

Preparedness of Malaysian Pre-school Educators for Environmental Education

Aini, M.S.* and Laily, P.

*Department of Resource Management and Consumer Studies,
Faculty of Human Ecology, Universiti Putra Malaysia,
43400 UPM, Serdang, Selangor, Malaysia*

**E-mail: ainimatsaid@yahoo.com*

ABSTRACT

The shaping of attitude and values, commitment and skills needed to preserve and protect the environment of individuals begins at an early age. Hence educators especially pre-school teachers play an influential role in developing new patterns of behaviors of the young to adopt a sustainable lifestyle. A study was conducted to assess the level of preparedness of the pre-school teachers in Malaysia with respect to their degree of concern for environmental issues, comprehension of fundamental environmental knowledge, and level of adoption of sustainability practices. A cross-sectional research design utilizing survey method was conducted among 300 pre-school teachers representing three different types of pre-schools in Malaysia. Data indicated that the respondents were aware of various basic environmental problems faced by the country but less of the advanced environmental issues. They were found to be more concerned regarding other social problems as compared to environmental ones and adoption of sustainable consumption practices of respondents was modest. Comprehension on fundamental concepts of environment and sustainability needs to be enhanced further through formal training as the main source of environmental knowledge was acquired through the mass media. The study shows that it is imperative for various stakeholders, in particular the Ministry of Education, to develop suitable environmental education syllabus for pre-school teachers training and in-service training programs in order to enhance their preparedness for environmental education.

Keywords: Environmental education, pre-school teachers, sustainability, environment

INTRODUCTION

The Brundtland Commission in 1987 and consequently the formulation of Agenda 21 in 1992 had set an impetus for global community's inquest for environmental stewardship that encompasses various intergovernmental, governmental, and civil society initiatives. An array of summits, conventions, guidelines, and programmes has been developed at an international level to ensure conservation, preservation, and protection of our planet. In spite of these efforts, a recent review by United Nations indicated that we may face an inevitable

crisis of climatic change that threatens the world's ecological systems and human well-being if the present production and consumption trends continue (UNEP, 2008).

Malaysia, which is at an intermediary stage of development, is facing tremendous challenges in decoupling economic growth from environmental degradation. As in other industrialized and urbanized countries, the economic growth of the country has been accompanied by pollution and other environmental issues. The principles of sustainable development have been introduced in the national development plans

Received: 8 July 2009

Accepted: 28 April 2010

*Corresponding Author

since the Third Malaysia Plan (1976-1980) and they have been reiterated in the subsequent development plans. Despite the enactment of various environmental acts, regulations and policies, the data indicated that there was a downward trend of the environmental quality in the country. For instance, the report from the Malaysian Quality of Life 2004 indicated that the quality of life in Malaysia improved during the period from 1990-2002, as reflected by the upward movement of the Malaysian Quality of Life Index (MQLI) by 9.8 points (Base year 1990 = 100 points). All the components of the MQLI recorded improvements, except for public safety and environment. On the contrary, the quality of the environment as measured by air quality, water quality and forested land, declined by 1.8 points during the 1990-2002 period.

The root causes of the environmental problems are the unsustainable patterns of consumption and production, many of which are unaffected by environmental laws and regulations only. Hence, promoting adoption of sustainable consumption and production is one of the principal responses to protect the environment and enhance human well-being. The studies by various scholars (e.g. Schulitz and Oskamp, 1996; Mansaray and Ajiboye, 1998) indicated that the quality of the environment is significantly dependent on the level of knowledge, attitude, values, and practices of the people. One of the ways to achieving this goal is through environmental education (EE). EE has been identified and recognized as one of the most important tools in promoting sustainable lifestyle in Agenda 21, which is a global action plan for delivering sustainable development. 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 her 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.

Subsequent to the First International Conference on Environmental Education held in Belgrade in 1975, the Government of Malaysia has developed a national policy on EE (ASEAN EEAP, 2000). EE across curriculum (not taught as a single subject but incorporated into each subject from Science to Religious Studies) has been introduced to both primary (age 7-12 years) and secondary schools (age 13-17 years) since 1986. The Government further intensified EE in the Seventh Malaysia Plan (1996-2000) to include broad base campaigns through the mass media to encourage the life-long process of environmental education, infusing formal environmental education in school curriculum, incorporate environmental education subject in teachers' training syllabus, establishment of research center for environmental health, and active participation of both the public and private sectors including non-governmental organizations in promoting environmentally responsible practices. Although the pre-school system in the country was established in the 1920's, it was only in 2003 that a National Pre-school Curriculum was introduced and EE is incorporated in creativity and aesthetic component (MOE, 2003).

BACKGROUND OF THE PRE-SCHOOLS IN MALAYSIA

In Malaysia, early childhood development is provided by two institutions, namely the childcare centre and pre-schools. The pre-school is a non-formal education programme catering for children aged four to six years. At the outset, it was the religious group that started informal nursery centres at the mosques (for Muslims) and churches (for Christians) in the 1920s. In the 1960s, the government agencies such as such Community Development Division (KEMAS) of the Ministry of Rural Development and Federal Land Development Authority (FELDA) started pre-schools targeting the under-privileged children particularly in the rural

areas with minimal fees. The private pre-schools are mainly concentrated in the urban areas, catering for children from middle to high-income families. The fees charged by these pre-schools vary and are largely determined by overhead costs and market forces.

There has been a steady growth of pre-school centres in the country and the number of children enrolled in those centers has increased from 253,675 in 1995 to 399,980 in 2000, which accounted for 68.7% of children aged between four to six years (Azizah, 2004). Thus, there is a steady increase in gross enrolment ratio (GER) over the years and if this trend is sustained, Malaysia is expected to achieve a 100 per cent GER in a few years' time (EFA, 2000). At present, pre-schools are managed by three main providers, namely the Government agencies (Ministry of Rural Development and the Ministry of National Unity & Community Development), the Ministry of Education and private enterprises. With the formulation of Education Acts 1996, the Ministry of Education (MOE) established a pre-school programme that was integrated within the formal school system of the country in 2001. Pre-school classes conducted by the MOE and other government agencies have enabled under-privileged children in the urban and rural areas access to pre-school education for free or at a minimal charge.

Although the Ministry of Education (MOE) does not fund and operate all the pre-schools in Malaysia, it has the responsibility of preparing the pre-school curriculum for all. In addition, MOE is also in charge of the registration of pre-schools and conducts teacher training programmes. All the pre-school centres have to abide by the National Pre-School Curriculum set by the MOE and the teachers are required to attend formal training or a special course before they can teach. In view of the fact that the standardization of the pre-school curriculum was only implemented since 2003 and with no standardization and uniformity in the educational and training background of the teachers, the implementation of the syllabus in general and EE specifically is somewhat uncertain. An assessment conducted by Pudin and Tagi (2003)

found that successful implementation of EE in schools in the country is greatly dependent upon the commitment, efforts, and level of enthusiasm of teachers. In this vein, this study was conducted to gauge the preparedness of the pre-school teachers as early childhood development programmes are instrumental in preparing the nation's young to participate in sustainable development of the nation.

LITERATURE REVIEW

Despite the many efforts in the past 20 years, EE is still a largely inadequate, relatively inconsistent, and scattered presence in curriculum (Hungerford and Volk, 2003). However, of late, there seems to be an increasing interest in the early childhood EE, whereby sustainability principles are beginning to be incorporated into its education philosophies, theories, and practices (Davis, 1998). Although EE in Malaysian schools started as early as in 1986, it was only in 2003 that the elements of EE were included in the Malaysian National Pre-School Curriculum. This is a step in the right direction as EE at early childhood level is important.

Scholars have recognized that environmental experience in the critical phase of the early learning years can determine subsequent development in environmental behaviour (Azizah, 2004; Wilson, 1996; Stapp, 1978; Palmer, 1999). This acknowledgment has led to significant development in EE, whereby it has been incorporated into the curricula for young children in preschool and elementary school classrooms worldwide. Meanwhile, studies have shown that this stage represents the formative years where thinking and feeling about the environment occur, and that it will endure passage of the years (Palmer, 1999). Unless children develop a sense of respect and caring for the natural environment during their early years, they are at risk of never developing such attitudes later in life (Stapp, 1978; Tilbury, 1994). The findings from studies conducted by Palmer (1999) among 2000 adults in 14 countries indicated that childhood direct experiences with nature were the most

important factors influencing their present concern for the environment. Hence, the early phase of childhood is a fundamental period for the formation of environmental learning and attitudes (Basile, 2000).

School represents important contexts in which young children learn about behaviours and develop attitudes that are appropriate for the culture in which they live (Bronfenbrenner, 1986). Therefore, early childhood education represents a significant platform for nurturing environmental sensitivity among the young. It was also found that teachers exert considerable influence on the children (Domka, 2004). Moreover, it was demonstrated that teacher's attitude, knowledge, and behaviour towards the environment affect and influence the students' attitude (Summers, 2000; Bradley *et al.*, 1999). In view of that, the teachers need to be prepared and equipped with all relevant psychological, cognitive, and social skills in order to successfully impart EE to the young.

The ultimate goal of environmental education is to produce a citizenry that is knowledgeable concerning the biophysical environment and its associated problem, aware of how to help solve these problems, and motivated to work towards their solutions (Stapp *et al.*, 1969; Tbilisi Conference Declaration 1977). By and at large, this can be facilitated through typical curriculum content where teaching the theory to address this requirement must receive prominent placement in curricula (Arvai *et al.*, 2004).

The content of EE covers three main aspects (NCC, 1990), namely education about the environment, education for the environment, and education in the environment. Education about the environment is related to the understanding of the ecological principles that underpin the working and interaction of natural systems and human system. Education for the environment is concerned with the values, attitudes, and positive action for the environment. Education in the environment involves inquiry and investigation of nature. Accordingly, the teachers need to

possess necessary skills to address those aspects. They need to have a basic understanding of the environment, its associated problems and environmental interrelationships (Nehrbass and Seiser, 2001), and foresee consequences of practices and behaviours (Hungerford and Volk, 2003). It has also been shown that one of the most important sources of information about the environment for children is school lessons and projects (Strong, 1998). Therefore, EE educators should thus be concerned both about providing accurate content knowledge and using effective pedagogy (Christenson, 2004).

Environmental action activities have been found to develop a sense of ownership and empowerment so that people are prompted to become responsible and active citizens. Environmentally active and responsible educators are shown to affect the behaviour of the students (Hungerford and Volk, 1990). Healthy development is found to depend on healthy interactions with the natural environment (Wilson, 1992; Wilson, 1996). Outdoor experiences can enhance environmental sensitivity (Sia *et al.*, 1986) and are also shown to be able to develop empathic relationship to nature for both students and teachers (Palmberg *et al.*, 2000).

Educators are shown to influence the way students think, solve problems, and shape them to become responsible citizens, especially when both instructional and organizational factors focus on the goal of transfer (Basile, 2000). Many studies have also indicated that successful implementation of EE in schools depends substantially on the commitment, efforts and level of enthusiasm of teachers (Cutter and Smith, 2001; Pudín and Tagi, 2003). However, before the educators can equip learners with the essential skills, the educators must experience these skills for themselves and this can be accomplished through in-service teacher education (Nehrbass and Seiser, 2001). Thus, education institutions and professional associations should be encouraged to advocate EE as a necessary part of both the pre-service

and ongoing professional development of early childhood teachers (Davis, 1998).

In view of this, a study was undertaken to determine the preparedness of pre-school teachers with respect to their awareness and concern for the environment, involvement in advocacy activities, basic environmental knowledge, and level of sustainable practices. As indicated by various studies above, these elements are shown to be pre-requisites for a successful delivery of EE to students. The gap analysis will enable appropriate environmental education syllabus to be formulated and effective policies developed to equip childhood educators so that they can successfully impart EE to children and become their role models.

METHODOLOGY

A cross-sectional research design utilizing a survey method was conducted among pre-school teachers representing three main types of pre-school in Malaysia, namely Tabika Kemas (managed by the Ministry of Rural Development), Pra-Sekolah (run by the Ministry of Education), and private kindergartens. Permissions were sought from the Ministry of Education, various State Education Departments and the Department of Community Development (KEMAS) prior to the data collection. Four states were randomly chosen; these are Penang, Perak, Pahang and Melaka to represent Northern, Central, Eastern and Southern zone of West Malaysia, respectively. A district was then randomly picked to represent each of the state. Lists of all the kindergartens within the chosen districts were obtained from the respective State Education Department. A quota sampling method was used to select 25 respondents from each of the three types of kindergarten in the district. Each district was therefore represented by 75 respondents, and this gave a total of 300 respondents. Only one teacher per kindergarten, i.e. the one that was recommended by the principle, was given the questionnaire. The quota sampling was used as the technique has been known to produce representative

samples without a random selection of cases (De Vaus, 2002). The data were collected using the drop and collect method in 2005, and were then analyzed using SPSS version 11.0. The questionnaire consisted of five sections labelled as demographic variables, awareness, and concern for the environment, involvement in advocacy activities, basic environmental knowledge, and sustainable consumption practices.

Environmental awareness was assessed by requesting the respondents to state three environmental problems faced by the country. The level of environmental concern was gauged through the respondents' rating of the level of seriousness of environmental problems as compared to other social issues. It is important to note that this section of the instrument was adopted and adapted from Greenberg (2005). The involvement in advocacy activities was measured through membership in environmental clubs or organizations and participation in environmental activities. Four items were developed to assess the level of supportiveness and the participation of environmental activities with a response format of 1 for not supporting, 2 for supporting but not actively involved, and 3 for supporting and actively involved. This section of the instrument was also adopted and adapted from Greenberg (2005). The objective knowledge on environment was measured by a two part, 12 – items scale. In the first 2 items subscale, the respondents were asked to explain in brief of their understanding of the term environment and sustainability. Their answers regarding the meaning of environmental term were classified accordingly, as proposed by Loughland *et al.* (2003). In the second subscale, respondents were asked to indicate right or wrong answer to each of the ten statements. One point was given for each correct answer for an effective range of zero to ten marks. Similar measures of objective environmental knowledge were developed and used by Oskamp *et al.* (1991), Vining and Ebreo (1990) and Bartkus *et al.* (1999), where the scales were shown to have content validity and predictive validity with

regards to consumer environmental behaviours. Sustainable consumption practices (SCP) were based on the four principles of sustainable consumption expounded by Janikowski (2000) comprising of selection, reduction, maximization and segregation. It consisted of 14 questions with a response format of 4 for all the time, 3 for always true, 2 for sometimes true, and 1 for never true. Meanwhile, a pilot study was carried out to determine the suitability and reliability of the instrument developed and changes were then made accordingly. The Cronbach's alpha value of the reliability of sustainable consumption practices scale was 0.72 and thus is acceptable. Descriptive statistics were used to describe the findings of the study and relevant statistical tests were also conducted on some variables to explore the bivariate relationships and examine differences between groups.

FINDINGS AND DISCUSSION

Majority of the respondents were females (97.7%), consisting of Malays (59.0%), Chinese (31.7%), and Indians (9.3%). This

approximately corresponds to the distribution of ethnicity in the country's population. The age of the respondents ranged from 20 to 67 years, with a mean age of 35 years. As for the education level, 69.3% of the respondents had secondary level schooling, 28.4% were college graduates, and 2.3% were degree holders. However, among 100 Tabika Kemas teachers, 92% of them had only secondary school level education. Table 1 displays the demographic background of the respondents while Table 2 shows the distribution of age and educational background of respondents for the three types of pre-school. It was found that newspaper (91.7%) and television (86.3%) were the main sources of environmental information for the respondents (Table 3), as it was similarly observed in other studies among Malaysians (Nurizan, 2004; Sharifah Azizah *et al.*, 2005; Aini *et al.*, 2007).

There are various non-governmental environmental organizations and societies, such as Malaysian Nature Society, Environmental Protection Society of Malaysia, and World Wildlife Fund for Nature, Friends of the

TABLE 1
Distribution of the demographic variables

Variables	Percentage (%)
Gender	
Females	97.7
Males	2.3
Age (years)	
20-29	34.3
30-39	33.3
40-49	35.3
≥50	7.1
Race	
Malay	59.0
Chinese	31.7
Indian	9.3
Level of Educational	
Secondary School certificates	69.3
Diploma/College Certificate	28.4
Degree/Masters/PhD	2.3

N=300

TABLE 2
Distributions of the age and level of education against type of pre-school

Variables	Kemas pre-school	Pre-school	Private
Age (years)			
20-29	19.0	46.0	38.0
30-39	29.0	44.0	27.0
40-49	45.0	9.0	22.0
≥50	7.0	1.0	13.0
Level of Education			
Secondary School certificates	92.0	41.0	75.0
Diploma/College Certificate	8.0	53.0	24.0
Degree/Masters/PhD	-	6.0	1.0

N=300

TABLE 3
Respondents' sources of environmental information

Sources	%
Newspaper	91.7
Television	86.3
Brochures/Bulletin	48.5
Seminar	21.3
Internet	4.0
Magazines	0.7

N=300

Earth, and Love Nature Club, etc. in Malaysia. However, the data indicated that only a small fraction of the respondents (2.5%) were members to such organizations. Other studies found that the level of participation in the environment-related clubs/organizations among Malaysians was low (Norhasmah *et al.*, 2004; Md Nor *et al.*, 2004). As for the support and involvement in environmental conservation and preservation activities, majority of the respondents indicated that they supported the programmes but they have only modest commitment to action (Table 4).

When asked to name three environmental problems in Malaysia, the three most frequently mentioned issues by the respondents were water pollution (54.3%), air pollution (41.6%), and solid waste (13.9%). The study by Burningham and

Thrush (2001) similarly noted that environmental pollution was the main concern of the society with regards to environmental issues. However, the respondents rated the level of seriousness of the socio-economic problems (Table 5) higher as compared to that of environmental issues (Table 6). A One-Sample T- test showed that there is a significant difference in means on the rating of the socioeconomic against environmental seriousness by the respondents, $t(299)=34.329$, $p<.05$. In addition, they were of the opinion that the government is doing as much as necessary with regards to dealing with environmental problems faced by the nation (Table 7).

Environmental knowledge was gauged through the understanding of the fundamental concepts (i.e. the concept of sustainable development and understanding of the terms on

TABLE 4
Support and involvement of respondent with environmental conservation and preservation

Statement	1(%)	2(%)	3(%)
Environmental activities at community level	33.3	64.7	2.0
Open burning	34.7	53.3	10.0
Recycling activities	62.3	37.3	0.3
Do not litter	68.7	26.3	5.0

N=300, Scale: 1= Does not support; 2= Support but not actively involved; 3= Support and actively involved
Mean score= 6.18 from a range of 4 to 12

TABLE 5
Level of seriousness of socio-economic issues

Statement	1(%)	2(%)	3(%)
Traffic congestion	73.7	23.7	2.7
Vandalism	73.0	24.0	3.0
Increase in price of petrol	88.0	7.7	4.3
Increase in price of road toll	83.7	13.0	3.3

N=300, Scale: 1= Serious; 2= Quite serious; 3= Not serious
Mean score= 4.19 from a range of 4 to 12

TABLE 6
Level of seriousness of environmental problems

Statement	1(%)	2(%)	3(%)
Water pollution	29.3	58.7	12.0
Solid waste problem	45.3	50.0	4.7
Air pollution	19.7	55.0	25.6
Decreasing availability of open space	21.7	53.3	25.0

N=300
Scale: 1= Serious; 2= Quite serious; 3= Not serious
Mean score= 7.51 from a range of 4 to 12

environment), underlying causes (e.g. sources of water pollution), and the environmental impacts (e.g. loss of bio-diversity). The collected data indicated that the concept of sustainable development was unfamiliar to most of the respondents and the understanding of the term environment was also limited. Table 8 shows the conception of environment by the respondents. The answers could be divided into seven categories, namely God's creation,

a place, a place with living things, a place with living things and human, a place that provides something for human, human is part of it and is responsible in taking care of it, and the aggregate of all conditions that supports living things, that interacts and depends on each other. The six later categories were as proposed by Loughland *et al.* (2002). From a total of 300 respondents who had responded to the questions, only 6.0 percent of the teachers defined environment in

TABLE 7
Government's efforts in environmental preservation and conservation

Statement	1(%)	2(%)	3(%)
Government takes into account environment in development	15.3	52.7	32.0
Government organizes environmental campaigns	17.0	35.7	47.3
Government utilizes mass media for environmental education and awareness	17.3	33.7	49.0
Government punishes those who violate environmental regulations	11.3	31.3	57.3

N=300, Scale: 1= Too little; 2= enough; 3= Too much
Mean score= 7.25 from a range of 4 to 12

TABLE 8
Respondents' conception of the environment

Conception of environment	Percentage
God's creation	3.0
Place	28.0
Object	16.7
Place with living things	9.3
Human responsible for it	3.3
A place that support human living	5.7
Human and others depending on each other for living	6.0
Do not know	28.0

N=300

relation to conception, while 28.0 percent was not able to define it and the majority (62.6%) defined environment in object conception (a place, a place with living things/support them). Meanwhile, majority of the respondents (83.7%) indicated that they did not know the meaning of the term sustainability.

The average number of correct answers to ten close-ended questions on environment was 7 on a 10 points scale, indicating that on average the respondents obtained more than half the questions correct. The respondents seemed to be less informed regarding the underlying causes of environmental problems, such as causes of air pollution, acid rain and thinning of the ozone layer.

Table 9 shows the score distribution of the respondents on sustainable consumption practices which comprise of selection, reduction, maximization and segregation. The mean score of the respondents on SCP was 41.07, from a maximum score of 56 and this indicates that the adoption of sustainable practices was at modest level.

The Mann-Whitney Test was conducted to examine whether the sources of environmental information (newspapers, televisions, seminars, bulletins and brochures) affect environmental knowledge. It was found that the respondents, who either had televisions ($z = -2.954$, $p = 0.003$) or brochures ($z = -2.793$, $p = 0.005$) as their main sources of environmental information,

TABLE 9
Respondents' sustainable consumption practices

Level	Score range	%
Low	14- 27	0.7
Medium	28-41	47.0
High	42-56	52.0

N=300, Scale: 1= Never; 2= Very seldom; 3=Sometimes; 4= Very often
Mean score= 41.07 from a range of 14 to 56

had significantly higher level of knowledge than those who did not. Meanwhile, the Kruskal-Wallis test (ANOVA was not performed as the data violate the assumption homogeneity of variances) conducted indicated that the knowledge of environment differs significantly across the three education level categories (primary school, secondary school and college/university), $\chi^2 (2, N = 300) = 7.659, p = 0.022$.

The One-way ANOVA test showed that there were no significant differences between the three groups of pre-school teachers on the knowledge and practices, but this was otherwise across the ethnics. The Indian teachers were found to have significantly lower environmental knowledge as compared to the Malays and the Chinese teachers, $F (2, 297) = 4.561, p < .05$. This could probably be due to the higher percentage of the Indians respondents (78%) who attained only the secondary level of education. With respect to sustainable consumption practices, the Chinese teachers were found to have the highest total mean score (42.71), followed by the Indians (41.46) and the Malay teachers with the lowest total mean score of 40.14. The One-way ANOVA test indicated that the Chinese teachers had significantly higher level of practices against the Malays, $F (2, 297) = 6.767, p < .05$.

CONCLUSIONS AND IMPLICATIONS

In this study, the data indicated that the respondents were aware of various basic environmental problems faced by the country, but less of the advanced environmental issues. Instead, they were found to be more concerned with other social problems as compared to

environmental issues. Environmental knowledge was commendable, where most of learning on environment was via mass media, as appeared more effective through television and brochures. However, the teachers' understanding was rather shallow on the concept of environment and they had a vague notion of sustainable development. The understanding of these two fundamental concepts is vital as it lays the foundation for environmental involvement and actions. There was a minimal level of involvement in environmental clubs or organizations, while the adoption of sustainable practices was modest. The findings above were similarly noted in a study conducted among primary and secondary school teachers in the country (Aini *et al.*, 2003). Based on the above findings, it can be concluded that the pre-school teachers in the country have more or less the same level of environmental awareness, knowledge and sustainable practices, regardless of the type of pre-school where they teach and their age. This uniformity would facilitate the formulation and implementation of a standardized in-service training of the teachers with regards to environmental education. However, special attention should be given to narrow the gap between the ethnics on sustainable practices and environmental knowledge, as well as on knowledge between teachers of different educational attainment.

In conclusion, the above findings indicate that the pre-school teachers are to some extent prepared with basic essential elements for EE. Nonetheless, based on the present environmental assessment data (indicating that 60% of the world's ecosystem services are being degraded

or used unsustainably, GEO-4), the present level of preparedness of childhood educators needs to be enhanced. More importantly, they ought to be equipped with the appropriate knowledge and behaviour, as studies have shown that teachers' attitude, knowledge, and behaviour towards the environment do affect and influence the students' attitude towards the environment (Summers, 2000; Bradley *et al.*, 1999). Furthermore, early years are vital for development of attitudes, learning, and subsequent development in environmental behaviour. The young are not only the future guardians of the earth, but also seem to possess peer power that influences their families' present expenditure and consumption pattern. Hence, the pre-school teachers need to enhance their preparedness for EE, specifically in the principle environmental knowledge and understanding of environmental interrelationships that aid education about the environment, enhance preparedness in education for the environment by engaging in environmental advocacy activities and sustainable behaviour as it has been found that successful implementation of EE in schools is greatly dependent upon the commitment, efforts and enthusiasm of teachers (Cutter and Smith, 2001).

The data obtained in this study could be used as base data for future benchmarking as pre-school education has recently been formalized into the national education system and that EE curriculum has just been introduced into the syllabus. There are various ways of enhancing preparedness of the pre-school teachers in the country for EE: in-service training programmes for the teachers should give emphasis to environmental aspects, encourage involvement of teachers in environmental related clubs/activities, establish linkage between the school and corporations or organizations that have environmental interest, and organize or participate in talks, seminars, and visits. It is also imperative for various stakeholders, particularly the Ministry of Education, to develop suitable environmental education syllabus for pre-school teachers training and in-service training programmes to enhance their preparedness for EE. National standardization of these

programmes is also necessary as to ensure that the quality and standard of EE delivered by all types of pre-school in the country are uniform.

REFERENCES

- Aini, M.S., Fakhru'l-Razi, A., Paim, L. and Masud, J. (2003). Environmental concerns, knowledge and practices gap among Malaysian teachers. *International Journal of Sustainability in Higher Education*, 4(4), 305-313.
- Aini, M.S., Nurizan, Y. and Fakhru'l-Razi, A. (2007). Environmental comprehension and practices of Malaysian youth. *Journal of Environmental Education Research*, 13(1), 17-31.
- Arvai, J.L., Campbell, V.E.A., Baird, A. and Rivers, L. (2004). Teaching students to make better decisions about the environment: Lessons from the decision sciences. *The Journal of Environmental Education*, 36(1), 33-44.
- ASEAN Environmental Education Action Plan. (2000). Retrieved on March 26, 2009 from <http://www.asean.or.id/10753.htm>.
- Azizah, L.N. (2004). *Pendidikan Awal Kanak-kanak: Teori dan Amali*. Kuala Lumpur: Penerbit Universiti Malaya.
- Basile, C.G. (2000). Environmental education as a catalyst for transfer of learning in young children. *Journal of Environmental Education*, 32(1), 21-28.
- Bartkus, K.R., Hartman, C.L. and Howell, R.D. (1999). The measurement of consumer environmental knowledge: Revisions and extensions. *Journal of Social Behavior & Personality*, 44(1), 129-147.
- Bradley, J. C., Waliczek, T. M. and Zajicek, J. (1999). Relationship between environmental knowledge and environmental attitude of high school students. *Journal of Environmental Knowledge*, 30(30), 17-21.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Development Psychology*, 22(6), 732-742.
- Christenson, M.A. (2004). Teaching multiple perspectives on environmental issues in elementary classroom: A story of teacher inquiry. *The Journal of Environmental Education*, 35(4), 3-16.

- Cutter, A.N. and Smith, R. (2001). Gauging primary school teachers' environmental literacy: An issue of 'priority'. *Asia Pacific Education Review*, 2(2), 45-60.
- Davis, J. (1998). Young children, environmental education and the future. *Early Childhood Education Journal*, 26(2), 117-123.
- De Vaus, D. (2002). *Surveys in Social Research*. Crows Nest: Routledge.
- Domka, L. (2004). Environmental education at pre-school. *International Research in Geographical and Environmental Education*, 13(3), 258-263.
- Education for All Forum (EFA). (2000). *The EFA 2000 assessment: Malaysia country report*. Retrieved on April 29, 2009, from <http://unesco.org/education/wef/countryreports/malaysia/rapport.html>.
- Greenberg, M.R. (2005). Concern about environmental pollution: How much difference do race and ethnicity make? A New Jersey case study. *Environmental Health Perspectives*, 113(4), 369-374.
- Hungerford, H.R. and Volk, T.R. (1990). Changing learner behaviour through environmental education. *The Journal of Environmental Education*, 21(3), 8-21.
- Hungerford, H.R. and Volk, T.R. (2003). Notes from Harold Hungerford and Trudi Volk. *The Journal of Environmental Education*, 34(2), 4-7.
- Janikowski, R. (2000). Imperative of a sustainable consumer: Principles of a sustainable consumption. In U. Pretterhofer (Ed.), *Strategies of sustainable policy* (pp. 29-32) (Graz Austria, IFF/IFZ).
- Loughland, T., Reid, A. and Petocz, P. (2003). Factors influencing young people's conceptions of environment. *Environmental Education Research*, 9(1), 3-19.
- Malaysian Quality of Life. (2004). Kuala Lumpur: National Printing Press.
- Mansaray, A. and Abijoye, J.O. (1998). Environmental knowledge, attitudes and behavior in Dutch Secondary School. *Journal of Environmental Education*, 30(2), 4-11.
- Ministry of Education (MOE). (2003). *National Pre-school Curriculum*. Kuala Lumpur: Fajar Bakti Press.
- NCC. (1990). *Curriculum Guidance 7: Environmental Education*, NCC, York.
- Nehrbass, C. and Seiser, J. (2001). Issue investigation and action training: Supporting goals of EE. *Environmental Education & Training Partnership*, January, No. 91.
- Norhasmah, S., Aini, M. S., Laily, P., Sharifah Aziah H., Nurizan, Y. and Naimah, M. S. (2004). Sikap dan amalan terhadap keperihatinan persekitaran. *Malaysian Journal of Consumer and Family Economics*, 7, 54-65.
- Nurizan, Y., Laily, H.P., Norhasmah, S., Aini, M.S. and Naimah, M.S. (2004). Penggunaan lestari: Pemahaman konsep asas dan pengetahuan terhadap kesejahteraan persekitaran. *Malaysian Journal of Consumer and Family Economics*, 7, 1-15.
- Md Nor, O., Ong, F. S and Lim, M.H. (2004). Environmental attitudes and knowledge of teenage consumers. *Malaysian Journal of Consumer and Family Economics*, 7, 66-78.
- Oskamp, S., Harrington, M.J., Edwards, T.C., Sherwood, D.L. and Swanson, D.C. (1991, July). Factors influencing household recycling behaviour. *Environment & Behavior*, 23, 294-519.
- Palmberg, I. and Kuru, J. (2000). Outdoor activities as a basis for environmental responsibility. *The Journal of Environmental Education*, 31(4), 32-37.
- Palmer, J.A. (1999). Research matters: A call for the application of empirical evidence to the task of improving environmental education. *Cambridge Journal of Education*, 29(3), 379-396.
- Pudin, S. and Tagi, K. (2003). Environmental education in Malaysia and Japan: A comparative assessment. Retrieved on April 24, 2009 from <http://www.ceeindia.org/esf/download/paper20.pdf>.
- Schulitz, P.W. and Oskamp, S. (1996). Effort as a moderator of the attitude behavior relationship: General environmental concern and recycling. *Sociology Psychology Quarterly*, 59(4), 375-383.
- Sharifah Azizah, H., Laily, P. and Nurizan, Y. (2005). Towards sustainable consumption: An examination of environmental knowledge among Malaysians. *International Journal of Consumer Studies*, 29(5), 426-436.

- Sia, A.P., Hungerford, H.R. and Tomera, A.N. (1986). Selected predictors of responsible environmental behavior: An analysis. *The Journal of Environmental Education*, 17(2), 31-40.
- Summers, M. (2000). Primary school teacher's understanding of environmental issues: An interview study. *Environmental Education Research*, 6(4), 293-310.
- Stapp, W.B. (1978). An instructional model for environmental education. *Prospect*, 8(4), 495-507.
- Stapp, W. B., Bennett, D., Bryan, W. Jr., Fulton, J., MacGregor, J., Nowak, P., Swan, J., Wall, R. and Havlick, S. (1969). The concept of environmental education. *Journal of Environmental Education*, 1(1), 30-31.
- Strong, C. (1998). The impact of environmental education on children's knowledge and awareness of environmental concerns. *Marketing Intelligence & Planning*, 16(6), 349-355.
- Tbilisi Conference Declaration. (1977). Retrieved on March 20, 2009 from <http://www.gdrc.org/uem/ee/tbilisi.html>.
- Tilbury, D. (1994). The critical learning years for environmental education. In R.A. Wilson (Ed.), *Environmental education at the early childhood level* (pp.11-13). Washington DC: North American Association for Environmental Education.
- UNEP. (2007). *Global Environmental Outlook GEO 4*. Malta:UNEP.
- UNEP. (2008). UNEP Year Book. An overview of our changing environment. United Nations Environment Programme.
- UNESCO. UN Decade for education for Sustainable Development: 2005-2014. Retrieved on July, 2008 from <http://portal.unesco.org/education/en/ev.php>.
- Vining, J. and Ebreo, A. (1990, January). What makes a recycler? : A comparison of recyclers and non-recyclers. *Environment & Behavior*, 22, 55-73.
- Wilson, R.A.(1992).The importance of environmental education at the early childhood level. *International Journal of Environmental Education and Information*, 12(1), 15-24.
- Wilson, R.A. (1996). Environmental education programs for preschool children. *Journal of Environmental Education*, 27(4), 28-34.

