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Environmental Knowledge and Attitude among Students in Sabah

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Abstract: Environmental awareness among students is highly influenced by their background, knowledge, attitude and sensitivity towards the environment. The objectives of this study are to identify level of knowledge on environmental literacy and attitude towards environmental issues that are occurring in Malaysia presently among students in Sabah, Malaysia. Multi-stage stratified sampling was used to select the samples. Data was collected using self-administered questionnaire which was developed by expert panel which consisted of lecturers and teachers through two sessions of focus group discussions (FGD). The items developed for the questionnaires took into consideration the environmental problems which have existed locally as well as cultural sensitivities of local community. Pilot test among 50 form four secondary school students show moderate level of internal l consistency of knowledge (Cronbach Alpha -0.68) and attitude (Cronbach alpha 0.72) domains. 1106 (95%) of 1200 sample responded the study. The result show that in general, students in Sabah particularly from Form 4 level have high level of environmental knowledge except for several items which measure the current environmental issues in Malaysia such as Carbon dioxide and climate change. Their attitudes are influenced by the level of knowledge that they have concerning the environment.

Key words: Environmental knowledge · Environmental Attitude · Sabah · Secondary school students

INTRODUCTION

Awareness towards critical issues in environment has gained much of attention worldwide. Many debates and discussion have been carried out either locally or globally to find the best solution or approach to solve environmental problem. As for a developing country like Malaysia, development is still progressing rapidly especially in technology and industries. Even though environmental sustainability is highlighted in many policies and regulations, yet the right values towards environment is always neglected when it comes to actions. Young generations especially teenagers are the group of people that will determine the future of environment in Malaysia. In addition to that, future generation needs to strengthen their knowledge and understanding about the environment and be more aware on world's current condition [1]. Formal education in school is among the best tools to convey adequate knowledge and inculcate the right environmental values in young generation specifically students.

Environmental Knowledge and Attitude: Knowledge is a precondition for environmental awareness to ignite in individuals. It is the students' ability to understand and evaluate the impact of a society on the ecosystem [1]. Rational actions toward the environment are the translation of knowledge that individuals have. High level of knowledge on the environment will create positive attitude towards the environment [2] referred to [3] as a belief and feelings that individual have for the environment. Knowledge increase awareness which combination would motivate environmentally responsible actions [4].

Student's attitude towards the environment is conceptualized as their verbal and actual commitment, motivation and effect concerning nature and environmental issues [5]. Attitude is also a complex mental construct (perception) which emerges out of an integration of an individual's belief and values system [6]. The dimension in environmental attitude can be divided into three major parts which are environmental

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worldview; environmental concern and environmental commitment [7].

Environmental awareness among students is highly influenced by their background, knowledge, attitude and sensitivity towards the environment. The objectives of this study are to identify level of knowledge on environmental literacy among student of Sabah and to identify their level of attitudes towards environmental issues that are occurring in Malaysia currently.

Methodology

Sampling: Multi-stage stratified sampling was used in this study. Schools were stratified by urban and rural as first strata and district as second strata. Nine schools from urban area and thirteen schools from rural areas were selected using simple random sampling. A list of all students of selected school was then obtained from the schools administrators and simple random sampling was used to select respondents (50 from each school) using random numbers generated by Epi-info 6.0.4. A Total of sample size of 1200 was calculated based on finding from pilot study, setting the maximum tolerable error at 3%, design effect of 0.67, interclass correlation coefficient of 0.5, average proportion of students per strata at 0.33 as well as non response rate of 10%.

Study Instrument: The self-administered questionnaire was used for data collection. The questionnaire was developed by expert panel which consist of lecturers and teachers who have vast experience in environmental education through two sessions of focus group discussion (FGD). The items developed for the questionnaires took into consideration theenvironmental problem which exist locally and cultural sensitivities of the local community. The questionnaire consisted of several component, namely (i) Demographic background; (ii) Knowledge; (iii) Perception; (iv) Attitude; (iv) Behavioral; (v) Sensitivity and (vi) Legislation aspect of environment. The questionnaire pilot was tested upon 50 students from Form 4grade in Sabah. Result of the Pilot test showed moderate level internal consistency of each domain of Knowledge (Cronbach Alpha-0.68) and attitude (Cronbach alpha 0.72). Minor correction was made based on the feedback form pilot test. The protocol and instrument used were approved by the Ministry of Education and the Sabah State Education Department. There were 27 and 12 items in knowledge and attitude domain to assess the respondent's knowledge and attitude toward environment. Several items in each domain are reworded into negative question to enhance the validity of the study Respondents are given choice of highly agree, not agree, not sure, agree and highly agree for each item .

Field Survey: During the beginning of data collection session, respondents were briefed on the questionnaire in detail. Besides that, written instructions on how to fill and complete the questionnaire were also included in the questionnaire. Respondents were given assurance of the confidentiality of the information given. They were also requested to withhold their identity by not writing their name on the questionnaire. Detail clarifications were given by research team to the respondent/s who did not understand certain the item in the questionnaire. Researchers comprised of officers from District Education Office School and Trained Research Assistants from Universiti Putra Malaysia.

Data Analysis: Data were analyzed using SPSS version 16. Descriptive statistic was used to describe the characteristic of sample and proportion of answer by respondents for each item.

RESULT AND DISCUSSION

A total of 1106 out of 1200 students responded to the questionnaire at response rate of 95%. 84 students did not respond due to absent from school on the day of the survey where important variables were not filled. Therefore, a total of 1106 students with complete questionnaires were included in the analysis. From the 1106 respondents, 428 (39.3%) were male and 661 (6.7%) were female. Respondents from schools in rural areas make up 577 of respondents (52.2%) while urban, 529 (47.8%).

The distribution of responses for items pertaining to respondents' knowledge on environment is shown in Table 1. Several results showed that Form 4 students demonstrated good level of knowledge of the environment except for several lists. Approximately only 30% of respondents know that siltation is the main cause of river pollution in Malaysia, while for items like complaint line for the Department of Environment, the increasing of world population exceeding 6 billion and contribution of carbon dioxide to climate change had scored 50%. Item that mention on sixty percent of our body is water also had 50% scores.

Table 1: Level of Form 4 students' knowledge toward the Environment

Item	Highly agreen(%)		Diasgreen(%)		Not suren(%)		Agreen(%)		Highly agree n(%)	
(n=Population)	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1(n=1071)	68 (13.2)	43 (7.7)	53 (10.3)	71 (12.8)	133 (25.8)	164 (29.5)	135 (26.2)	179 (32.2)	126 (24.5)	99 (17.8)
2(n=1093)	7 (1.3)	17 (3.0)	15 (2.9)	32 (5.6)	77 (14.7)	112 (19.6)	166 (31.7)	173 (30.4)	258 (49.3)	236 (41.4)
3(n=1072)	7(1.4)	11 (2.0)	21 (4.1)	26 (4.7)	182 (35.3)	193 (34.6)	144 (28.0)	168 (30.2)	161 (31.3)	159 (28.5)
4(n=1099)	3(0.6)	6 (1.1)	2 (0.4)	4 (0.7)	6 (1.1)	3 (0.5)	69 (13.1)	81 (14.2)	44.8 (84.8)	477 (83.5)
5(n=1092)	18(3.4)	20 (3.5)	10 (1.9)	28 (4.9)	37 (7.1)	50 (8.8)	100 (20.9)	119 (20.9)	348 (66.7)	353 (61.9)
6(n=1100)	351 (66.5)	363 (63.5)	97 (18.4)	132 (23.1)	14 (2.7)	27 (4.7)	18 (3.4)	21 (3.7)	48 (9.1)	29 (5.1)
7(n=1098)	2 (0.4)	6 (1.1)	3 (0.6)	5 (0.9)	98 (18.6)	110 (19.3)	251 (47.6)	246 (43.1)	173 (32.8)	204 (35.7)
8(n=1076)	16 (3.1)	22 (3.9)	53 (10.3)	61 (10.9)	285 (55.4)	294 (52.3)	107 (20.8)	131 (23.3)	53 (10.3)	54 (9.6)
9(n=1087)	15 (2.9)	17 (3.0)	20 (3.8)	37 (6.6)	106 (20.4)	125 (22.2)	148 (28.5)	169 (30.0)	231 (44.4)	216 (38.3)
10(n=1082)	30 (5.8)	39 (6.9)	40 (7.8)	56 (9.9)	116 (22.5)	158 (27.9)	168 (32.6)	185 (32.7)	162 (31.4)	129 (22.6)
11(n=1099)	2 (0.4)	4 (0.7)	3 (0.6)	7 (1.2)	30 (5.7)	20 (3.5)	151 (28.8)	141 (24.5)	338 (64.5)	403 (70.1)
12(n=1100)	4 (0.8)	4 (0.7)	6 (1.1)	12 (2.1)	35 (6.7)	27 (4.7)	189 (35.0)	195 (33.9)	292 (55.6)	337 (58.6)
13(n=1100)	13 (2.5)	12 (2.1)	27 (5.1)	24 (4.2)	42 (8.0)	39 (6.8)	179 (34.1)	169 (34.1)	264 (50.3)	304 (52.9)
14(n=1100)	5 (1.0)	6 (1.0)	5 (1.0)	12 (2.1)	46 (8.8)	63 (11.0)	169 (32.2)	183 (31.8)	300 (57.1)	311 (54.1)
15(n=1101)	9 (1.7)	10 (1.7)	5 (1.0)	10 (1.7)	31 (2.5)	23 (4.0)	109 (20.8)	111 (19.3)	389 (74.1)	422 (73.3)
16(n=1096)	272 (52)	235 (41.0)	64 (16.1)	108 (18.8)	85 (16.3)	110 (19.2)	39 (75)	53 (9.2)	43 (8.2)	67 (11.7)
17(n=1099)	7 (1.3)	12 (2.1)	19 (3.6)	23 (40)	51 (9.7)	76 (13.3)	106 (20.2)	163 (28.4)	343 (65.2)	299 (52.2)
18(n=1098)	22 (4.2)	21 (37)	20 (2.8)	29 (5.1)	214 (40.8)	206 (36.0)	155 (29.5)	201 (35.1)	114 (21.7)	116 (20.2)
19(n=1079)	65 (12.5)	33 (5.9)	63 (12.1)	34 (6.1)	233 (44.8)	284 (50.8)	108 (20.8)	148 (26.5)	51 (98)	60 (10.7)
20(n=1079)	10(1.9)	4 (0.7)	8 (1.5)	11 (2.0)	380 (72.9)	422 (75.6)	73 (14.0)	73 (13.1)	50 (9.6)	48 (8.6)
21(n=1076)	4 (0.8)	13 (2.3)	3 (0.6)	8 (1.4)	462 (89.0)	409 (84.2)	27 (5.21)	40 (8.3)	23 (4.4)	21 (3.8)

Notes: Details of the items for student's knowledge evaluation are listed as follow:

1. Wood is renewable energy
2. Coal and Petroleum resources
3. Mercury is a hazardous toxic waste
4. Paper can be recycled
5. Glass can be recycled
6. Aluminum tin cannot be recycled
7. You understand the meaning of "Environmental awareness"
8. Siltation is the main source of river pollution in Malaysia
9. The main source of natural energy is the sun
10. Electricity is from electric energy
11. The environment is the most important elements of human life
12. The Department of Environment is the responsible department in monitoring environmental quality in Malaysia
13. Cigarette is the major source of dangerous diseases
14. Unsystematic waste management can cause long lasting pollution
15. Wildlife habitat is endangered due illegal logging.
16. Black is one of the colors of recycle bins
17. Forrest destruction cause global warming
18. Carbon dioxide is the major gas contributing to climate change
19. Sixty percent of our body is water
20 .In this year, the world population is more than 6 billion
21. Complaint line for the Department of Environment is 1-800-88-2727

Table 2: Level of Form 4 students' attitude toward the environment

Item	Highly agreen(%)		Diasgreen(%)		Not suren(%)		Agreen(%)		Highly agree n(%)	
(n=Population)	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1(n=1090)	7 (1.3)	9 (1.6)	5 (1.0)	8 (1.4)	39 (7.5)	64 (11.2)	238 (45.8)	233 (40.9)	231 (44.4)	256 (44.9)
2(n=1096)	4 (0.8)	3 (0.5)	12 (2.3)	12 (2.1)	62 (11.9)	71 (12.4)	226 (43.2)	248 (43.3)	219 (41.9)	239 (41.7)
3(n=1099)	10 (1.9)	8 (1.4)	5 (1.0)	10 (1.7)	9 (1.7)	21 (2.1)	64 (12.2)	81 (14.1)	437 (83.2)	463 (80.7)
4(n=1094)	16 (3.1)	17 (3.0)	29 (5.6)	11 (1.9)	31 (6.0)	37 (6.5)	76 (14.6)	138 (24.1)	369 (70.8)	370 (63.6)
5(n=1092)	33 (6.3)	45 (7.9)	86 (16.5)	85 (14.9)	190 (36.5)	248(43.4)	144 (27.7)	139 (24.3)	67 (12.9)	55 (9.6)
6(n=1099)	11 (2.1)	13 (2.3)	33 (6.3)	33 (5.7)	63 (12.0)	72 (12.5)	195 (37.3)	222 (38.7)	221 (42.3)	234 (40.8)
7(n=1099)	4 (0.8)	7 (1.2)	8(1.5)	7 (1.2)	17 (3.3)	36 (6.3)	211 (40.3)	236 (41.0)	283 (54.1)	290 (50.3)
8(n=1094)	5 (1.0)	3 (0.5)	9 (1.7)	14 (2.4)	58 (11.1)	82 (14.3)	170 (32.6)	171 (29.8)	279 (53.6)	303 (52.9)
9(n=1099)	14 (2.7)	13 (2.3)	61 (11.7)	58 (10.1)	114 (21.8)	135 (23.4)	199 (38.0)	225 (39.1)	115 (25.8)	145 (25.2)
1(n=1089)0	6 (1.2)	9 (1.6)	23 (4.4)	19 (3.3)	156 (29.9)	160 (28.2)	157 (30.1)	210 (37.0)	179 (34.4)	170 (29.9)
11(n= 1094)	84 (16.1)	81 (14.2)	158 (30.2)	162 (28.4)	190 (36.3)	251 (144.0)	61 (11.7)	58 (10.2)	30 (5.7)	19 (3.3)
12(n=1098)	36 (6.9)	31 (5.4)	70 (13.4)	73 (12.7)	236 (45.1)	261 (45.4)	136 (26.0)	164 (28.5)	45 (8.6)	46 (8.0)

Notes: Details of the items for students' attitude evaluation are listed as follow:

1. You feel that knowing about environmental problem is important for students and their family
2. Environment plays a significant role in students and their family life
3. In your opinion, smoking is dangerous to your health
4. In your opinion, cigarette smoke is dangerous to non smokers
5. Excessive population growth contributes towards environmental destruction
6. In your opinion, smoking in public place shall be imposed with higher penalty
7. The government should fine people who litter in public areas
8. Your agree that more national parks be gezetted for conserving wildlife habitat
9. In your opinion, the recycle campaign to reduce waste problem is effective
10. Increase number of visitors to Mt. Kinabalu will generate economic benefits
11. Increase number of visitors to Mt Kinabalu will cause adverse effect on the environment
12. Diving tourism will not disturb the coral reefs

Answers of respondents from rural and urban area showed not much difference except for item of aluminum cannot be recycled and electricity is from electric energy. Most of the respondents (>70%) had agreed on questions about recycle items such as paper, glass and aluminum, knowledge of forest destruction will endanger the species and they were aware of department in charge of environmental protection in Malaysia. Respondents only showed moderate level of knowledge on these items; Black is one of the colors of recycle bins (63.8%), wood is renewable energy (50.3%), mercury is a hazardous toxic waste (59%), electricity is from electric energy (59.4%), carbon dioxide is the major gas contributing to climate change (53.5%). The results also showed that respondents have not had enough knowledge on current environmental issue in which only 32% highly agreed that siltation is the major contributor of river pollution in Malaysia and only 10.9% of them were very sure about the hotline of Environmental Department and 22.6% of them agreed that global population which had exceed 6 billion during 2008.

Distribution of responses for items concerning respondents' attitudes towards the environment is summarized in Table 2. Twelve questions were asked on environmental issues that occurred locally or globally. The attitude of respondents in overall is good except for item that stated the increase number of visitors to Mt. Kinabalu will generate economic benefits and diving tourism will not disturb the coral reefs.

Majority of Form 4 students (> 80%) agreed or highly agreed that environment plays a major role in student's and their family's life, cigarettes are dangerous to health, cigarettes smoke is dangerous to non smoker, setting up more national park to conserve wildlife and agreed that stringent punishment to people who litter in the public place. However, only 37.1% of respondent agreed that excessive population will effect the environment and 22.6% agreed high penalty to deter non

smoker from being expose to tobacco smoke while 74.3% are unsure, a similar pattern of feedback are observed for item increase number of visitors to Mt Kinabalu where 15.4 % agreed or highly agreed and 40.3% unsure. Meanwhile 35.6% agreed or highly agreed that diving tourism will not disturb the coral reefs and 45.3% of respondents are unsure about it.

CONCLUSION

Level of environmental knowledge and attitude of students in Sabah particularly from Form 4 are good. However level of current issue is lacking among students although students advocate all the measures to increase environmental qualities but they show different attitude when dealing with local condition as shown in question 10-11 (attitude). 'Nimby Syndrome" may be the possible explanation after current study. Their attitude towards the environment is influenced by their level of knowledge about the environment. Should their knowledge be good about particular environmental subjects, then their environmental attitude will be positive. The actual cause of the discrepancy in attitude between advocate environmental preservation and of local environmental protection should be further investigated in future study.

REFERENCES

1. Gambro, J.S. and H.N. Switzky, 1996. A National Survey of High Schools Students' Environmental Knowledge. The J. Environmental Education, 27(3): 28-33.
2. Murphy, T.P., 2002. The Minnesot Report Card on Environmental Literacy. Minnesota Office of Environmental Assistance. Hamline University.Minnesota, US.
3. Kogan, N., 1961. Attitude towards Old People: The Development of A Scale and Examination of Correlates. J. Abnormal and Social Psychol., 62(1): 44-54.
4. Leeming, F.C., W.O. Dwyer, B.E. Porter and M.S. Cobern, 1993. Outcome Research in Environmental Education: A Critical Review. The J. Environmental Education, 22(4): 8-21.
5. Aminrad, Z., 2009. Environmental Awareness and Attitude among Iranian Students in Malaysian Universities. Universiti Putra Malaysia. Selangor, Malaysia.
6. Boershing, S. and R. De Young, 1993. Evaluation of Selected Recycling Curricular: Educating the Green Citizen. J. Environmental Education, 18(3): 7-13.
7. Cluck, A., 1997. Attitudes Towards and Commitment to Environmentalism: A multidimensional Conceptualization, 1997. Paper Presented at 60th Meeting of Rural Sociological Society, Toronto, Ontario, Canada.