

Impact of Environmental Education on Concern, Knowledge and Sustainable Behavior of Primary School Children

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ABSTRACT: Education has been identified as one of the most important tools in promoting sustainable lifestyle in Agenda 21, a global action plan for delivering sustainable development. Consequently, the Malaysia Ministry of Education has incorporated Environmental Education (EE) into Malaysian school KBSR curriculum since 1986. An empirical study was thus undertaken to gauge the impact of environmental education on concern, knowledge and sustainable practices among primary school children. Data was collected from 163 students aged 11 years at two schools in Hulu Selangor district using a survey questionnaire. The respondents were majority Malays and both genders were equally represented. The results show that main sources of environmental knowledge were television (63%) and newspaper (64%) while text books and teachers were rather unimportant. The data also show that the students were highly concerned about the environment, had commendable level of environmental knowledge but this has not been resonated into sustainable behaviour. The results indicate knowledge was positively correlated with environmental concern and environmental concern with sustainable behavior at $p < 0.05$. Ways of enhancing understanding and participation of students in environment are proposed.

Keywords: environmental education, ecologically conscious behavior, student

Introduction

Environmental problems have been recognized and acknowledged at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 as culminated in Agenda 21, a comprehensive blueprint of action taken globally, nationally and locally in which humans direct affect the environment. This conference also reaffirmed the Declaration of the United Nations Conference on the Human Environment which was adopted at Stockholm on 16 June 1972. A review by United Nations Environmental Program after seven years asserted that although the global system of environmental management is moving in the right direction, its progress is, however too slowly (UNEP, 1999).

It is foreseen that if the present trend of economic growth and consumption patterns continues, the natural environment will be over stressed.

Among the full scale environmental emergencies recognized by United Nations Development Program are water supply, land degradation, tropical forest

destruction and loss of biodiversity, urban air pollution and global warming contributed green house gas emission.

Education has been identified as one of the most important tools in promoting sustainable lifestyle as delineated in Agenda 21. The significance of environmental education is further attested at the 2002 Johannesburg Summit where the Decade of Education for Sustainable Development (DESD) was proposed. The United Nations General Assembly in the 57th session in December 2002 endorsed and proclaimed that the Decade of Education for Sustainable Development (DESD) is from the year 2005-2014. The goal of the DESD is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning (UNESCO).

Subsequent to the first International Conference on Environmental Education held in Belgrade in 1975 the Government of Malaysia has developed a national policy on Environmental Education (EE) (ASEAN, 2004). EE across curriculum (i.e. not taught as a single subject but incorporated into each subject from Science to Religious Studies) has been introduced to both primary (with students aged 7-12 years) and secondary schools (with students aged 13-17 years) since 1986. The recognition of the need to create awareness on environment through EE was conceived during the Third Malaysia Plan (1976-1980). Subsequently, it led to the development of The New Primary School Curriculum (KBSR or

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Kemahiran Bersepadu Sekolah Rendah) and the New Secondary School Curriculum (KBSM or Kemahiran Bersepadu Sekolah Menengah) that incorporate EE in the school syllabus. Consequently, the provision for environmental education in school was introduced in 1982, at 305 pilot schools and subsequently in all primary schools in 1983. In 1986, a subject entitled 'Man and his Environment' was formally introduced as a subject in the upper primary school curriculum (with students aged 10-12 years) that covered the elements of science, health science, geography, history, social science and civics.

The involvement of youth in protection of the environment and sustainable development is important because it affects their lives today and has implications to their future and the world. It was acknowledged that the formation of attitude towards the environment begins at a very early age of an individual (Bryant and Hungerford 1977). As environmental issues are becoming more complex and challenging and the need to act becomes more urgent, the youth need to be equipped with appropriate skills that can help them to make better decisions and choices (Joseph et al. 2004). In this vein, an exploratory study is therefore undertaken to investigate the students understanding and awareness of environmental issues; extent of practice of environmentally responsible behaviour; and their involvement in environmental related activities. Evaluation of the impact of the EE programmes is necessary in order to determine the level at which learners have acquired the desired knowledge, attitude and skills and hence the effectiveness of the curriculum (Hungerford and Volk 2003; Palmer 1999). Comprehension and recognition of the gaps can help to provide information for revision and improvements in environmental education programmes of the country.

Materials and Methods

The research design was a descriptive type of study utilizing survey method. Primary school students (age 11 years) was the focus of the study because this cohort has undergone formal environmental education at primary and secondary schools. Two primary schools of category A (i.e. schools with more than 1000 students) situated in rural area in the district of Hulu Selangor were randomly selected for the study. A total of 163 students were randomly selected from a total population of 940 students. Upon receiving approval from the Ministry of Education, data was collected in 2007 and was analyzed using SPSS version 13.0.

The instrument of the survey consisted of four sections: demographic variables, environmental concern (EC), environmental knowledge (EK); and

sustainable behavior (SB). Environmental concern scale was adopted and adapted from Aini et al. (2007) and Sharifah et al. (2005). It contained 12 statements, with a response format of 5 points Likert scale ranging from strongly agree (5) to strongly disagree (1). Objective knowledge on environment was assessed through 17 questions consisting of a mixture of open ended and multiple choices. Sustainable consumption practices were based on key principles of sustainable consumption expounded by Janikowski (2000) that consist of reduction, maximization and segregation. Three items measuring social responsibilities were added to the behavior scale. Thus the scale consisted of a total of 13 questions with a response format of 4 for all the time, 3 for always, 2 for sometimes, and 1 for never. Pilot study was carried out to determine the suitability and reliability of the instrument used. The value of reliability coefficient (Cronbach's Alpha) for environmental concern was 0.74 while for sustainable behaviour was 0.89 and is thus acceptable.

Results and Discussion

The average age of the respondents was 11 years and 51.5 per cent of them were female students. Majority were Malays (87.1%), followed by Indians (11.0%) and Chinese (1.8%) with corresponding religion of Islam, Hindu and Buddha, respectively. When asked to ascertain three main sources of environmental knowledge, data indicated that they were newspaper (40.0%), television (39.0 %) and internet (33.0 %). Text book and teacher as sources of environmental knowledge were mentioned by only 21.0% and 12.0% of the respondents, respectively (which ranked 6th and 10th position). It is worth noting that the studies conducted by Aini et al. (2007) (among secondary school students) showed different findings in which the main sources of environmental knowledge for the students being television (84 %), with other minor ones include internet (5.9 %), newspaper (4.6%) and radio (4.2%). Our studies found that only one respondent stated textbook as the main source of environmental information.

Environmental concern/attitude refers to the belief stance and degree of concern an individual holds towards the environment. From a total score of 60 for environmental concern scale, our results show that 68% of respondents obtained a score of above 46 which can be classified as a high concern for environment while the remaining (32%) had a total score of between 29 and 45 (moderate level of environmental concern). The mean of environmental concern of the respondents was 3.98 with SD of 1.11, on a scale of 1 (strongly disagree) to 5 (strongly agree). The findings illustrate that there was a considerable level of environmental concern among

the respondents. This similar trend was noted by Md Nor et al. (2004) where it was found that the secondary school students had positive attitude towards the environment.

Environmental knowledge that was assessed in this study consisted of environmental awareness knowledge, principle knowledge and know-how knowledge. Majority of the respondents (98.2%) indicated that they were aware of environmental problems faced by the country. When asked to name the environmental problems, a total of 163 (33.4%) respondents identified land pollution as the main issue followed by water pollution (159 respondents or 32.7%), air pollution (150 respondents or 30.7%) and 8 respondents (1.6%) identified noise pollution. The first three environmental issues stated by the respondents matched that of our national key concern indicating that the students were aware and conscious of the main environmental problems faced by the nation. However, the students were less aware of the advanced environmental issues such as ozone depletion and acid rain. Similar findings were also noted among secondary school children (15-16 years old) in a study conducted by Aini et al. (2007). Know-how knowledge on recycling was gauged through 15 questions. It was found that 40 respondents (24.5%) had all the answers correct and 45 (27.6) of them were able to answer 14 questions correctly. On the whole, majority (84.6%) were found to obtain 12 to 15 right answers. This indicates that their level of know-how knowledge on recycling is very commendable. Nevertheless, our results showed that the principle knowledge on environment which include key concepts such as habitat, global warming, ozone layer etc., was lower whereby only 9 (5.5%) had all answers right and 30.7% scored less than 5 out of a total of 11.

Of the four aspects of principles of sustainable practices, reduction (mean score = 2.52) and social responsibilities (mean score = 2.30) were adopted slightly better than segregation (mean score = 2.05) and maximization (mean score = 1.95). The findings indicated that sustainable practices were moderately performed in all aspects by the respondents with a mean of 2.37 on a scale of 1 (never) to 4 (all the time). Studies by Aini et al. (2007) and Md Nor et al. (2003) also showed similar results for the secondary school students who were found to exhibit a modest level of environmentally friendly practices (mean 2.6 on a scale of 1-4 from never to all the times). Note that the findings above are not only unique to school students but similar findings were noted among teachers (Aini et al., 2003) and households (Norhasmah et al., 2004) in Malaysia with sustainable practices being found to be modest. Among the variables of the study tested for linear relationships, it was found that environmental knowledge had significant positive correlation with

environmental concern and environmental concern with sustainable behaviour.

Conclusion

The data indicate that the impact of formal environmental education through teaching in class by teachers and text book was not very significant as compared to the learning through mass media. The understandings of the key environmental concepts of the students need to be enhanced and this may be achieved if the teachers are well versed in EE. A study conducted by Aini et al. (2003) found that both primary and secondary school teachers had a fair general knowledge on environmental issues but lacking in general understanding of the underlying causes of the environmental problems. This shortcoming need to be addressed by the Ministry of Education as EE educators should be able to provide accurate content knowledge (Christenson, 2004). EE involves inquiry and investigation of nature and this may not be always possible to be conducted with inadequate time allocated and financial constraints to organize more interactive EE activities (Pudin et al., 2005).

Although the students were found to be very familiar with recycling prerequisites, these activities were seldom performed. As previous studies found that "in" and "with" nature experiences affect behaviour (Palmer, 1999; Finger, 1994), environmentally responsible behavior may be enhanced through active participation in environmental related activities such as enrolment in nature-related clubs, environmental seminars, campaigns and undertake outdoor activities and hobbies. These are some of the challenges faced by the teachers in implementing formal environmental programs in schools.

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