AN INVESTIGATION INTO FACTORS AFFECTING PRIMARY SCHOOL CHILDREN'S AWARENESS AND ATTITUDES TOWARDS ENVIRONMENTAL ISSUES IN CHAUNGZONE TOWNSHIP*

Su Chan Myae[1], Aung Lin[2], Thet Naing Oo[3]

Abstract

The purposes of this study are (1) to investigate the level of primary school children's existing awareness towards environmental issues, (2) to investigate the level of primary school children's existing attitudes towards environmental issues, (3) to identify the factors affecting environmental awareness of primary school children, and (4) to identify the factors affecting environmental attitudes of primary school children. Descriptive method was used in this research. The reliability coefficient (Cronbach's Alpha) of questionnaire was 0.83. In qualitative study, interview and observation were used. A proportional stratified sampling was used to select 354 primary school children from 38 Basic Education Schools in Chaungzone Township. The parents of the children and teachers who taught at primary level also participated in this study. Among them, 20 teachers and 20 parents were purposively selected for qualitative study. Descriptive statistics, Item Percent Correct (IPC), Independent Samples *t* Test, One-Way ANOVA, post-hoc test by Tukey, and Multiple Regression were used for the analysis of quantitative data. In analyzing qualitative data, the cyclical process was used. According to the findings, it was found that most of the primary school children have satisfactory level of environmental awareness and above satisfactory level of environmental attitudes. Regarding the factors affecting children's environmental awareness, the first predictor was their concern towards environmental issues and the second one was their out-of-school experience. Concerning the factors affecting children's environmental attitudes, the first predictor was their interest towards environmental issues, the second one was their in- school experience and the third one was gender. Qualitative study suggested that children who got the opportunity to participate in out-of-school experience and connect the lesson with the natural environment conveyed more environmental awareness than those of others.

Keywords: Environmental Awareness, Environmental Attitudes

Introduction

Environmental education is the effective way to address the environmental problems and strengthen for conservation of nature. It plays a key role to attain both self-responsibility and self-awareness on current environmental issues and challenges and to be noticed that every citizen has the duties to address those matters and challenges.

Educating people is one of the measures to bring the needed awareness and sensitivity towards protecting the environment. In order to strengthen knowledge and understanding about the environment and be more aware on the world's current condition, school, parents and community need to collaborate to convey adequate awareness and inculcate the right environmental attitudes in young generation, especially children.

Myanmar is also one of the countries which are facing a wealth of new and challenging environmental problems every day. As the effects of climate change, Myanmar experiences rising temperatures, greater frequency of intense rainfall and severe cyclones along Myanmar's coastline. Land degradation, urban solid waste management and deforestation are also increasing problems in Myanmar. Then, in Chaungzone Township, the major economy is paddy and rubber plantation. But, some people use chemical fertilizer for the nutrition of the plant to control agricultural productivity and quality. The improper fertilization can lead to water, soil and air pollution. In

[1] Dr, Lecturer, Department of Educational Theory, Yangon University of Education
[2] Dr, Associate Professor, Department of Educational Theory, Yangon University of Education
[3] Dr., Associate Professor, Department of Educational Theory, Yangon University of Education
[*] Best Paper Award Winning Paper in Educational Theory (2020)

order to handle environmental problems, it is very important to emerge environmentally literate children who know about environment and are aware of the environmental problems.

Keeping in mind these issues, it was intended to find out the environmental awarenessand environmental attitudes of primary school children in Chaungzone Township.

Objectives of the Research

General Objective

The main objective of this study is to investigate factors affecting primary school children's awareness and attitudes towards environmental issues.

Specific Objectives

The specific objectives of this study are as follows:

(1) To investigate the level of primary school children's existing awareness towards environmental issues

(2) To investigate the level of primary school children's existing attitudes towards environmental issues

(3) To identify the factors affecting environmental awareness of primary school children

(4) To identify the factors affecting environmental attitudes of primary school children

Research Questions

This study is targeted on the following questions:

(1) What is the level of primary school children's existing awareness towardsenvironmental issues?

(2) What is the level of primary school children's existing attitudes towards environmental issues?

(3) What are the factors affecting environmental awareness of primary school children?

(4) What are the factors affecting environmental attitudes of primary school children?

Scope of the Research

This study was conducted in Chaungzone Township, Mon State. Primary schoolchildren who were attending Grade IV, their parents and teachers who were teaching at primary level from those schools were participated in this study.

Definition of Key Terms

Environmental Awareness is defined as conscious of the problem and dangersfacing mankind and environment and pressing need for positive action to control the dangers and undesirable impact of man activities and demand upon the environment (Environmental Education Committee, Kenyatta University College, 1980, cited in Boiyo, 2014).

Environmental Attitudes involves set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection (UNESCO, 1978).

Operational Definitions

In this study, **Environmental Awareness** is operationally defined as the children's awareness of the problems concerning conservation of resources, pollution, and generalissues and positive action to control these problems.

Environmental Attitudes is operationally defined as the desirable attitudes on children's values and feeling of concern that reflects conservation and protection of the environmental resources.

Theoretical Framework

The goals of environmental education which were agreed in the Tbilisi Declaration are

- to foster clear awareness of, and concern about, economic, social, political andecological interdependence in urban and rural areas;
- to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- to create new patterns of behaviors of individuals, groups and society as a whole towards the environment

The categories of environmental education objectives which were established at the Tbilisi conference are (1) Awareness, (2) Knowledge, (3) Attitude, (4) Skills and (5) Participation (UNESCO, 1997, cited in Palmer & Neal, 1994).

According to Palmer & Neal (1994), environmental education needs to fall on threefold structures:

(1) Education in the environment focuses on facilitating environmental education experiences in nature and inspiring children to develop relationships with the natural world. The primary school children need to be involved in learning process through the environment by working outside the classroom, developing skills of enquiry and exploration within the local area, developing problem-solving skills and critical and creative thinking skills.

(2) Education about the environment is concerned with building environmental knowledge, understandings, and awareness of ecological processes. The primary school children should develop knowledge and understanding of the natural process which takes place in the environment, how life is dependent on the environment, the impact of human activities on the environment, environmental issues, the importance of effective action to protect the environment, the role of science and technology in the development of societies and their impact on the environment.

(3) Education for the environment is mainly directed towards promoting positive conservation behaviours and environmental action. For being educated for the environment, the children should be interested in and learn to appreciate their environment through the careof living things and their habitats in and around the school, respect for their environment through relevant and interesting studies of it, seek solutions to environmental problemswithin the school and the local area, appreciate the resilience, fragility, and beauty of nature.

Environmental Awareness. Based on the UNESCO report in reorienting teacher education to address sustainable development guideline and tools by Steele (2012) and the Myanmar's National Environmental Performance Report 2007-2010, children need to have awareness on conservation of resources (energy, forest, water), pollution (air pollution, water pollution, soil pollution) and general issues concerning environmental problem.

Environmental Attitudes. In the early stages of life on earth, the hazards presented by the environment were inanimate — broadly speaking the inclemency of the elements — but as life

developed, or evolved, it became self-predatory so that the weaker and the smaller were consumed, or deprived of their food, by the stronger and the bigger (Dr. Khin Zaw, 2001).

In order to preserve all species of animals on the earth, the balance of ecological system needs to be considered. Based on the Models of Ecological Values by Wiseman and Bogner (2003), there are two factors of environmental attitudes; preservation and utilization attitudes. Preservation Attitudes is a bio-centric dimension that reflects conservation and protection of the environment's resources and these attitudes will involve intent to support, care with resources and enjoyment of nature. Utilization Attitudes is an anthropocentric dimension that reflects the utilization of natural resource and this attitude will involve altering nature and human dominance.

There are possible factors affecting children's awareness and attitudes towards environmental issues:

In-school Experience: This involves playing and visiting in the school park, inquiring the nature of plants and animals, investigating environmental issues, and participating in environmental education activities in the school environment.

Out-of-school Experiences: This includes recreation in nature, observing different types of plants and animals, and inquiring the types of water and soil in local environment.

Home: It includes parents' knowledge, their interest and concern towards environmental issues, and their attitudes towards environmental education.

Environmental Education Given by Teachers: Environmental awareness and attitudes of children can be increased because of the teachers' knowledge and attitudes on environmental issues and their environmental education activities.

Media: It is a means of public communication and environmental awareness and attitudes are expanded through media education. This includes printed media (magazines, journals, books, newspaper) and electronic media (radio, television, video, internet).

Methodology

Quantitative and qualitative methods were used in this study. For quantitative study, descriptive research design was used and data were collected through questionnaire. A set of questionnaire was developed after reviewing related literature. For content validity, the advice and guidance were taken from the 11 expert educators. The reliability coefficient of questionnaire was 0.83. The participants of this study were 354 primary school children. Proportional stratified sampling was used.

In this study, schools were classified into three groups. The first group involvingBasic Education Primary Schools and Basic Education Post Primary Schools was categorizedas Group 1 Schools. The second group including Basic Education Middle Schools and Basic Education Middle Schools (Branch) was assigned as Group 2 Schools. The third group including Basic Education High Schools and Basic Education High Schools (Branch) was regarded as Group 3 Schools. According to this classification, there were 29 Basic Education Primary Schools and 1 Basic Education Post Primary School in Group 1 Schools, 2 Basic Education Middle Schools and 1 Basic Education Middle School (Branch) in Group 2 Schools, and 4 Basic Education High schools and 1 Basic Education High School (Branch) inGroup 3 Schools.

Descriptive statistics, Item Percent Correct (IPC), Independent Samples *t* Test, One- Way ANOVA, post-hoc test by Tukey, and Multiple Regression were utilized for the analysis of quantitative data. In scoring the response to the items relating to environmental awareness and environmental attitudes, the value less than 50% is considered as below satisfactory level, the

value between 50% and 74% as satisfactory level, and the value grater than or equal75% as above satisfactory level. To explain the factors affecting primary school children's awareness and attitudes towards environmental issues, in-school experience, out-of-school experience, interest, and concern towards environmental issues included in the childrenquestionnaire were analyzed by using descriptive statistics.

For qualitative data, the researcher selected purposively ten schools based on the results of quantitative data analysis. Qualitative method was also used to get more definite information about factors affecting primary school children awareness towards environmentalissues.

Findings

Quantitative Findings

Research Question (1) Investigating the level of primary school children's existingawareness towards environmental issues

Table 1 Numbers and Percentages of Primary School Children Showing the Level of Environmental Awareness (N=354)

Scoring Range	No. of Students	Remark
<50%	53 (15%)	Below Satisfactory Level
50%-74%	154 (43%)	Satisfactory Level
≥75%	147 (42%)	Above Satisfactory Level

Scoring range: <50% = Below Satisfactory 50%-74% = Satisfactory ≥75% = Above Satisfactory

According to the table, 53 (15%) of total students were below satisfactory level, 154 (43%) of students were at satisfactory level, and 147 (42%) of total students were above satisfactory level.

Table 2 One-Way ANOVA Result Showing Primary School Children's Environmental Awareness Grouped by School Group (N=354)

Variables		Sum of Squares	*df*	Mean Square	*F*	*p*
Environmental Awareness	Between Group	166.803	2	83.402	6.182	.002**
	Within Group	4735.027	351	13.490		
	Total	4901.831	353			

Note: *p<.05, **p<.01, ***p<0.001, ns= not significant

According to One-Way ANOVA result, it was found that there was a significant difference in environmental awareness of primary school children among school groups.

Table 3 Tukey HSD Result Showing Primary School Children's EnvironmentalAwareness Grouped by School Group (N=354)

Variables	(I) School	(J)School	Mean Difference (I-J)	*p*
Environmental Awareness	Group 2	Group 1	-1.963*	.005**
		Group 3	-2.430*	.002**

*p<.05, **p<.01, ***p<0.001, ns= not significant

According to the table, Post hoc Tukey test indicates that there were significant differences in environmental awareness between children from Group 1 schools and Group 2 schools and between children from Group 2 schools and Group 3 schools.

Research Question (2) Investigating the level of primary school children's existing attitudes towards environmental issues

Table 4 Numbers and Percentages of Primary School Children Showing Desirable Attitudes towards Environmental Issues (N=354)

Scoring Range	No. of Students	Remark
<50%	6 (2%)	Below Satisfactory Level
50%-74%	159 (45%)	Satisfactory Level
≥75%	189 (53%)	Above Satisfactory Level

Scoring range: <50% = Below Satisfactory 50%-74% = Satisfactory ≥75% = Above Satisfactory

According to the table, it was found that 6 (2%) of total students were below satisfactory level, 159 (45%) of total students were at satisfactory level and 189 (53%) of total students were above satisfactory level.

Table 5 Independent Samples *t* Test Showing Primary School Children's Environmental Attitudes Grouped by Gender (N=354)

Variable	Gender	*t*	*df*	*p*
Environmental Attitudes	Male	-2.411	352	.016*
	Female			

*p<.05, **p<.01, ***p<0.001, ns= not significant

According to the table, a significant difference in attitudes towards environmental issues was found by their gender.

Table 6 One-Way ANOVA Result Showing Primary School Children's Environmental Attitudes Grouped by School Group (N=354)

Variables		Sum of Squares	*df*	Mean Square	F	*p*
Environmental Attitudes	Between Group	128.100	2	64.050	6.398	.002**
	Within Group	3513.685	351	10.010		
	Total	3641.785	353			

*p<.05, **p<.01, ***p<0.001, ns= not significant

According to the table, It was found that there was a significant difference in environmental attitudes among school groups.

Table 7 Tukey HSD Result Showing Primary School Children's EnvironmentalAttitudes Grouped by School Group (N=354)

Variables	(I) School	(J)School	Mean Difference (I-J)	*p*
Environmental Awareness	Group 2	Group 1	-1.892*	.001**
		Group 3	-1.830*	.010*

*p<.05, **p<.01, ***p<0.001, ns= not significant

According to the table, there were significant differences in environmental attitudes between the students from Group 2 School and Group 1 School, and between the students from Group 2 School and Group 3 School.

Table 8 Mean Values and Standard Deviations of Primary School Children's In-school Experience and Out- of-school Experience (N=354)

No.	Variables	Mean	SD
1	In-school Experience	2.67	0.65
2	Out-of-school Experience	2.39	0.69

Scoring range: 1.00-1.80 =never 1.81-2.60 =seldom, 2.61-3.40=sometimes
3.41-4.20 =often 4.21-5.00=always

For in-school experience, the average mean value was 2.67. It can be noted that the children sometimes participated in in-school experience. The mean value for out-of-school experience was 2.39. It was found that they seldom participated in out-of-school experience.

Table 9 Mean Values and Standard Deviations of Primary School Children's Interest and Concern towards EnvironmentalIssues (N=354)

No.	Variables	Mean	SD
1	Interest	3.36	0.84
2	Concern	3.54	0.79

Scoring range:

Interest: 1.00-1.80 = not interested 1.81-2.60 =slightly interested
2.61-3.40 = moderately interested 3.41-4.20 =very interested
4.21-5.00 = extremely interested

Concern: 1.00-1.80 =not concerned 1.81-2.60 = slightly concerned
2.61-3.40 = moderately concerned 3.41-4.20 = very concerned
4.21-5.00 = extremely concerned

According to the table, the average mean value was 3.36 and it can be noted that primary school children were moderately interested in environmental issues. For Environmental Concern, the average mean value was 3.54. It can be regarded that primary school children were very concerned towards environmental issues.

Research Question (3) Factors affecting environmental awareness of primary school children

Five variables were identified as predictors of primary school children's Environmental Awareness (EA): In-school Experience (IE), Out-of-school Experience (OE), Interest (I), Concern(C), and School Group (SP). Simultaneous multiple regression was conducted to investigate the best predictor of their Environmental Awareness. The combination of variables for predicting Environmental Awareness included In-school Experience (IE), Out-of-school Experience (OE), Interest (I), Concern(C), and School Group (SG), F (5,348) = 9.222

Table 10 Simultaneous Multiple Regression Analysis for Factor Predicting Primary School Children's Environmental Awareness

Variables	B	SEB	β	*p*
In-school Experience	.11	.07	.11	.051
Out-of-school Experience	.14	.07	.12*	.049
Interest	.03	.08	.03	.732
Concern	.22	.08	.20**	.006
School Group	.07	.04	.08	.123
Constant	1.11	.18		.000

*R=.34, R^2=11, F (5,348)= 9.222 *p<.05, **p<.01, ***p<0.001,*

The Beta coefficients were presented in the table. Out-of-school experience of the children and their concern towards environmental issues significantly predicted their environmental awareness when all five variables were included. The adjusted R squaredvalue was .11 (R=.34). This indicated that 11% of the variance in children's awareness towards environmental issues was explained by the model, and this is smaller than typical effect.

According to Beta weights, concern towards environmental issues variable (β = .20, p<.01) appears to be the best predictable of children's environmental awareness. Out-of- school experience variable (β = .12, p< .05) appears to be the second predictor of children's environmental awareness. Children's in-school experience, their interest towardsenvironmental issues and the school group appear to be important for their environmental awareness

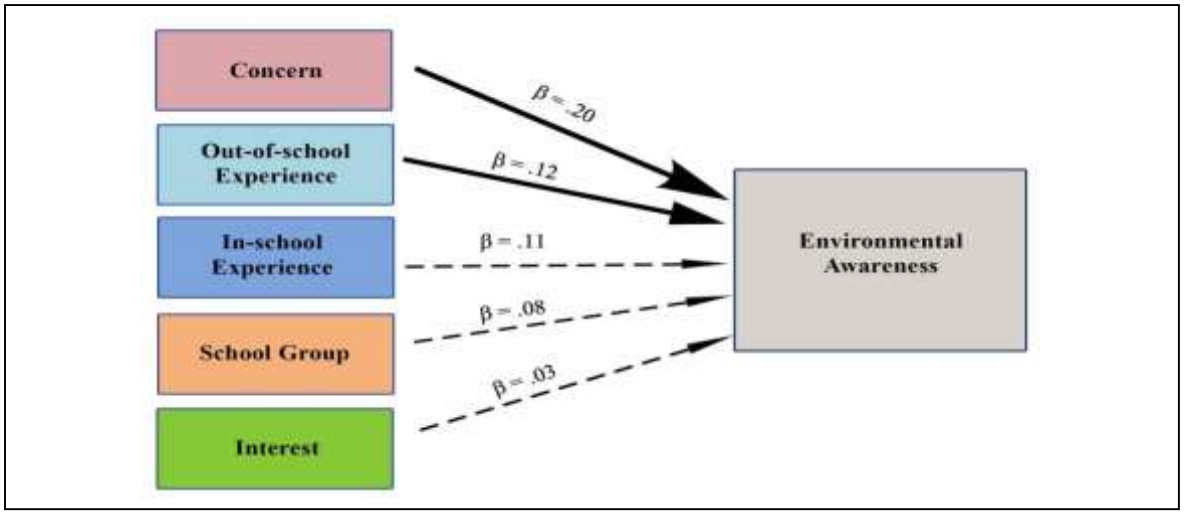

Figure 1 Potential Factors Affecting Primary School Children's Environmental Awareness

Notes:

- - - - - - - - - ▶ Predicting on children's environmental awareness (not significant)

——————▶ Predicting on children's environmental awareness (statistically significant)

Research Question (4) Factors Affecting environmental attitudes of primary school children

To investigate the best predictors of Environmental Attitudes (EA) of primary school children, simultaneous multiple regression was conducted to identified six variables as predictors: In-school Experience (IE), Out-of-school Experience (OE), Interest (I), Concern(C), Gender (G) and School Group (SG). 8

Table 11 Simultaneous Multiple Regression Analysis for Factor Predicting Primary

School Children's Environmental Attitudes (354) Variables	B	SEB	β	*p*
In-school Experience	.11	.05	.12*	.033
Out-of-school Experience	.02	.05	.02	.683
Interest	.16	.06	.21**	.004
Concern	.12	.06	.11	.051
Gender	.17	.05	.16**	.001
School Group	.00	.03	.00	.935
Constant	1.38	0.16		

*R=.41, $R^{2=}$.15, F (6,347) = 11.439 *p<.05, **p<.01, ***p<0.001,*

The Beta coefficient were presented in the table. Interest, gender and in-school experience significantly predicted primary school children's environmental attitudes when all six variables were included. The adjusted R squared value was .15 (R = .41). This indicates that 15% of the variance in environmental awareness explained by the model. This is a medium effect according to Cohen (1988).

According to Beta weights, Interest variable (β= .21, p < .01) appears to be the best predictor of primary school children environmental attitudes and Gender variable (Beta = .16, p < .001) appears to be the second predictor of environmental attitudes. In-school experience (Beta = .12, p < .05) appears to be the third predictor of primary school children's environmental attitudes. It was shown in figure.

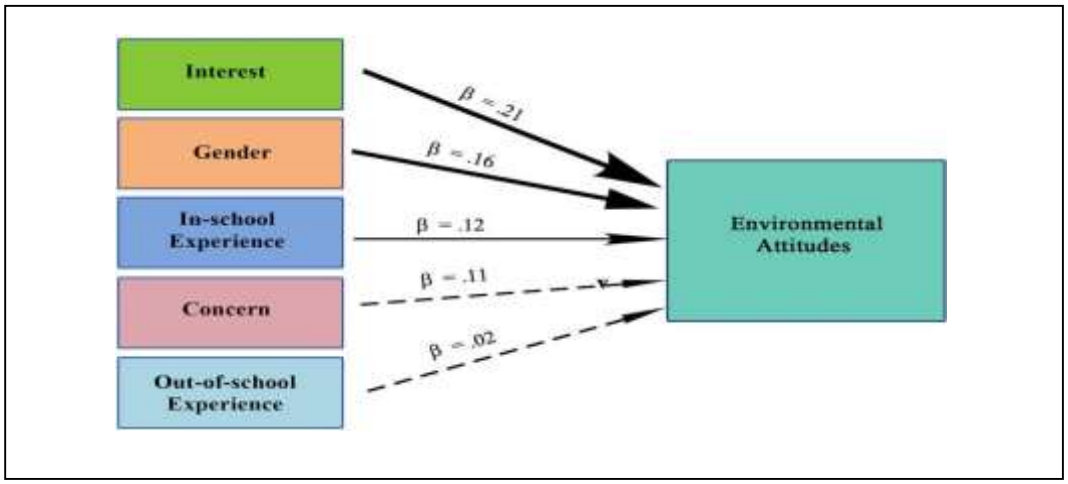

Figure 2 Potential Factors Affecting Primary School Children's Environmental Attitudes

Notes

Predicting on children's environmental attitudes (not significant)

Predicting on children's environmental attitudes (statistically significant)

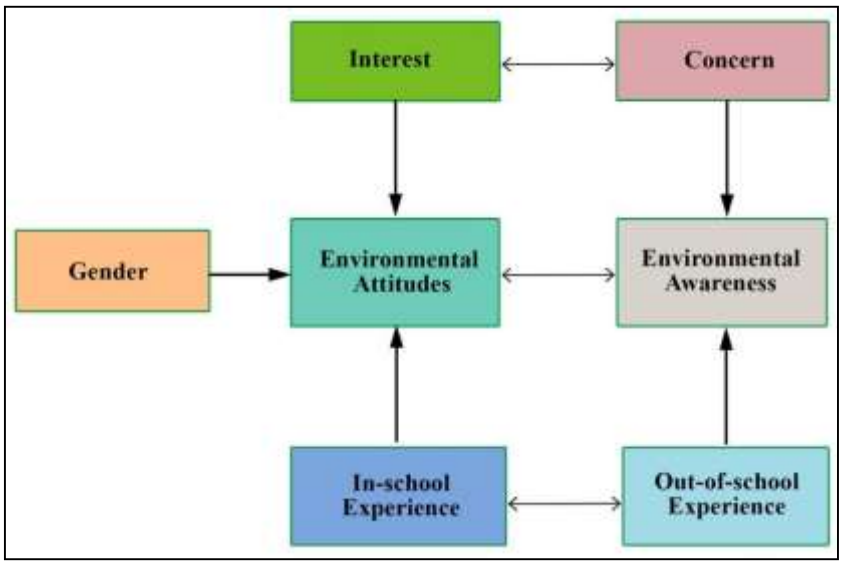

Figure 3 Potential Factors Affecting Primary School Children's Environmental Awareness and Attitudes

Qualitative Findings

The Result of Interview

Twenty teachers and twenty parents from ten schools participated in this interview. The schools were selected according to the environmental awareness level of the students. The schools were divided into two groups: Group A and Group B. Group A involved one Basic Education High School, one Basic Education Middle School and three Basic Education Primary Schools with high level of environmental awareness and Group B included one Basic Education High School, one Basic Education Middle School and three Basic Education Primary Schools with low level of environmental awareness. In each group, there were ten teachers; two teachers from each school were interviewed. In parents section, participants were also selected in the same way.

(i) Environmental Awareness and Environmental Attitudes

Regarding environmental awareness of teachers and parents, the interviewed result revealed that all teachers and parents from both groups were aware of the causes and consequences of deforestation because they could explain that deforestation occured due to cutting trees for commercial purpose without reforestation, agricultural use of land, and the extreme use of timber products. They were also aware that the lack of plants and trees could cause the change in climate which leads to the problems for the survival of all beings.

Regarding awareness on pollution, all teachers from both groups had awareness on the causes and consequences of air pollution. Although parents from group A realized the impact of air pollution and could name the diseases caused by it, parents from group B could only give the answer that it had negative effect on human health. Most teachers and parents from Group A and B could mention the cause of water pollution like throwing solid and industrial wastes into water bodies and they also had awareness on the consequences of water pollution because most of them mentioned that it has a serious effect on human health and aquatic life. Moreover, most teachers and parents from both groups were knowledgeable on how to manage solid wastes. Concerning the use of chemical fertilizers, pesticides and insecticides most teachers and parents from both groups gave a complete explanation on the harmful effect of the chemical fertilizers, pesticides and insecticides. Regarding endangered species, most teachers and parents had a desire to preserve, but a few of group A teacher gave the response on how to preserve these species.

Regarding environmental attitudes of teachers and parents, the interviewed result revealed that a few teachers from group A and some teachers from group B considered that natural resources could provide for the need of people forever. Over half of Group A teachers and parents though that environment exists for utilization by people and over half of Group B teachers and parents considered it was not concerned with people only. Most teachers and parents from Group A and Group B had the attitudes that people could not change the environmental setting in order to supply the needs of people.

(ii) In-school Experience and Out-of-school Experience

Group A Teachers: Based on the result of interview, 50% of teachers from Group A (n=5) said that, in practical, they did not perform any events concerning environmental education. In contrast, only one teacher said that she delivered her students current environmental issues and news. However, 40% of teachers from Group A (n=4) replied that they always try to share their knowledge to their students because they wanted to give more knowledge about ecology and persuade their students by explaining the law of nature in order to permeate the feeling of loving nature. Moreover, they also delivered the awareness on not to destroy the plants and trees.

With regard to in-school experience, 30% of the Group A teachers (n=3) said that they gave their students environmental education in connection with science subjects in school curriculum. Furthermore, 20% of teachers from Group A (n=2) responded that they hold panel discussion and talk show program for environmental education. Nevertheless, 50% of teachers from Group A (n=5) stated that they frequently did activities of plantation around the school.

As out-of-school experience, 50% of teachers from Group A (n=5) presented that they arranged for exploration trip concerning the knowledge on different types of plants; either what is the difference between Gymnosperms and Angiosperms or how to classify flowering and non-flowering plants. One of the teachers who performed exploitation trip continued that she also participated in regional plantation ceremonies.

The rest of 50% of the teachers from Group A (n=5) did not perform such kind of activities mentioned in above.

Group B Teachers: As in-school experiences, one of Group B teachers taught her students in connection with science subject in school curriculum. A few of Group B teachers (20%) organized for panel discussion and talk show about the environmental education. Just over half of surveyed (60%) organized to make such kind of activities such as plantation around the school.

Moreover, 60% of teachers from Group B (n=6) said that they rarely took their students to out of schools for the purpose of observing nature. Among them, one of the teachers from Group B said that she sometimes explained current environmental issues and 40 % of teachers from Group B (n=4) explained about ecology to their students. They also continued that they explained the students to love the nature and the importance of plants and tree.

Group A and Group B Parents: In response to that question, 50% of parents from Group A (n=5) and 40% of Group B parents (n=4) said that they asked their children to plant trees and to throw rubbish systematically. One of the parents from group A replied that painting was the best way to give environmental education because children were more interested in picture and colour and it could attract them. Another one of the Group A teacher also said that she sometimes took her children to garden and forest to love and feel the beauty of nature. One of the Group B parents said that nurturing the children to love the nature since their childhood could instill the preservation attitudes in them. In contrast, one of the Group B parents said that giving environmental education was not the task of parents and it was the duty of teachers.

The Result of Observation

The Result of Observation revealed that some schools had green environment, but cultivation of plants by students themselves was rarely occurred. Most of the schools had magazines, journal and books which were arranged in the school library. A few schools displayed connecting the lesson with the natural environment.

Discussion

According to Jackson (2005, cited in Boiyo, 2014), one of the best ways to preserve the environment is to create environmental awareness among society especially students. In the findings, although most of the primary school children were at satisfactory level concerning environmental awareness, 15% of students were below satisfactory level. The result of quantitative findings demonstrated that it needs to promote the collaboration with independent experts and third party institutions which mainly emphasize on environmental conservation to perform various kinds of activities such as giving lecture to primary school children and holding impromptu talk, and essay competition concerning environmental issues. Qualitative finding also revealed that recycling habits were rarely found in school and most of parents had little knowledge of

conservation of wildlife. Moreover, even though teachers and parents had known much information on causes and consequences of environmental issues, children from a few schools had got the opportunities to learn outside the classroom as a natural extension of the working environment and develop skills of enquiry and exploration within the local area for raising awareness among them. Since the children as the future leader play a very important role in the development of a country, it is very essential for them to know about the environment. They can apply this knowledge and can be better citizens in the future. According to Palmer and Neal (1994), the use of the environment as a resource for learning enables the development of a great deal of knowledge and understanding and skills of investigation and communication.

Investigating primary school children's attitudes towards environment plays an important role in enhancing their preservation attitudes towards environment. According to Palmer and Neal (1994), encouraging children to explore their personal response to the relation with the environment and environmental issues is linked to the development of attitudes and values. In the findings, a few children were below satisfactory level regarding desirable attitudes towards environments although most of them were at above satisfactory level and satisfactory level. The results of qualitative findings pointed out that some schools had given little opportunity to children to connect the lesson to the natural environment and the children did not also participate in creating green environment around the school. Moreover, the attitudes of the teachers and parents can influence their children because some of them believed that the natural resources had no limitation and it could fulfill the need of the people all the time.

Davis (1998) stated that education in environment aims to enhance positive feelings and attitudes towards nature and natural elements. As in-school experience, quantitative findings pointed out that although children sometimes participated in cultivating, watering flowers and plants in school, playing in the surrounding of the school compound, they seldom participated in Impromptu talk and debate concerning the environmental issues, creating toys and souvenir with the waste products, investigating various types of insects, and participating in essay competition concerning the environment. It may be concerned with the environmental education opportunity given by the school because even though teachers often practice on such activities as explaining the environmental-friendly behaviour, asking students to participate in planting flowers and trees in their environment, using relevant first-hand resources and real life experience as a basis for learning, they rarely held competition concerning essay writing, and impromptu talk on environmental conservation.

The benefit of undertaking out-of-school experiences is the best strategy to acquire information through hands-on experiences. From these experiences, they are enable to analyze on environmental problem and will also able to conduct on problem solving of current environmental issues and changes. One of the possible facts that accumulation of knowledge and information form out-of-school experiences raise their awareness capacity in addressing environmental problems.

In this study, the findings pointed out that there was no significant difference in environmental awareness between male students and female students. But, a significant difference was found in environmental attitudes between male students and female students. It is in line with what Hassam, Rahman and Sharifah (n.d.) and Sakar (2011) examined that female students had higher attitudes to environment as compared to male students. The results obtained in this study also indicated that female students have higher environmental attitudes than male students. According to socialization theory, females tend to assume 'caregiver' roles more than males, which in turn make them abler to understand their locality and the world. As a result, females can feel compassion for the ecological environment. Taking socialization theory into consideration, different socialization of males and females can be claimed as being the reason for the gender

difference in environmental attitudes and responsibility favoring females. Females are socialized to be more altruistic, cooperative, nurturing, and interdependent while males are socialized to be more independent and competitive (Zelezny, Chua, & Aldrich, 2000).

Research findings proved that environmental concern and out-of-school experiences are the factors affecting environmental awareness of primary school children. As out-of-school experience, the findings pointed out that although primary school children sometimes participated in planting flowers and trees in the home surrounding, observing animals in the home surrounding, and discovering to the place where crops are growing, they never participated in going a picnic to forest and mountain and seldom participated in playing and wandering along the river and forest, observing birds and animals in the nature, and visiting to the zoo. Then, they seldom participated in these experiences. According to informal interview, it was found that children were brought only to the place near the school compound as out-of-school experience in some schools and most schools did not perform such activities. Chan. koon-chai (1995) stated that students may obtain various environmental education through participation in a number of extracurricular activities, in special meeting or field visit to country parks and various outdoor education activities

Conclusion

Research findings could be combined as follows:

1. Regarding environmental awareness, 53 (15%) of primary school children had below satisfactory level, and 154 (43%) of children were in satisfactory level, and 147 (42%) of children were in the above satisfactory level. Hence, it can be regarded that most of the primary school children had satisfactory level of awareness towards environmental issues.
2. Regarding environmental attitudes, 6 (2%) of primary school children had below satisfactory level, and 159 (45%) of children were in satisfactory level, and 189 (53%) of children were in the above satisfactory level. It can be regarded that most of the primary school children had above satisfactory level of desirable environmental attitudes.
3. According to gender group, *t* test results indicated that no significant difference was found in environmental awareness between the group of male students and that of female students. But, there was a significant difference in environmental attitudes of primary school children between the group of male students and the group of female students.
4. Concerning in-school experience of the primary school children, primary school children sometimes participated in in-school experience. As out-of-school experience, primary school children seldom participated in out-of-school experience.
5. Concerning interest and concern towards environmental Issues, primary school children were moderately interested in environmental issues. Moreover, primary school children were very concerned to environmental issues.
6. According to the result of simultaneous multiple regression, it can be concluded that concern towards environmental issues becomes the best predictor for environmental awareness. Out-of-school experience becomes the second predictor for environmental awareness.
7. Concerning environmental attitudes, it can be concluded that interest in environmental issues becomes the best predictor for environmental attitudes. Gender becomes the second predictor for environmental attitudes. In-school experience becomes the third predictor for environmental attitudes.
8. According to the qualitative findings, most teachers and parents had awareness on the cause and consequences of deforestation, air pollution, and water pollution. They also had knowledge on how to manage solid waste. They could give a complete explanation on the

harmful effect of chemical fertilizers, pesticides and insecticides. Concerning endangered species, although they had a desire to preserve to these species, the challenge is that they had a little knowledge on this issue. Regarding environmental attitudes, most teachers and parents from Group A perceived that natural resources could not exist for a long time without conservation. But, the rest of them thought that it would always fulfill the needs of people. Most of teachers and parents also accepted that nature does not exist for the utilization of people only. To preserve the environments, most parents and teachers gave emphasis on the issues of deforestation, air pollution and water pollution. In giving environmental information to children, they usually talk about the importance of plants and trees and emphasize the role of education for environmental sustainability. Group A teachers and parents gave more opportunity concerning in-school experience and out-of-school experience to students.

Recommendations

The following recommendations are based on the analysis of research findings.

1. Children should be given the opportunities to engage in the activities of *education in the environment, education about the environment* and *education for the environment.*
2. Children should be given the opportunities to participate in environmental education through action taking like awareness raising, negotiation, persuasion campaigns and rehabilitation of degraded areas in order to promote their attitudes towards the environmental conservation.
3. School should collaborate with environmental educators to foster environmental literacy of primary school children by engaging them in activities.
4. A school garden should be set up in every school by encouraging children to cultivate plants individually or in group because children will get a feeling of ownership and try to conserve their own environment.
5. Every school should have adequate arrangements for planning and implementing a programme of environmental education.
6. Classroom should be decorated with some educational infographic tools like posters, photographs, charts and informative artworks to raise environmental awareness of the children.
7. Educators should increase the willingness of parents to let their children play in nature by developing targeted programming that fills specific community needs and by creating safe, supervised outdoor spaces for children.
8. School should use a range of resources in teaching environmental education including trips to museums, gardens, backyards, wetlands, national parks, camping, building trees houses, etc.
9. School should include environmental studies as part of the extra-curricular activities.
10. Parents should help their children connect to nature by providing access and encouraging play and exploration.
11. Female should participate in future environmental activism more and more because they tend to preserve the environment than males and they play a key role in household management as well as in educating their children and family.
12. All teachers should have the capacity to provide environmental education and these should study at local, national and global levels.
13. Teachers should be familiar with the goals and objectives of environmental education and the evaluation techniques for supporting the set environmental goals.

14. The teacher should use the approaches that are suitable and interesting for pupils such as using the resources from the local environment, simple investigative techniques, critical thinking and problem solving, and story-telling.
15. Department of Basic Education should lay down a policy which can perform as bridge within schools and third-party institutions who are focusing on environmental conservation and awareness.
16. Government should organize Environmental Education campaign programmes for children, youth, men and women.
17. NGOs (at national and community levels) should initiate and help by awareness campaigns to save environment.
18. Environmental Education (EE) should be integrated and implemented in every subject of the curriculum.

Need for Further Research

This study has been conducted on primary school children with special focus on their awareness and attitudes towards environmental issues. It is necessary to investigate their skills and participation for conservation of environment. As this study has mainly examined on primary school children's awareness and attitudes, other factors affecting middle school and high school children's awareness and attitudes towards environmental attitudes are here by recommended for further studies.

Acknowledgements

We are deeply grateful to Dr. Khin Zaw (Retired Rector, Yangon University of Education), Dr. Aye Aye Myint (Retired Rector), Dr. Pyone Pyone Aung (Pro-Rector) and Dr. Kay Thwe Hlaing (Pro-Rector) who allowed us to do this research. We would like to express our gratitude to Dr. Daw Mya Kywe (Retired Professor), Dr. Aye Aye Cho (Retired Professor), Dr. Daw Htay Khin (Retired Professor) and Dr. Su Su Thwin (Retired Professor), Dr. Khin Mar Ni (Professor and Head of Department) and Dr. Phyu Phyu Yin (Professor) for their expert guidance and valuable advice to complete this paper.

References

Anil, K.D., & Arnab, K.D. (2003*). Man, Nature and Environment*. New Age International (P) Limited, New Delhi

Aye Aye Cho. (1997). *Factors Affecting the Elementary School Children's Environmental Perception and Attitudes in Japan and Myanmar*. Unpublished Doctoral Dissertation, Hiroshima University, Japan 15

Blower, A., & Hinchliffe, S. (2003). *Environmental Responses*. The Open University, United Kingdom

Boiyo, K.V. (2014). *Environmental Awareness, Attitude and Participation among Secondary School Student*: A Comparative Study of Kasarani and Kibera division, Nairobi Country, Kenya. Retrieved December 21, 2016 from http://iribrary.ku.ac.ke

Chan Koon-Chai. (1995). *A Study of the Environmental* A*wareness of Form Two Student's Hong Kong and Possible* Factors *on it*, Unpublished Master's Thesis, University of Hong Kong, Retrieved February 19, 2016 from www.hub.hku.hk/bitstream

Davis, J.M. (2015). *Young Children and The Environment: Early Education for Sustainability*. Cambridge University Press

Khin Zaw, Dr. (2001). DS 1: *Theoretical Pedagogy (I) Ontology*, Ph.D Course. Yangon Institute of Education

Kaiser, F., Frick, J., & Wilson, M. (2004). Environmental Knowledge and Conservation Behavior: Exploring Prevalence and Structure in A Representative Sample. Personality and Individual Differences. Retrieved June 7, 2016 from https://www.researchgate.net

Kimaryo, L.A. (2011). *Integrating Environmental Education in Primary School Education in Tanzania*. Abo Akademi University Press, Finland

Hassan, A., Rahman, N.A. & Sharifah, A. (n.d.). The Level of Environmental Knowledge, Awareness, Attitudes and Practices among UKM Students. Universities Kebangsaan Malaysia. Retrieved March 9, 2017 from http://tree.utm.my/wp

Milfont, T. L., & Duckiitt, J. (2006). Preservation and Utilization: Understanding the Structure of Environmental

Attitudes. Medio Ambientey Comportamiento Humano. Vol.7:1, 29-50. Retrieved August 3, 2016 from https://mach.webs.ull.es

Palmer, J.A., & Neal, P (1994). *The Handbook of Environmental Education*. Landon and New York

Palmer, J.A. (1998). *Environmental Education of the 21st Century: Theory, Practice, Progress and Promise*. Routledge, London.

Sakar, M. (2011). Secondary Students' Environmental Attitudes: The Case of Environmental Education in Bangladesh. *International Journal of Academic Research in Business and Social Sciences, Vol. 1, special Issues*

Steele, R. (2010). *Reorienting Teacher Education to Address Sustainable Development Guidelines and Tools*. UNESCO, Thailand.

Wiseman, M., & Bogner, F.X. (2003). A Higher-order Model of Ecological Values and Its Relationship to Personality. *Personality and Individual Differences* 34: 783–94.