

**EFFECTS OF ENVIRONMENTAL EDUCATION THROUGH
CAMPING EXPERIENCE ON STUDENTS'
KNOWLEDGE AND ATTITUDE
REGARDING WETLANDS**

JAYA MARY ASIRVATHAM

**DISSERTATION SUBMITTED IN FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF TECHNOLOGY
(ENVIRONMENTAL MANAGEMENT)**

**FACULTY OF SCIENCE
UNIVERSITY OF MALAYA
KUALA LUMPUR**

2009

ACKNOWLEDGEMENTS

My heartfelt gratitude goes to

Mr. Lim Loong Fatt from the Faculty of Education for his suggestions and remarks in designing the questionnaire and encouragement in conducting my research.

Professor Dr. Chong Ving Ching from the Institute of Biological Sciences for his guidance, support and comments rendered in the analysis of my study.

Shanmugaraj and Evelyn from the Education Unit, Malaysia Nature Society for their suggestions, comments and most of all for allowing me to conduct the survey of my study in the zonal camps.

Ministry of Education, Malaysia for allowing me to carry out the preliminary test in selected schools.

My colleagues Kamaruddin, Aryanti, Santha and the rest of the teachers from SK Kempadang, Kuantan who had always been generously providing motivation to move on with my study.

My friends Krishan, Stella, Uma Rani and Rohayu who were always helpful and concerned with the progress of my study.

My siblings for their endless support and understanding shown throughout the challenges I faced in completing my study.

Management staffs of the Institute of Biological Sciences (IBS) for their kind assistance rendered to me.

My late parents, Mr. Asirvatham and Madam Amlor Mary for sowing the seed of interests in higher education.

Most of all to God for His gracious blessings.

ABSTRACT

The study was conducted to determine if environmental education camp has an effect on the level of knowledge and attitude regarding wetlands. The result of this study was based on a questionnaire survey of pre-test and post-test groups which consisted of 206 students, who attended the education camp. Participants of the camp were primary and secondary school students from 10 states which were segregated into Eastern, Northern and Southern zones of Peninsular Malaysia. The study examined the demographic profile, pre-camp knowledge and attitude of students regarding wetlands, students' expectations and perception of the environmental education camp.

Students' pre-camp environmental knowledge was significantly influenced by level of education ($p < 0.05$), with upper secondary school students (Form 4, 5 and 6) showing higher environmental knowledge on wetlands as compared to lower secondary and primary school students. The results showed significant interaction effects between gender and location of school (rural or town) on students' pre-test knowledge with town males showing the lowest scores as compared to the rest ($p < 0.05$). The study also showed that on a zonal basis, the students from the Eastern Zone (states of Pahang, Kelantan and Terengganu) had the lowest pre-test scores of knowledge as compared to those from the other two zones. The pre-camp students' attitude level varied by location of schools with rural area students showing higher positive attitude towards wetlands issues as compared to their urban counterparts. Town males again showed significantly the lowest score for attitude level ($p < 0.01$). Students' pre-camp expectation of the camp's programme was significantly influenced by level of education ($p < 0.05$) with lower secondary level students and upper secondary level students showing higher expectation on the camp's programme as compared to the primary level students. Correlation analysis revealed that students' pre-test knowledge was positively correlated with students' pre-test attitude ($r = 0.32$, $p < 0.05$) and students' frequency of involvement in environmental activities ($r = 0.16$, $p = 0.02$), while pre-test attitude was not significantly correlated to students' frequency of involvement in environmental activity ($r = 0.08$, $p = 0.24$).

The Wilcoxon matched pair test between pre-test and post-test students showed highly significant differences in knowledge ($p < 0.01$), attitude ($p < 0.001$) and

participants' perception ($p < 0.001$) on the camp's programme; for all parameters tested, post-test scores were significantly higher than pre-test scores. More than 50% of the students scored above 22 correct answers (maximum of 24) as compared to the same percentage that had scored above 12 correct prior to the camp. It is concluded that theoretical and practical learning methods, pedagogical approaches used in the activities of the camp and the role of facilitators are important factors which contributed to the accomplishment of the objectives of this study.

ABSTRAK

Kajian ini dilaksanakan untuk mengenalpasti sekiranya kem pendidikan alam sekitar berkesan ke atas tahap pengetahuan dan sikap pelajar mengenai tanah lembap. Keputusan kajian adalah berdasarkan soalan kaji selidik terhadap kumpulan pra-ujian dan pasca-ujian terdiri daripada 206 pelajar yang dibahagikan kepada zon Timur, Utara dan Selatan Semenanjung Malaysia. Kajian ini menilai profail demografi, pengetahuan dan sikap pelajar mengenai tanah lembap, harapan dan persepsi mereka tentang program kem pendidikan alam sekitar. Pengetahuan pelajar sebelum kem dipengaruhi secara signifikan oleh tahap pendidikan ($p < 0.05$), dimana pelajar tahap menengah tinggi (Tingkatan 4,5,dan 6) menunjukkan tahap pengetahuan mengenai tanah lembap lebih tinggi berbanding dengan pelajar menengah rendah dan pelajar sekolah rendah. Keputusan terhadap pengetahuan pelajar sebelum kem menunjukkan kesan interaksi signifikan antara jantina dan lokasi sekolah (bandar dan luar bandar) dimana pelajar lelaki dari bandar menunjukkan skor paling rendah berbanding yang lain ($p < 0.05$). Kajian ini juga menunjukkan pada tahap zon, pelajar dari zon Timur (negeri Pahang, Kelantan dan Terengganu) memperolehi skor pengetahuan sebelum kem paling rendah berbanding dengan dua zon yang lain. Tahap sikap pelajar terhadap tanah lembap sebelum kem berbeza dengan lokasi sekolah dimana pelajar dari luar bandar menunjukkan sikap positif terhadap isu tanah lembap berbanding dengan pelajar sekolah bandar. Pelajar lelaki sekali lagi menunjukkan skor terendah untuk tahap sikap terhadap tanah lembap ($p < 0.01$). Harapan pelajar terhadap kem dipengaruhi secara signifikan oleh tahap pendidikan ($p < 0.05$) dimana pelajar tahap menengah rendah dan tinggi menunjukkan harapan yang lebih tinggi berbanding dengan pelajar sekolah rendah. Analisis korelasi mempamerkan pengetahuan pelajar sebelum kem secara positif berkorelasi dengan sikap pelajar sebelum kem ($r = 0.32$, $p < 0.05$) dan dengan kekerapan pelajar terlibat dalam aktiviti alam sekitar ($r = 0.06$, $p = 0.02$) sementara ujian sikap pelajar sebelum kem secara signifikan tidak berkorelasi dengan kekerapan pelajar terlibat dengan aktiviti alam sekitar ($r = 0.08$, $p = 0.24$)

Ujian pasangan Wilcoxon menunjukkan perbezaan signifikan tinggi antara pra-ujian dan pasca-ujian untuk pengetahuan ($p < 0.01$) dan sikap ($p < 0.001$) terhadap tanah lembap serta persepsi pelajar ($p < 0.001$) terhadap program kem; untuk semua parameter

yang diuji, skor pasca-ujian secara signifikan lebih tinggi daripada skor pra-ujian. Lebih daripada 50% pelajar memperoleh jawapan betul melebihi 22 (maksimum 24) berbanding dengan pelajar yang memperoleh jawapan betul melebihi 12 sebelum kem. Kajian ini menyimpulkan pembelajaran secara teori serta praktikal, kaedah pedagogi yang digunakan dalam kem dan peranan fasilitator sebagai faktor utama menyumbang kepada pencapaian objektif kajian ini.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
ABSTRAK	vi
TABLE OF CONTENTS	viii
LIST OF TABLES	xi
LIST OF FIGURES	xv
CHAPTER 1: INTRODUCTION	
1.1 Background	1
1.2 Definition of Wetlands	3
1.3 Importance of Wetlands	4
1.4 Wetlands Issues	9
1.5 The Study	11
1.6 Significance of the Study	13
1.7 Research Questions	14
1.8 Objectives of the Study	15
CHAPTER 2: LITERATURE REVIEW	
2.1 Conservation and Environmental Education on Wetlands	16
2.2 Case Studies pertaining to environmental Education through Camping / Field trip Experiences	21
CHAPTER 3: RESEARCH METHODOLOGY	
3.1 Introduction	38
3.2 Pilot Test	39
3.2.1 The Samples	39
3.2.2 Instruments	40
3.2.3 Administration of Test	42
3.2.4 Validity and Translation of the Questionnaire	43
3.2.5 Data Analysis	44
3.3 Camp's Programme	44
3.3.1 Camp's Activities	45
3.3.2 Role of Facilitators	47
3.3.3 Equipments	47
3.3.4 Programme of Schedule	48
3.4 Proper Survey	50
3.4.1 The Samples	50
3.4.2 Instruments	51
3.4.3 Respondents of the Study	53
3.4.4 Administration of Test	54
3.4.5 Marking Scheme	54
3.4.6 Data Processing and Data Analysis	56

3.5	Limitations of the Study	57
3.6	Definition of Terms	58
CHAPTER 4: RESULTS AND DISCUSSION		
4.1	Demographic Profile of Sampled Students	60
4.2	Pre-camp Knowledge of Wetlands: Effects of Gender, School Location and Level of Education	75
4.3	Effects of Environmental Education Camp: Level of Knowledge on Wetlands	79
4.3.1	Results of Wilcoxon Pair Test, Box and Whisker Plot on Knowledge Level of Students Before and After Camp	79
4.3.2	Performance by Zone	80
4.3.3	Performance by Location and Gender	87
4.3.4	Performance by Level of Education	94
4.3.5	Discussion	97
4.4	Pre-camp Attitude on Wetlands Issues: Effects of Gender, School Location and Level of Education	101
4.5	Effects of Environmental Education Camp: Level of Attitude on Wetlands	104
4.5.1	Results of Wilcoxon Pair Test, Box and Whisker Plot on Students' Attitude regarding Wetlands Before and After Camp	104
4.5.2	Students' Response in the Pre-test and Post-test on Attitude towards Wetlands	106
4.5.3	Discussion	111
4.6	Pre-camp Expectations regarding Camp's Programme: Effects of Gender, School Location and Level of Education	113
4.7	Effects of Environmental Education Camp: Expectations and Perceptions on the Camp	116
4.7.1	Results of Wilcoxon Pair Test, Box and Whisker Plot on Students' Expectations and Perceptions Before and After Camp	116
4.7.2	Students' Response on Their Expectations and Perceptions of the Environmental Education Camp	119
4.7.3	Discussion	124
4.8	Relationship between Students' Knowledge and Attitude regarding Wetlands	126
4.8.1	Discussion	127
CHAPTER 5: GENERAL DISCUSSION		
5.1	Management of the Environmental Education Camp	129
5.1.1	Pedagogical Approaches	129
5.1.2	Role of Facilitators	132
5.1.3	Role of Teachers	133
5.1.4	School Curricular System	135

CHAPTER 6: CONCLUSIONS	137
6.1 Recommendations	138
REFERENCES	140
APPENDICES	
Appendix A	
Appendix B	
Appendix C	
Appendix D	

LIST OF TABLES

Table	Page
4.1. Frequency Distribution of Sampled Students by Number of Response.	60
4.2. Frequency Distribution of Sampled Students by Zone	60
4.3. Frequency Distribution of Sampled Students by States.	61
4.4. Frequency Distribution of Sampled Students by Schools (Primary and Secondary)	62
4.5. Frequency Distribution of Sampled Students by Stream	62
4.6. Frequency Distribution of Sampled Students by Age	63
4.7. Frequency Distribution of Sampled Students by Gender	63
4.8. Frequency Distribution of Sampled Students by Race	64
4.9. Frequency Distribution of Sampled Students by Member of Nature Lovers Club (KPA)	64
4.10. Frequency Distribution of Sampled Students by Location	65
4.11. Frequency Distribution of Sampled Students by Involvement in Environmental Education Programme	65
4.12. Frequency Distribution of Sampled Students by Frequency of Involvement in Environmental Education Programme	66
4.13. Frequency Distribution of Sampled Students by Reasons Not Involved in Environmental Education Programme	66
4.14. Frequency Distribution of Sampled Students by “Participation Supported By”	67
4.15. Frequency Distribution of Sampled Students by Academic Achievement in Science Subject	68
4.16. Frequency Distribution of Sampled Students by Academic Achievement in Examination.	68

4.17.	Frequency of Sampled Students as Groups by Members of Nature Lovers Club (KPA) and Gender	69
4.18.	Frequency of Sampled Students as Groups by Involvement in Environmental Education Programme and Gender.	70
4.19.	Frequency of Sampled Students as Groups by Frequency of Involvement in Environmental Education Programme Prior to Attending the Camp	71
4.20.	Frequency of Sampled Students as Groups by Location (rural and town) and Members of Nature Lovers Club (KPA)	72
4.21.	Frequency of Sampled Students as Groups by Location (rural and town) and Involvement in Environmental Education Programme Prior to Attending Camp	73
4.22.	Frequency of Sampled Students as Groups by Location (rural and town) and Frequency of Involvement in Environmental Education Programme Prior to Attending Camp	74
4.23.	ANOVA Summary Table of the Effects of Gender (Sex), Location of Schools, Level of Education on Students' Knowledge regarding Wetlands	75
4.24.	Mean Score on Knowledge of Wetlands by Students' Level of Education	76
4.25.	Mean Score by Students' Gender and Location on Knowledge regarding Wetlands	76
4.26	Effects of Zone and Gender of Students' Knowledge regarding Wetlands	77
4.27.	Mean Score on Knowledge of Wetlands by Zone	78
4.28.	Wilcoxon Matched Pairs Test on Students' Knowledge regarding Wetlands	79
4.29.	Frequency Distribution of Correct Answer Selection by Students on Knowledge regarding Wetlands by Zone	82
4.30. (a)	Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Zone (East)	85

4.30. (b) Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Zone (South)	86
4.30. (c) Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Zone (North)	87
4.31. Frequency of Correct Answer Selection by Group, Gender and Location of Schools on Knowledge regarding Wetlands	88
4.32. Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Gender	92
4.33.(a) Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Level of Education (Pre-test)	95
4.33.(b) Frequency Distribution of Correct Answer on Knowledge regarding Wetlands by Level of Education (Post-test)	96
4.34 ANOVA Summary Table of the Effects of Gender, Location of Schools and Level of Education on Students' Attitude regarding Wetlands Issues	102
4.35 Mean Score by Location of Schools on Students' Attitude regarding Wetlands Issues	102
4.36 Mean Score by Gender and Location of Schools on Students' Attitude regarding Wetlands Issues	103
4.37 Wilcoxon Matched Pair Test on Students' Attitude regarding Wetlands	105
4.38 Frequency Distribution on Students' Attitude towards Wetlands Issues based on Groups	106
4.39 ANOVA Summary Table of Effects of Gender, Location of Schools and Level of Education on Students' Expectations Regarding Camp's Programme	114
4.40 Mean Score by Level of Education on Students' Expectations regarding Camp's Programme	114
4.41 Mean Score by Gender, Location of Schools and Level of Education on Students' Expectations regarding Camp's Programme	115

4.42	Wilcoxon Matched Pair Test on Students' Expectations and Perceptions regarding Environmental Education Camp	117
4.43	Frequency Distribution on Students' Expectations and Perceptions on Environmental Education Camp based on Groups	119
4.44	Spearman Rank Order Correlations	126

LIST OF FIGURES

Figure	Page
4.1. Mean Score on Knowledge on Wetlands by Students' Level of Education	76
4.2. Mean Score by Students' Gender and Location on Knowledge regarding Wetlands	77
4.3. Mean Score on Knowledge of Wetlands by Zone	78
4.4. Box and Whisker Plot Analysis on Students' Knowledge regarding Wetlands	80
4.5. Mean Score by Location of Schools on Students' Attitude regarding Wetlands Issues	103
4.6. Mean Score by Gender and Location of Schools on Students' Attitude regarding Wetlands Issues	104
4.7. Box and Whisker Plot Analysis on Students' Attitude regarding Wetlands Issues	105
4.8. Mean Score by Level of Education on Students' Expectations regarding Camp's Programme	115
4.9. Mean Score by Gender, Location of Schools and Level of Education on Students' Expectations regarding Camp's Programme	116
4.10. Box and Whisker Plot Analysis on Students' Expectations and Perceptions regarding Camp's Programme	118

