404		
Practice	Male	174	2.939	0.705	-1.182	0.945
	Female	201	3.025	0.698		

* Significant at level p <0.05

Table 4 Level of knowledge, awareness, attitudes and practices towards environment based on Disciplines

Variables		SS	df	Mean Square	F	Level of Significant
Knowledge	Between Group	6.933	3	2.311	8.893	0.000
	Within Group	96.410	371	0.260		
	Total	103.342	374			
Awareness	Between Group	4.669	3	1.556	12.593	0.000
	Within Group	45.846	371	0.124		
	Total	50.515	374			
Attitudes	Between Group	0.698	3	0.233	1.537	0.205
	Within Group	56.184	371	0.151		
	Total	56.882	374			
Practices	Between Group	0.740	3	0.247	0.499	0.683
	Within Group	182.985	371	0.495		
	Total	183.725	374			

* Significant at level p <0.05

Based on one-way ANOVA test shown in Table 4, there were significant differences in terms of knowledge F (df = 3.371; p = 0.000) = 8.893 and awareness towards environment based on disciplines, F (df = 3.371; p = 0.000) = 12.593. Results of Scheffe Post Hoc Tests showed that there were significant differences exist between students from the Professional studies (min = 3.775) with students from Pure Science (4.105), Social Sciences (4.042) and Islamic Studies (min = 4.089) area, p <0.05. Professional students had lower level of environmental knowledge

as compared to students from Pure Science, Social Sciences and Islamic Studies. In terms of awareness, the Pure Science students (4.162) showed the highest awareness level as compared to the students from professional (3.888), Social Sciences (3.864) and Islamic Studies (3.843), ($p <0.05$). There were no significant differences in terms of attitudes F (df = 3.373; p = 0.205) = 1.537 and practices F (df = 3.373; p = 0.683) = 0.499 between students from different disciplines. Scheffe Post Hoc Test results are shown in Tables 5 and 6.

Table 5   Scheffe Post Hoc Tests on Environmental Knowlege Based on Disciplines

Group	Mean	Pure Science	Social Science	Professional	Islamic Studies
Pure Science	4.105				
Social Science	4.042				
Professional	3.775	*	*		*
Islamic Studies	4.089				

* Significant at level $p <0.05$

Table 6   Scheffe Post Hoc Tests on Environmental Awareness Based on Disciplines

Group	Mean	Pure Science	Social Science	Professional	Islamic Studies
Pure Science	4.162		*	*	*
Social Science	3.864				
Professional	3.888				
Islamic Studies	3.843				

* Significant at level $p <0.05$

Results from Pearson analysis showed there was a significant relationship between knowledge (r = 0.328, p = 0.008), awareness (r = 0.362, p = 0.000) and attitudes (r = 0.345, p = 0.05) to the practices of the environment. However, the relationship was low (Alias Baba 1999) (Table 7).

Table 7 Relationship between knowledge, awareness, attitudes and practices

Relations Variables	Practices	Level of Significant
Knowledge	r = 0.328**	0.008
Awareness	r = 0.362**	0.000
Attitudes	r = 0.345**	0.005

DISCUSSION

This research was conducted at UKM. The results found that UKM students had high level of knowledge, awareness and attitudes but the level of environmental practices was low. These research findings were similar to the opinion found by Azizan (2008) which says that "students had a good awareness about environmental problems but yet had no changed in practice". This was also supported by Wahida et al. (2004) who stated that "the awareness towards

environmental issues and awareness about the need to maintain the environment had increased among the society, but the level of individual involvement in the activities of environmental protection still at low level".

Female students who demonstrated lower level of attitude as compared to male was corresponding with the results of previous studies (Anderson et al. 2007; Ewert & Baker 2001; Mainieri 1997; Olofsson & Ohman 2006; Tikka et al. 2000). Students of professional disciplines had a lower level of environmental knowledge as compared to students from other disciplines. Tikka et al. (2000) stated that Gigliotti (1992) considered students who had technology background believed that technologies were capable to solve environmental problems. Pure Science students had the highest awareness as compared to students from other disciplines. This was because the science students were more interrelated to the environment (Xin Ma & Bateson 1999). Direct contact with the environment would create awareness towards the environment.

Research findings showed there was a significant relations between knowledge, awareness and attitudes with the practices of the environment. This showed that the infusion of the knowledge, awareness and attitudes elements were important in changing the students behavior towards environmental practices. However, Cottrell and Graefe (1997) stated that the prediction of behavior in terms of environmental practices was a complex task and influenced by many other factors.

SUGGESTIONS

Research findings showed there was a significant relationship between knowledge, awareness and attitudes to the practices of the environment. This shows that to improve the environmental practices, students should be provided with the knowledge to build awareness and develop a positive attitude towards the environment. Therefore it is suggested that environmental education should be applied in all studies to ensure the consistency of environmental practices among students. Method of teaching and learning in Environmental Education also should be focussed to methods in field work such as conducting experiments, and practical research in the field to solve environmental issues. This is because students will be exposed to the direct experience with environment and nature through "hands-on" activities. The relationship between students with the environment thus, can directly increase the awareness and attitudes that lead to good practices on the environment.

The university should play a proactive role in improving the behavior of students to care and practice in environmental conservation. Activities that need more serious attention are such as carrying environmental awareness campaigns and other programs including the weekly "gotong-royong" activities in the universities, participated by staffs and students especially by residential colleges. Stakeholder such as government agencies, non-governmental organizations and mass media also play vital roles in improving the practice of students towards the environment. Students must also change their way of life with more priority to environmental and actively participate in nature society. Through this association, they can participate more actively in resolving environmental issues collectively. This further, indirectly will overcome problems in resolving environmental issues individually. Such of this matter is what should be

done by a group of students. This is because they are the agents of change to ensure that the environment is preserved.

CONCLUSION

This study shows that the levels of knowledge, awareness and attitudes towards the environment is high among students but the practices are still at the moderate level. Therefore, more comprehensive environmental education should be applied to all students, especially students in higher learning institutions. This is because they are the future leaders later involved in decision-making. Their decisions and actions will determine the status of the environment in the future.

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