

INCLUSION OF ENVIRONMENTAL EDUCATION IN

SOUTH KOREAN SCHOOLS

by

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DECLARATION

I declare that INCLUSION OF ENVIRONMENTAL EDUCATION IN SOUTH KOREAN SCHOOLS is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

SIGNED: _____

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DATE: _____

AT UNISA

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ABSTRACT

The main objectives of this research were to determine the perspectives of South Korean educators regarding the inclusion of environmental education into the curriculum of South Korean schools and to establish the educators' level of knowledge of environmental education. The research was conducted using a translated questionnaire, which was administered to the educators. The findings of the research showed that few South Korean educators have had any training in environmental education. While most have had no exposure to environmental education it was found that they would appreciate training in the subject. The study highlights the importance of, and discusses the implementation of, environmental education in some Asian countries, as well as the constraints experienced during implementation. On the basis of the research findings, it is recommended that South Korea draw on the knowledge of other countries in both improving the current curriculum so as to include environmental education at all levels, and in the professional development of its educators, in order to bring about the effective inclusion and implementation of environmental education in South Korean schools.

Key words: Environmental Education (EE); South Korean education system; constraints of EE implementation, implementation of EE in Asian countries

ABBREVIATIONS

ADD – Attention deficit hyperactivity disorder

ASCD – Association for Supervision and Curriculum Development

CA – Club Activity

CDC – Curriculum Development Center

DANIDA – Danish International Development Assistance

DEQP – Department of Environmental Quality Promotion

DoE – Department of Environment

EBS – Educational Broadcast System

ECC – Environmental Campaign Committee

EE – Environmental Education

EESD – Environmental Education for Sustainable Development

EPD – Environmental Protection Department

ETS – Educational Testing Service

GDP – Gross domestic product

GNH – Gross national happiness

INSET – In-service education and training

ISEP – International Student Exchange Programs

IUCN – International Union for the Conservation of Nature

JEEF – Japan Environmental Education Forum

KDB – Korea Development Bank

KLAs – Key learning areas

KRW – South Korean Won

LLL – Lifelong learning

LPG – Liquefied petroleum gas

MERK – Ministry of Environment Republic of Korea
Mest – Korean Ministry of Education, Science and Technology Development
MEWR – Ministry of Environment and Water Resources
MoE – Ministry of Education
NAPE – New Approach to Primary Education
NBIPs – Nationally Based In-Service Programs
NEA – National Environment Agency
NFCED – Non-formal and Continuing Education Division
NFE – Non-formal education
NGO – Non-governmental organisation
OECD – Organisation for Economic Co-operation and Development
ROK – Republic of Korea
RSPN – The Royal Society for the Protection of Nature
SEC – Singapore Environmental Council
SEPA- The Student Environment Protection Ambassador
SERI – Socio-Economic and Environmental Research Institute
Seri – Samsung Economic Research Institute
SO₂ - Sulphur dioxide
Toefl – Teaching of English Foreign Language
TrEES – Treat Every Environment Special
TVET – Technical and vocational education and training
UNESCO – United Nations Educational, Scientific and Cultural Organization
USA – United States of America
USSR – Union of Soviet Socialist Republics (Soviet Russia)
WATER – Watershed Action through Educational Research
WWF – World Wildlife Fund

TABLE OF CONTENTS

Declaration	i
Acknowledgements	ii
Abstract and keywords	iii
Abbreviations	iv

CHAPTER 1

ORIENTATION AND BACKGROUND TO THE STUDY

1.1	INTRODUCTION	1
1.2	POLLUTION IN KOREA	2
1.3	PROBLEM STATEMENT	7
1.4	AIMS OF THE RESEARCH	8
1.5	MOTIVATION FOR RESEARCH	9
1.5.1	Importance of the research	9
1.5.2	Contribution to education	9
1.6	RESEARCH STRATEGIES AND METHODS	11
1.7	LIMITATIONS OF THE RESEARCH	12
1.8	TERMINOLOGY	14
1.9	CHAPTER DIVISION	14
1.10	CONCLUSION	15

CHAPTER 2

AN OVERVIEW OF LITERATURE REVIEW

2.1	INTRODUCTION	16
2.2	KOREAN EDUCATION SYSTEM	16
2.3	THE MINISTRY OF EDUCATION AND HUMAN RESOURCE DEVELOPMENT	16

2.4	THE DEVELOPMENT OF EDUCATION	18
2.4.1	Pre-modern Education (up to the 19th century)	18
2.4.2	Expansion of Democratic Education (1945–1950s)	18
2.4.3	Quantitative Expansion in the 1960s and 1970’s	19
2.4.4	Qualitative Development in the 1980s	20
2.4.5	Human Education Preparing for Future Society – the 1990’s and Beyond	21
2.5	CURRICULUM	23
2.5.1	The Seventh Curriculum	24
2.6	OVERVIEW OF SCHOOL EDUCATION	25
2.6.1	Preschool Education in Korea	26
2.6.2	Elementary Education in Korea	27
2.6.3	Secondary Education	27
2.6.3.1	Korean Middle Schools	27
2.6.3.2	Korean High Schools	28
2.6.4	Higher(Tertiary) Education in Korea	29
2.6.4.1	Entrance Examinations in Korea	30
2.6.4.2	Korean Junior Vocation Colleges	30
2.6.4.3	College and Universities in Korea	31
2.6.4.4	Korean Graduate Schools	31
2.7	TEACHER TRAINING	32
2.7.1	Pre-service Training for Teachers	32
2.7.2	In-service Training for Teachers	32

AN OVERVIEW OF ENVIRONMENTAL EDUCATION

2.8	ENVIRONMENTAL EDUCATION (EE)	33
2.8.1	Definition of EE	34
2.8.2	Goals and Objectives of EE	35
2.8.3	Principles of EE	36
2.8.4	Characteristics of EE	36
2.8.5	Practice of EE	37
2.8.6	Education about, in and for the environment	38
2.8.7	Teaching methods for EE	39
2.9	IMPLEMENTATION OF EE INTERNATIONALLY	43
2.9.1	Malaysia	45
2.9.2	Hong Kong	51
2.9.3	Singapore	54
2.9.4	Thailand	57
2.9.5	Bhutan	59
2.9.6	South Korea	64
2.10	CONSTRAINTS TO IMPLEMENTATION OF EE	71
2.10.1	Constraints related to the status and relevance of EE	71
2.10.2	Constraints related to the support of active environmental learning	72
2.10.3	Constraints related to learning support materials	73
2.11	CONCLUSION	74

CHAPTER 3

RESEARCH METHODS AND DATA COLLECTION METHODS

3.1	INTRODUCTION	75
3.2	RESEARCH METHODS	75
3.2.1	Quantitative Approach	76
3.2.2	Data Collection Methods	77
3.2.2.1	Literature Study	77
3.2.2.2	Research Survey	78
3.2.3	Questionnaire as a research tool	79
3.2.3.1	Questionnaire designs	80
3.2.4	Nature of Questions	82
3.2.5	Reasons for selecting the Questionnaire as a tool for this study	83
3.2.6	Reliability and Validity	83
3.3	THE RESEARCH GROUP	84
3.4	DATA COLLECTION PROCEDURE	85
3.5	CONTENT VALIDATION OF THE QUESTIONNAIRE	87
3.5.1	Pretesting the questionnaire	89
3.6	RESEARCH ETHICS	89
3.7	PROCEDURE FOR DATA ANALYSIS AND PRESENTATION	90
3.8	CONCLUSION	92

CHAPTER 4

REPORTING AND ANALYSIS OF SURVEY DATA

4.1	INTRODUCTION	93
4.2	PRESENTATION AND DISCUSSION OF RESULTS	93
4.2.1	Biographical data of the respondents	94
4.2.2	Factor A - Environmental Literacy of Educators	95
4.2.3	Factor B – Educator’s Knowledge of Environmental Education	97
4.2.4	Factor C – Teaching Methods of Educators	100
4.2.5	Factor D – Environmental Practices of Educators	101
4.2.6	Factor E – Environmental Practices in Schools	102
4.2.7	Factor F – Environmental Awareness at Schools	104
4.2.8	Discussion of Results	106
4.3.	CONCLUSION	106

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS FOR INCLUSION AND IMPLEMENTATION OF EE

5.1	INTRODUCTION	107
5.2	SUMMARY OF FINDINGS AND CONCLUSIONS	107
5.2.1	Factor A - Environmental Literacy of Educators	108
5.2.2	Factor B – Educator’s Knowledge of EE	109
5.2.3	Factor C – Teaching Methods	110
5.2.4	Factor D – Environmental Practices of Educators	111
5.2.5	Factor E – Environmental Practices in Schools	112
5.2.6	Factor F – Environmental Awareness at Schools	113

5.3 RECOMMENDATIONS	114
5.3.1 Formulate EE guidelines	115
5.3.2 Develop an EE policy at South Korean schools	115
5.3.3 Appoint an EE coordinator	117
5.3.4 Develop a cross-curricular teaching curriculum	117
5.3.5 Training Educators	120
5.4 OVERCOMING COSTRAINTS FOR EE IMPLEMENTATION	122
5.4.1 Evaluation	123
5.4.2 Environmental activities	124
5.4.3 Resources	126
5.4 CONTRIBUTIONS OF THE STUDY	126
5.5 SUGGESTIONS FOR FURTHER RESEARCH	127
5.6 CONCLUSION	128
6. REFERENCES	129

7. APPENDICES

APPENDIX A: Letter to Gyeonggi Education Office – requesting permission to conduct research in Suwon

APPENDIX B: Prenotification letter to principals of schools in the sample informing them about the research.

APPENDIX C: Letter to Principals, attached to questionnaire, explaining the purpose to the study.

APPENDIX D: Letter to respondents explaining the purpose of the study.

APPENDIX E: Letter to the school reminding them to return the questionnaire

APPENDIX F: Questionnaire

CHAPTER 1

ORIENTATION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

From 3 to 14 June 1992, the United Nations held a major conference, the United Nations Conference on Environment and Development (also known as the Earth Summit). Agenda 21, adopted at the Rio Conference, states that governments should strive either to update or to prepare strategies aimed at integrating the environment and development as cross-cutting issues into all levels of education within the three years following the conference and that this should be done in cooperation with all sectors of society. In addition, it was recommended that these strategies set out policies and activities, as well as identify the needs, costs, means and schedules for the implementation, evaluation and review of the strategies. Article 21 also recommended that a thorough review of curricula should be undertaken in order to ensure a multidisciplinary approach to both environmental and developmental issues and their socio-cultural and demographic aspects and linkages (Agenda 21, Chapter 36.5b).

International documents suggest that governments throughout the world should promote education for sustainability. In this respect, several state and national governments have taken the lead in developing environmental educational policies and practices within the schools, for example, New South Wales, Australia, the Netherlands, and the state of Wisconsin in the United States of America (Jacobson, 2006:85).

In October 2004, a meeting of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was held in Bonn, Germany. This meeting was titled “Learning for Work, Citizenship and Sustainability”. The participants – all international experts on technical and vocational education and training – agreed that, in view of the fact that education may be considered as key to effective development strategies, then technical and vocational education and training (TVET) must be the key alleviating poverty, promoting peace, conserving the

environment, improving the quality of life for all and helping to realise sustainable development (UNESCO, 2004).

At the UNESCO World Conference on Education for Sustainable Development held in Bonn, Germany on 31 March to 2 April 2009, the following statement was issued:

Through education and lifelong learning we can achieve lifestyles based on economic and social justice, food security, ecological integrity, sustainable livelihoods, respect for all life forms and strong values that foster social cohesion, democracy and collective action. Gender equality, with special reference to the participation of women and girl children in education, is critical for enabling development and sustainability. Education for sustainable development is immediately necessary for securing sustainable life chances, aspirations and futures for young people (UNESCO, 2004).

However, despite the fact that efforts are being made worldwide to incorporate the issues of environment and development into education, environmental education often remains marginalised within the formal school setting. In addition, there is no consistency in the way in which conservation education is administered worldwide. In some countries, environmental education is housed within a ministry or department of the environment, whilst, in others, the ministry of education oversees the programming of conservation education. However, there are still several countries with either no formal policy in place and/or supporting institutions for environmental (conservation) education (Jacobson, 2006:85).

South Korea is one of the countries which have marginalised environmental education within the school context and this has been at the expense of its environment. It is, thus, essential that the country no longer procrastinate about incorporating environmental education into its schools.

1.2 POLLUTION IN KOREA

During the first two decades of South Korea's economic boom – 1960 to 1980 – little attention was paid to the damaging effects of rapid industrialisation on the environment with large industries becoming the primary contributors to air and water pollution (Microsoft Encarta,

2009). Silver (1990:2) aptly describes the sacrifice of the environment for the benefit of economic development as follows:

Raw materials are drawn from the earth to stoke the engines of the growing world economy, and we treat the atmosphere, land, and waters as receptacles for the wastes generated as we consume energy and goods in our everyday lives. Scientific evidence and theory indicate that, as a result of such activities, the global environment is undergoing profound change.

Industrial development has entailed massive land-reclamation projects, the drainage of wetlands, and the damming of rivers. Population densities increased rapidly in cities in which industries were located, thus creating urban congestion and an increased demand for additional development. South Korea's waterways became highly polluted in the 1970s as a result of industrial effluents, untreated sewage, and widespread soil erosion. Deforested mountainsides eroded at an alarming rate, thus silting rivers and streams (Microsoft Encarta, 2009).

Acid rain is another problem which arises from rapid industrialisation, with studies indicating that a large part of Asia is being threatened by acid rain. Factory smoke and automobile exhaust fumes contribute to the sulphur-oxides contained in the precipitation of this acid rain. Despite the fact that China is the largest producer of sulphur dioxide (SO₂) emissions in Asia (20 million tons of SO₂ emissions in 1987) South Korea is also a major producer of SO₂ (Lee, 2006:1).

Environmental problems, such as acid rain, which extend beyond national boundaries, are becoming an increasingly common phenomenon. Acid rain reduces visibility and pollutes lakes and streams, thus destroying fish and other forms of life. Acid deposition results from the chemical transformation and transport of sulphur dioxide and nitrogen oxides. Experts agree that the major strategy in solving the acid rain problem would be to reduce the emissions of sulphur and nitrogen oxides as, without these reductions, lakes and streams, groundwater, soils and forests will continue to become acidified and economic and aesthetic damage will be exacerbated. Statistics in the Environmental Statistics Yearbook 2008, compiled by the Ministry of Environment, Republic of Korea (MERK, 2002), confirm the increase in *acid rain* and *environmental toxin* levels in recent years.

The trend in *air pollutant emitting facilities* has also seen considerable increases in recent years with the trend in the *toxic chemicals in circulation* at an all time high. MERK (2002) acknowledges that South Korea is the tenth largest energy consumer in the world, with 97% of its energy consumption resulting from imported energy sources. This shows relatively high energy consumption rates with low energy efficiency. In addition, Korea's CO₂ emissions are also showing an upward trend. The result is that all these factors together are causing severe environmental degradation (MERK, 2002).

South Korea is facing several environmental problems and the inclusion of Environmental Education (EE) into the South Korean school curriculum has become a matter of importance. It is essential that the population be educated about the importance of the environment in order to enable the citizens of South Korea to overcome these environmental problems. Human beings are entitled to a healthy and productive life in harmony with nature (Couzens, 2006:1).

MacLeish (1990:1) aptly describes the environmental crisis which is being experienced, not only in South Korea, but across the globe:

These are bad days for divination. Pollution grows inexorably. The power of technology grows, too. But in the game of challenge and response, we can never be sure whether nature or human ingenuity will find ways to make the things we rightly fear go away – as the specter of nuclear winter, which terrified us not so long ago, now seems to have abated somewhat. It goes without saying that what is scary about the future is the environment, especially the possibility of a rapid climatic change followed by an almost unimaginable loss of a myriad of living things, perhaps even including us. At the very least there is an unsettling sense in some quarters that we may be rapidly heading toward the end of living as we've expansively known it, and the beginning of an elemental struggle just to survive.

It is hoped that the urgency of the global situation will catalyse the creation of a learning society in which people acquire sustainability literacy skills and dramatically enhance the ability of the

human race both to survive and to evolve (Davies,2010:11).

It is, thus, essential that education, including formal education, and public awareness and training, be recognised as a process in terms of which human beings and societies are enabled to realise their fullest potential. Education is critical both for promoting sustainable development and for improving the capacity of the people to address environmental and developmental issues. Davies (2010:11) has suggested six strategies with which to develop a learning society in order to assist humankind's evolution towards sustainability and to help learners acquire the sustainability literacy skills they will need to survive and to thrive in the 21st century whilst building a more sustainable world. These strategies include the following:

- *Creating learning communities* – There are many examples of collaboration in respect of learning. These include spiritual, professional, online and neighbourhood communities. World Cafés, for example, may bring a diverse range of participants together to share perspectives on sustainability issues. In addition, involvement in practical shared tasks, such as creating community gardens, may further stimulate active learning.
- *Learning from experience* – Although books and experts may be helpful, our own lived experience is a powerful teacher.
- *Fostering a new cultural worldview* – A learning society for sustainability could foster the development of a new cultural worldview based on respect for both the earth and the great diversity on which humans depend. The development of values and beliefs consistent with sustainability will require a shared understanding of the destructive consequences of the present Western worldview – a worldview that assumes that human beings have an inherent right to exploit the other species and exhaust the planet's resources – as well as a widely held desire to bring about a respectful and long-term relationship with the earth.
- *Thinking systematically* – This strategy is based on the belief that the parts of a system may best be understood within the context of their relationships with each other. Systematic thinking emphasises patterns, trends and feedback loops. Within a learning society, systematic thinking would focus on an understanding of the interactions between human and ecological systems, and on restructuring human systems to become more sustainable. Without systematic thinking, society will continue to apply ineffective

band-aid solutions that do little to resolve the underlying problems.

- *Embracing diversity* – A learning society would embrace diversity – not only different cultures and ethnicities, but also different ideas, beliefs and ways of knowing. We are able to learn from people who do not think like us because such people challenge our assumptions, beliefs and expectations. We are also able to learn from the wisdom of peoples and communities around the world that have proved their sustainability over hundreds and thousands of years. In the same way that the health of an ecosystem depends on its biodiversity, so the sustainability of human systems depends on cultural diversity and a diversity of ideas and practices.
- *Whole person learning* – A learning society could foster the development of whole person learning. This type of learning enables students to grow as authentic human beings and to develop their personhood and is very different from contemporary education, which focuses mainly on the intellect while ignoring ethical values, emotions, embodied experience and the grounded experience of place. Contemporary education equips learners with few of the practical skills which enable sensitive engagement with those around them, interaction with the local environment, and the navigation of a complex world. We need a learning society that engages and integrates the hearts, minds, hands and spirits of people (Davies, 2010:11).

The United Nations established the Brundtland Commission in 1983 "to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond". The Commission's final report expressed, in very simple language, the central issue, namely, the environment is where we all live and development is what we all do in attempting to improve our lot within that abode. These two issues are inseparable (Aitken, 1989:1).

Basic education provides the foundation for environmental and development education and, thus, it is essential that the latter be incorporated as an essential part of learning. Both formal and non-formal education are indispensable in changing people's attitudes so that they acquire the capacity both to assess and to address their sustainable development concerns. In addition, both formal and non-formal education are critical in instilling the environmental and ethical awareness, values and attitudes, and skills and behaviour which are consistent with sustainable

development and effective public participation in decision-making. In order to be effective, environmental and developmental education should focus on the dynamics of the physical/biological and socioeconomic environment with human development being integrated into all disciplines (Agenda 21, Chapter 36.2).

1.3 PROBLEM STATEMENT

Acting “for the environment” involves making certain decisions in an attempt to live out personal values through either individual or collective behaviour. Environmentally responsible behaviour refers to that behaviour which leads to sustainable development (Scott & Oulton, 1998:214).

It is vital that learners be educated about the environment in order to enable them to change their behaviour. Rasmussen (2000:1) explains the reason for educating learners as follows:

Humans and the environment are in constant interaction, therefore it's our responsibility to help learners understand the ecosystem where they live and the impact humans have on it. Our children will be responsible for making decisions that help preserve or make a healthy environment. For that, they need to know what a healthy environment is and how to make good decisions.

Accordingly, environmental education is “good education”. One of the features of good education is that it involves indoctrination to make others see things “our” way. When we become aware of the serious threat which environmental issues pose, we must want to make everyone else aware of the problem and we must want them to take action and to change their ways. In other words, educators need to provide students with the opportunities to learn about their world, to form their values and to build the skills needed to engage well with that world (Rosenberg, 2009).

In view of the fact that educators are the key role players in achieving positive environmental attitudes at school level and it becomes essential that the following research question be answered regarding the inclusion of EE in the South Korean school curriculum:

“Are South Korean educators informed about EE and what is their position regarding the inclusion of EE into the curriculum?”

Based on this research question the following tentative hypotheses may be formulated:

Hypothesis 1

South Korean educators have not received any pre-service or in-service training in EE.

Hypothesis 2

South Korean educators have a positive attitude regarding the inclusion of EE into the curriculum. They would like EE to be included into the curriculum and teachers to spend more time teaching EE.

1.4 AIMS OF THE RESEARCH

The main aim of this study is both to evaluate the knowledge of South Korean educators in respect of EE and to explore their views on the future position of EE in the South Korean school curriculum.

Accordingly, this research will seek to realise the following objectives:

- i) To understand the evolution of education in South Korea
- ii) To gain an understanding of the perceptions of South Korean educators regarding EE by using an empirical investigation
- iii) To provide guidelines for educators and education policy makers regarding the importance of the inclusion of EE in the curriculum in South Korean schools
- iv) To provide suggestions for the effective implementation of EE in schools

We continually make decisions that affect the environment, with these decisions ranging from deciding whether or not to recycle a soda can to bigger policy issues. In view of the fact that the state of the environment affects our quality of life, it is vital that EE become an essential part of the curriculum in schools in a democratic society (Rasmussen, 2000:1).

1.5 MOTIVATION FOR RESEARCH

1.5.1 Importance of the research

This investigation may be regarded as important because sustainable living is a global necessity and not merely the responsibility of any particular country or organisation. In the same vein, the inclusion of EE in the school curriculum is necessary, not only in other countries of the world, but in South Korea as well.

The impetus to research this topic arose from the following factors. Having studied EE for some time, having been trained as an educator of botany and zoology, and having taught biology at secondary school level, the researcher understands the importance of the environment. In addition, the researcher is aware of both the need for the sustainable use of the environment and the damage which human beings are causing to the environment. The researcher is also aware of the possible bleak future facing the environment if knowledge about its survival is not disseminated. It is, thus, imperative that more people show an interest in the environment.

On arrival in South Korea the researcher noted that the quality of the air and water in that country is of an extremely low standard. In fact, drinking water from a tap is not a “luxury” that foreigners and many Koreans are able to enjoy. Accordingly, the researcher realised the urgent need to start educating South Korean citizens about the impact that their actions are having on, not only the local, but also on the global environment.

According to Hungerford and Volk (1990:8), the ultimate aim of education is to shape human behaviour. Societies throughout the world establish educational systems in order to produce citizens who will behave in desirable ways.

1.5.2 Contribution to education

It is hoped that this study will be of particular significance to the curriculum planners in the

South Korean Ministry of Education, educators, school principals, school management teams, universities, colleges of education, whole school evaluators and personnel engaged in professional development activities. This study envisages informing these people about both the necessity of including EE in the school curriculum, and about the basic concepts and ideas of EE.

In addition, it is also hoped that the study may encourage the curriculum planners of schools and universities to design curricula that will include EE, as well as help all individuals and teams involved in the professional development of educators to start providing training to educators that will enhance the skills and knowledge of these educators and, thus, enable them to teach EE effectively, thereby producing environmentally literate citizens. The addition of environmental education does not add another layer to the curriculum, but it must become the common fabric that holds the curriculum together (Rasmussen, 2000:1).

In *Infobrief*, Archie (2001:1) discusses a report issued in 2000 by the National Environmental Education and Training Foundation in the United States which had reviewed those schools that had adopted environmental education as the central focus of their academic programs. According to that report “the results in all of the schools studied are impressive and heartening, as the nation searches for effective ways to improve the quality of education our children receive in public and private school.” The study showed that

- reading scores improved, sometimes spectacularly
- mathematics scores improved
- learners performed better in science and social studies
- learners developed the ability to make connections and to transfer their knowledge from familiar to unfamiliar contexts
- learners learnt to “do science” rather than just “learn about science”
- classroom discipline problems declined
- every child was given the opportunity to learn at a high level.

In the same article, Archie (2001:1) reports that the State Education and Environment Roundtable's study of EE strategies at 40 schools in the United States indicated that learners learn more effectively within an environment-based context than within a traditional educational framework. The study also found that performance in respect of the traditional measures of competence, as well as student enthusiasm and motivation, tended to improve.

This finding shows that, in addition to making students more environmentally conscious, the inclusion of EE in the curriculum may be beneficial to students in many other ways.

1.6 RESEARCH STRATEGIES AND METHODS

In order to gain a broader perspective of the research context the researcher conducted a literature review in the following fields: South Korean education system; South Korean teacher training system; speeches and press releases by the ministry of education in South Korea; pollution in South Korea; English education in South Korea; EE in various countries and the implementation, conferences and declarations, aims, goals, principles, history and teaching methods of EE.

It was decided that, based on the aims of this study and taking into account the language barrier, the quantitative approach would be the most appropriate approach for this study. Accordingly, a survey was conducted using a translated questionnaire which comprised closed ended questions only. The questionnaire was administered to a sample population consisting of both middle and high school educators (independent variable) with the aim of gaining an understanding of their level of knowledge about EE and gaining an insight into their attitudes towards the inclusion of EE in the curriculum (dependent variable).

The research group for this study came from the Gyeonggi Province in South Korea with the research being confined to Suwon city, as this was where the researcher was living. The school system in South Korea includes elementary (Grades 1–6), middle (Grades 7–9) and high (Grades 10–12) schools. The research group included educators from middle and high schools in Suwon city.

In order to ensure that certain characteristics of the population were adequately represented by the sample, stratified random sampling was used twice. Firstly, in order to ensure that there was a fair representation of both middle school and high school educators in the sample, two lists were drawn up – a list of middle schools and a list of high schools. These lists were arranged in alphabetical order (Korean) and systematic sampling was used to select every third school from the list, starting from the second school on each list.

Secondly, stratified random sampling was used for the target population. A target population of eight teachers per school – four males and four females from each of the selected schools – was requested to complete the questionnaire. Accordingly, of the 88 middle and high schools in Suwon, 29 schools were chosen for the sample. Each school was represented by eight educators, thus resulting in a total number of 224 teachers participating in the survey.

Based on the fact that the minimum requirement to become an educator in South Korea is a university degree with a teaching certificate, it was assumed that all the educators were literate and that they would be able to understand the questions in the questionnaire. It was also assumed that the questionnaire would be completed by the educators themselves and not by their students, relatives, spouses or children.

1.7 LIMITATIONS OF THE RESEARCH

The first limitation to this research is the focus placed by the South Korean Ministry of Education on English education. According to *The Guardian* (Card, 2006), South Koreans are spending \$15,3 billion a year on private English lessons. Although South Koreans appear to have an insatiable appetite for education, they remain hampered by a low self-esteem in respect of their own ability as linguists (with reference to English). Each year South Koreans spend \$752 m on tests of English, with a large proportion of this amount being spent on the Teaching of English Foreign Language (Toefl) assessment test, which is produced by the American company, Educational Testing Service (ETS). Currently, South Korea comprises the world's largest market for Toefl and, yet, according to a 2004 report of the Korean Government Information Agency,

South Koreans ranked a dismal 110th on the ETS's global Toefl rankings. According to Dr Lee Byung-min of Seoul National University's Department of English Language Education, the study of English has, for nearly all South Koreans, become a kind of ideology. This attitude is influenced by the belief of many South Koreans that English is essential for their upward social and economic mobility (Card, 2006).

The South Korean Government is concentrating mainly on improving the English linguistic skills of its scholars and, thus, EE rates extremely low on the government's list of priorities. Accordingly, the recommendation that EE be included in the curriculum, necessary though it may be, will probably not be taken seriously by the government and ministry of education at the moment, as their focus is on improving English education. Nevertheless, recommendations emanating from this study may serve to educate the ministry about the importance of the inclusion of EE inclusion in the curriculum.

The second limitation as regards this research study is as a result of the low level of English in South Korea. It was necessary to translate all the correspondence, information and questionnaires which were distributed for the benefit of this study and, for this, professional translators had to be paid. During translation there is always a possibility of minor errors occurring and, thus, in order to overcome this problem, a person competent in both English and Korean was requested to double check the translation in order to ensure a minimum number of errors and no misinterpretations.

The third limitation in respect of this study is the fact that all correspondence and information relating to South Korean education is usually found in Korean. There are a few websites that translate some of the information from Korean to English for the benefit of non-Koreans and post them on an English website. The website is the Ministry of Education, Science and Technology (Mest) <http://english.mest.go.kr/main.jsp?idx=0201010101>. Also, the news is also translated on very few websites, with the most common and popular website being KOREA.net. http://www.korea.net/news/issues/main_issues.asp?issue_no=131. There will, thus, be several references to these websites in this study.

The final limitation in respect of this study has to do with the workload of educators in South Korea. Educators often do not attend in-service training and many educators leave school until long after the school day has ended as a result of their enormous workloads. There was, therefore, a possibility of a low return rate of the questionnaires, as the educators may have perceived these questionnaires as an extra burden in their already overloaded schedules. As an incentive, a small gift was attached to each questionnaire in order to motivate the educators to complete the questionnaires. In addition, a self-addressed, stamped envelope was included in order to avoid any further inconvenience to the educators.

1.8 TERMINOLOGY

1.8.1 Education

Education is often defined as a process of imparting or acquiring general knowledge, developing the powers of reasoning and judgement, and preparing oneself or others intellectually for mature life (Jacobson, 2006:10).

1.8.2 Environment

The Merriam-Webster's Online Dictionary (2009) defines the environment as the complex of physical, chemical, and biotic factors (climate, soil, and living things) that acts upon an organism or an ecological community and, ultimately, determines its form and survival.

1.8.3 Curriculum

The ASCD (Association for Supervision and Curriculum Development, 2009) states that the term *curriculum* is reserved for the entire educational programme of an institution; it is the locus of corporate responsibility for learning that engages faculty, trustees, administration, and students. Accordingly, the curriculum encompasses all those sectors of an institution which are involved with the process of teaching and learning.

1.9 CHAPTER DIVISION

Chapter 1 comprises the introduction to the study. It provides the background to the study and discusses the importance of conducting this research. The problem to be researched and the

research methodology used are introduced. In addition, the terminology used in the dissertation is clarified and the statement of the research problem, hypothesis and aims are also presented.

Chapter 2 will examine the literature relevant to the study.

Chapter 3 will describe the research design and the methodology. The data collection methods and research instrument will also be discussed.

Chapter 4 will present the results and interpretation of the research findings.

Chapter 5 will provide a summary of the findings and the conclusions. Recommendations for the effective inclusion and implementation of EE policies in South Korean schools will also be offered.

The sources consulted in this research study are listed in the bibliography.

1.10 CONCLUSION

This chapter discussed the problem statement, motivation for the study, and the aims and limitations of the study. It also highlighted the methods of investigation used and defined important concepts. The next chapter will review the literature relevant to the study.

CHAPTER 2

AN OVERVIEW OF THE LITERATURE REVIEW

2.1 INTRODUCTION

This chapter attempts to provide an overview of both the Korean Education System and EE. The education system; the national curriculum; pre-service and in-service training for educators in South Korea, as well as EE in Korea, are discussed. In addition, the definition, aims, goals, objectives, principles and teaching methods of EE are explained. The implementation of EE in various Asian countries is reviewed and the constraints experienced by educators in implementing EE are explored. The attempts made by the government of South Korea to bring about greater environmental awareness are also outlined.

2.2 THE KOREAN EDUCATION SYSTEM

South Korea, officially the Republic of Korea (ROK), is a homogeneous society with the majority of the population being of Korean ethnicity. The capital is Seoul – the second largest metropolitan city in the world and a major global city. South Korea covers a total area of 100 032 square kilometres and has a population of over 48 million, thus making it the third most densely populated country in the world (after Bangladesh and Taiwan). As a result, education in South Korea is regarded as crucial to success and, consequently, competition is both heated and fierce. South Korea's education system is highly advanced technologically and South Korea was, in fact, the first country in the world to supply high-speed, fibre-optic, broadband internet access to every primary and secondary school in the country (WorldAtlas.com, 2010).

2.3 THE MINISTRY OF EDUCATION AND HUMAN RESOURCE DEVELOPMENT

The Ministry of Education and Human Resources Development in South Korea is the government body which is responsible for the formulation and implementation of policies related to academic activities, the sciences and public education. In terms of the education ideology of

Hongik Ingan, which envisions all Korean citizens developing into ideal citizens with enhanced self-sustaining capabilities to contribute to the democratic development of both the nation and the welfare of humankind, the Ministry plans, formulates and coordinates the educational policies that govern primary, secondary and higher educational institutes, publishes and approves textbooks, provides administrative and financial support at all levels of the school system, supports local education offices and national universities, operates the teacher training system and is responsible for overseeing lifelong education and developing human resource policies (Ministry of Education, Science and Technology (Mest), 2008).

The Education Innovation Council counsels the President of South Korea regarding strategies and policies for education and human resource development geared toward producing the human talent necessary in the knowledge-information society of the 21st century. This Council was established in terms of the Innovation Council Regulations, promulgated on 23 June 2003. The major function of the Education Innovation Council is to advise the President on such matters as the drawing up of mid- to long-term plans for policies on education and human resource development, major education policies, education innovation systems, efficient execution of the education finances, securing the education budget, and conducting assessments of education innovation policies (Wikipedia, 2009).

The Ministry of Education, Science and Technology (2008) has as its core mission the nurturing of the basic learning capacities of pre-school children and the provision of appropriate education for both primary and secondary students with special abilities in certain fields. Its focus is also on the specialisation policy for higher education in order to equip universities to be internationally competitive and to cultivate those talents required by both industry and local society. It also endeavours to expand lifelong learning programmes and access to these programmes across South Korea.

Whilst there may be different approaches and voices in respect of education in South Korea, there exists the one common goal; that education should offer hope to and create better opportunities for all. Despite the fact that the pursuit of profit through environmental consumption may bring immediate economic wealth, in the long run, this pursuit of profit does

constitute a threat to both the wellbeing of human beings and to a good, healthy environment (Lee, 2003).

2.4 THE DEVELOPMENT OF EDUCATION

2.4.1 Pre-modern education (until the 19th century)

Informal education in South Korea, which may be traced back to the prehistoric times, ended with the establishment of “Taehak” in the year 372 during the Goguryeo era. Taehak is regarded as the earliest form of formal education. The curriculum consisted of ethics education, which was focused on cultivating the morals of the learners and educating the general public, and was based on Confucianism and Buddhism. Modern schools, which were first introduced in the 19th century, comprised both national and private education institutes which were established by Christian missionaries and members of the independence movement. From this period onward, many private schools founded by Western missionaries began to appear throughout the country (Fischer, 2004).

In the 19th century, national leaders, who were resisting the Japanese intrusion, pressed for the independence movement to save the nation through education. Their primary focus was on educating future leaders to achieve national independence. After liberation from 35 years of Japanese colonial rule in 1945, a foundation for democratic education was established. Education in South Korea has undergone numerous transformations as a result of changing objectives according to the needs of the time. The government set the direction for democratic education and expanded basic education to enhance democracy, growth in terms of the numbers in education (quantitative growth), educational reform, and growth in terms of performance – improvement in the quality of education (qualitative growth) (Fischer, 2004).

2.4.2 Expansion of democratic education (1945–1950s)

In order to lay the foundation for democratic education after liberation in 1945, education policies were directed toward the objectives (listed below) within the framework of the

Constitution. The Education Law for Korean education was enacted and promulgated and was followed by the provision for educational autonomy and the implementation of compulsory education.

The objectives of education policies were as follows:

- The compilation and distribution of primary school textbooks
- Reform of the school ladder system to a single track system following a 6–3–3–4 pattern: elementary school (1st to 6th grades), middle school (7th to 9th grades), high school (10th to 12th grades) and junior college, college and university (4 years)
- Adult education in respect of literacy and supplementary, in-service training for educators
- Incremental expansion of educational opportunities for secondary and higher education and the creation of teacher colleges (School Accountability Framework Review, 2006)

2.4.3 Quantitative expansion in the 1960s and 1970s

Together with the rapid economic growth, significant changes took place in many spheres of life and, in order to manage these changes, efforts were made to bring about rapid quantitative growth in the education sector. The most outstanding feature of educational development in South Korea during the 1960s was its quantitative expansion in terms of student population, education facilities, and the number of educators. However, such rapid growth in the learner population inevitably resulted in overcrowded classrooms, oversized schools, a shortage of fully qualified educators and educational facilities, as well as intense competition in terms of the college entrance system. Such shortfalls necessitated the reform of the entrance examination system in order to normalise education at all levels within the schooling system (School Accountability Framework Review, 2006).

The following measures were introduced in order to manage the changes:

- Teacher/education reform
- Establishing the Graduate School of Education to carry out the functions of in-service

training and education for educators

- Abolishing the middle school entrance examination
- Improving the local university system and establish junior colleges
- Establishing broadcast and correspondence colleges and high schools
- Institutionalising a standard examination as a preliminary screening mechanism for the college entrance examination in an effort to normalise high school education
- Upgrading general high schools to two-year colleges of education to train primary school educators. Institutions providing training to secondary school educators were upgraded to four-year teacher colleges (Ministry of Education, Science and Technology (Mest), 2008).

2.4.4 Qualitative development in the 1980s

The innovative efforts made during the decade prior to the 1980s to modernise the educational system were carried over into the 1980s, particularly in respect of those aspects related to the normalisation and improvement of educational quality. The government accepted an educational policy to promote the success of education. In the constitution the government stipulated the need for lifelong education as well as emphasising both the role of education in raising wholesome citizens of society and the role of education innovation in pursuing science and lifelong education.

The following measures were introduced with the aim of achieving these goals:

- Building of a broadcasting system dedicated exclusively to education programmes
- Implementing a college graduation quota system
- Creating an educational tax system to finance educational reforms
- Abolishing the main entrance examination and giving high school achievements greater weight in determining qualifications
- Introducing the Social Education Act and Early Education Promotion Act (Ministry of Education, Science and Technology (Mest), 2008).

In March 1985, the Commission for Educational Reform was inaugurated as the consultative body on education for the President. The ten education innovation measures listed below were proposed for implementation by December 1985 with the aim of “Cultivating Koreans to lead the 21st century.” The innovative measures were as follows:

- Reforming the education system
- Improving the college entrance system
- Upgrading school facilities
- Securing high quality educators
- Promoting science education
- Improving the curriculum and methodology
- Improving college education
- Promoting autonomy in education administration
- Establishing a lifelong education system
- Expanding educational investments

These objectives have been pursued on an ongoing basis (Ministry of Education, Science and Technology (Mest), 2008).

2.4.5 Human education preparing for future society: the 1990s and beyond

On the basis of the pursuit of quality in education which characterised the 1980s, Korean education, during the 1990s, emphasised the concept of human education preparing for the future. Due to take effect on 27 December 1990, the Ministry of Education streamlined its organisation with the clarification of its role. New laws for the promotion of local autonomy were enacted. Since 1990, education policies have focused largely on the upgrading of the education system while expanding the scope of mandatory education, widening the supply of secondary education services, and increasing opportunities for higher education have all contributed to the fulfilment of personal goals and national development (Kim, 2004).

The 8th Five-Year Plan for Economic and Social Development (1997–2001) focused on the future

in terms of producing well-rounded citizens, pursuing efficiency, enhancing independence, and creating a balance in order to expand education opportunities. Plans for education reform which were first announced on 31 May 1995 have continued to be implemented with success to the present. One such reform is the attempt to rectify the problems of the past – which had resulted from the rapid expansion of tertiary education – and, thus, catapult South Korean universities into the global education market. Recent higher education policy issues have focused on the following broad areas: the restructuring of institutions; a new admission system; the merger and acquisition of institutions; specialisation and diversification through the building of networks and cooperatives; globalisation and internationalisation. It stands to reason that none of these reforms really stand alone, as they are all intertwined and overlap (World Resources Institute, 2002).

On 6 December 2007, the Ministry of Education and Human Resources Development in South Korea announced a road map designed to enhance the lifelong learning capacity of all South Koreans and to raise the country's national competitiveness. This road map took the form of the 2nd Five-year Lifelong Learning (LLL) Promotion Plan, which was to be implemented during the years 2008 to 2012. This plan follows on the completion of the first national lifelong learning promotion plan which was implemented between 2002 and 2006.

With the overall revision of the Lifelong Learning Act, the Ministry also recognised the need both to reorganise LLL support functions such as the National Institute for Lifelong Education, and to provide guidelines for the introduction of related systems and regulations. In terms of its implementation, the Ministry sought to improve the lack of linkage between programmes and projects as identified under the 1st LLL Plan, and to develop a more holistic and organic system that would ensure more effective delivery of lifelong education (Choi,2006).

Visions and objectives of the 2nd National LLL Promotion Plan include the following:

(1) Vision: Learning together, Working together, Living together

- Joyous learning: Lifelong learning releases the innate creativity of individuals, thus

helping them solve problems and find genuine pleasure in the course of self-realisation.

- **Future learning:** Lifelong learning is a compass that will guide people through an uncertain future. It helps them shape their own futures and be prepared for all the challenges in life.
- **Integrated learning:** Lifelong learning is the ultimate safety tool with which to counter low fertility rates, population ageing, social polarisation, poverty and other new risks. It provides a linkage between study, employment, and welfare and culture, and helps people gain a deeper understanding of others, thus promoting diversity and co-existence.

(2) Objectives

In terms of the vision to create an advanced LLL society in which all members learn, work and live together in harmony, the Ministry's core objectives in implementing the 2nd National LLL Promotion Plan include

- nurturing creative knowledge workers who will contribute to national competitiveness
- fostering social cohesion and integration by minimising potential social risk factors through the promotion of LLL
- establishing an efficient lifelong learning infrastructure, including an evaluation and accreditation framework in terms of which to assess diverse learning outcomes.

This plan comes as an attempt to deal with the current and future structural changes taking place in South Korea's population and industry and which have been caused mainly by low fertility rates and population aging. Domestically, the plan is meant to serve as a security valve that will induce social integration while, internationally, it is hoped that the plan will help meet growing demands to develop a globally adaptable framework of education and accreditation (Choi, 2006).

2.5 CURRICULUM

The Ministry of Education and Human Resources Development oversees the national school

curriculum, which is aimed at ensuring equal educational opportunities for all and maintaining the quality of education. The national curriculum and regional guidelines accord flexibility to individual schools in accordance with the particular characteristics and objectives of each school. The national curriculum is revised on a periodic basis in order to reflect the newly emerging demands for education, the emerging needs of a changing society, and the new frontiers in respect of the academic disciplines. The government has undertaken seven curriculum revisions in order to meet national and social needs, as well as to keep up with the changes in respect of various factors related to research development (Kim, 2004).

2.5.1 The Seventh Curriculum

The Seventh Curriculum, which was introduced on 30 December 1997, was initially applied to primary first and second grade learners in the 2000 school year and was gradually expanded to 12th grade learners in 2004. The application of curricula in primary schools started with the 1st and 2nd grades in 2000, followed by the 3rd and 4th grades in 2001 and the 5th and 6th grades in 2002 (Asia Society, 2008).

In order to prepare learners for the 21st century – the era of globalisation and a knowledge-based society – the Seventh Curriculum attempts to break away from the spoon-fed and short-sighted approach to education of the past and adopt a new approach in the classroom aimed at producing human resources capable of facing new challenges. The study loads for each subject have been reduced to an appropriate level while curricula that accommodate the different needs of individual learners have also been introduced. Independent learning activities designed to enhance the self-directed learning required in a knowledge-based society have either been introduced or expanded (Wikipedia, 2009).

Accordingly, the Seventh Curriculum is a learner-oriented curriculum which, unlike the curricula of the past, emphasises individual talent, aptitude, and creativity. The Seventh Curriculum defines the desired image of an educated person as follows:

- A person who seeks individuality as the basis for the growth of the whole personality

- A person who exhibits a capacity for fundamental creativity
- A person who pioneers a career path within the wide spectrum of culture
- A person who creates new values on the basis of understanding the national culture
- A person who contributes to the development of the community on the basis of democratic civil consciousness (Kim, 2004)

2.6 OVERVIEW OF THE SCHOOL EDUCATION SYSTEM

The school system in South Korea follows a 6–3–3–4 ladder pattern which consists of elementary school (1st to 6th grades), middle school (7th to 9th grades), high school (10th to 12th grades) and junior college, college and university (4 years). Elementary school provides six years of compulsory elementary education to children between the ages of six and 11. Middle school offers three years of lower secondary education to those aged 12 to 14, while high school offers three years of higher secondary education to students aged 15 to 17. High school graduates may then choose to apply to either a junior college or to a college or university in order to receive higher education (Diem, Levy & VanSickle, 2008).

High schools are generally divided into two categories, namely, general and vocational. Correspondence high schools are included in the former, while agricultural, commercial and technical high schools are included in the latter. There are a limited number of schools of the so-called “comprehensive” type which offer both general and vocational training. There are also science high schools and other speciality high schools, including foreign language high schools, art high schools and athletic schools. Institutes of higher learning include two- or three-year junior vocational colleges and four-year colleges and universities. Both the universities of education and the colleges of education offer four-year courses (Asia Society, 2008).

In addition to the general school ladder system, there are secondary level trade schools which provide highly specialised vocational training. Civic schools, originally intended to offer literacy courses, now provide elementary and secondary level education to mainly financially underprivileged learners. However, with the compulsory education requirements now extending to the 6th grade, these schools are gradually disappearing. There are also special needs schools

offering elementary and secondary education for the deaf and blind and for learners with other learning difficulties. Preschool education is provided by kindergartens (Asia Society, 2008).

2.6.1 Preschool education in Korea

Preschool education is not included in the formal school system. However, its importance justifies attention in relation to the formal school system. Kindergarten is the main facility for preschool education in South Korea. Kindergarten education aims at providing an appropriate environment for the nurturing and development of learners on the basis of various pleasant activities and diverse methods of instruction (The Schommunity Wiki, 2007).

The Korean Kindergarten Curriculum comprises five life areas: health, social relationships, expression, language and inquiry. The characteristics and objectives of each are as follows:

Health is designed to help young children develop the basic physical strengths needed for a positive sense of self and for daily life. It is also intended to develop harmonious minds and bodies in young children. The objectives of the health life area include helping children to recognise their bodies in a positive way and to develop both the basic physical strengths needed for daily life as well as healthy and safe living habits.

Social relationships are designed to help young children develop knowledge and value of self, learn to cooperate with others, and take an interest in and adapt to the surrounding environment. The objectives of this life area include developing self respect and living in harmony with others.

Expression is intended to help young children develop a rich sensitivity, aesthetic appreciation and creative expressive abilities, and also to pay attention to various artistic expression methods and foster appreciative skills. The objectives of this life area include developing both an aesthetic appreciation and creative expressive skills through artistically expressing and appreciating thoughts and feelings.

Language is designed to help young children enjoy language in the context of their daily lives, develop communication skills and use language properly and appropriately. The objectives of

this life area include developing the basic linguistic abilities needed for reading, writing and to be able to enjoy using polite language happily.

Inquiry is designed to help young children think, respect nature and develop problem-solving skills. The objectives include developing a basic literacy in terms of respecting nature, creative exploration and logical problem solving (Ministry of Education, Science and Technology (Mest), 2008).

2.6.2 Elementary education in South Korea

Although the relevant legislation was enacted in 1948, because of the post-Korean War rehabilitation effort, elementary education for children was not made compulsory until 1953. The Constitution stipulates in Article 31 both that it is the responsibility of all parents and guardians to ensure an elementary school education for their children aged 6 to 11 and that this education is free. Article 93 of the Education Act states that the goal of elementary school education is to teach the fundamentals necessary for a productive civic life. In order to realise this objective, the basic curricula for elementary school education are divided into nine principal subjects: moral education, Korean language, social studies, arithmetic, natural science, physical education, music, fine arts and the practical arts. However, subject matters in grade 1 and 2 are integrated in order to reflect "disciplined life", "intelligent life" and "pleasant life" (Constitution of South Korea, 1987).

2.6.3 Secondary education

Secondary education is divided into the lower secondary (middle) school and higher secondary (high) school levels.

2.6.3.1 Korean middle schools

Upon completing elementary school, learners between the ages of 12 and 14 are allowed to enter middle school for the 7th to 9th grade courses. Middle school in South Korea marks a considerable shift from elementary school, with learners being expected to spend much more time studying than previously. At most middle schools the regulations in respect of school

uniforms and prescribed haircuts are enforced fairly strictly, and there are certain aspects of the learners' lives which are highly controlled. In elementary school, learners spend most of the day in the same homeroom classroom with the same classmates although they have different educators for each subject. Educators, thus, move around from classroom to classroom (Asia Society, 2008).

Most middle school learners attend six lessons a day and, in addition, usually have an early morning block that precedes regular lessons and a seventh lesson specialising in an extra subject to finish the day. Unlike high school, middle school curricula do not vary much from school to school. Mathematics, English, the Korean language, social studies, and science form the core subjects with students also receiving instruction in music, art, physical education, history, *Hanja* (Chinese characters), ethics, home economics, technology, and computers. The subjects studied and the time spent on each subject varies from year to year (Diem et al, 2008).

All regular lessons are 45 minutes long. Before school, learners have an extra block – 30 or more minutes long – that may be used for self-study, watching the Educational Broadcast System (EBS) broadcasts, or for personal or class administration. As from 2008, learners have been attending school from Monday to Friday with a half-day on every first, third, and fifth (calendar permitting) Saturday of the month. Saturday lessons usually include club activity (CA) lessons during which learners may participate in extracurricular activities (Wikipedia, 2009).

2.6.3.2 Korean high schools

High school education aims at providing advanced general and specific education on the basis of the middle school education. The period of study at this level extends for three years. Previously, admission into high school was based primarily upon the grades received at the high school entrance examination. However, on revision of the Education Act of 31 May 1995, there are now various new ways for selecting learners for admission, including taking into account the so-called "school activities records" in which both the achievements and the defaults of learners, during their three years in middle school, are recorded. Accordingly, schools may, when screening freshmen learners for admission, either select learners according to the school

activities records alone, take into account both the school activities records and the examination test scores, or else take into account examination test scores only (AsianInfo, 2000).

As a result of the introduction of these individualised standards for school admission, small-sized specialised high schools in areas such as music and the arts, as well as mathematics and science ,have been, and will continue, to be established. Unlike middle school education in South Korea high school is not mandatory. However, according to a 2005 study conducted by the Organization for Economic Co-operation and Development (OECD) into 31 member countries; including Austria, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey, United Kingdom, Germany, Spain, Canada, United States, Japan, Finland, Australia, New Zealand, Mexico, Czech Republic, Hungary, Poland, Republic of Korea, Slovakia and Chile, almost 97% of South Korea's young adults do complete high school. This was the highest percentage recorded in any country (Wikipedia, 2009).

2.6.4 Higher (tertiary) education in Korea

There are four categories of institutions for higher learning: (1) colleges and universities with four-year undergraduate programmes (6 years in medical colleges); (2) junior colleges; (3) universities of education and colleges of education; and (4) miscellaneous institutions such as theological colleges and seminaries (StateUniversity.com, 2010).

All institutes of higher education, whether public or private, come under the supervision of the Ministry of Education, with the Ministry having control over such matters as learner quotas, qualifications of teaching staff, curricula and degree requirements. Higher education aims at the teaching and studying of fundamental academic theories and their various applications as deemed necessary for the progress and enlightenment of both society and the global community, with the overall aim of nurturing the nation's future leaders (AsianInfo, 2000).

2.6.4.1 Entrance examinations in South Korea

Colleges and universities in South Korea operate under strict enrolment limits. The college entrance examination system underwent a drastic reform in 1981. The main entrance examination was abolished and a new system introduced that combined scholastic achievements in high school with the score obtained in the nationwide qualifying examination in order to determine the applicant's eligibility for admission (Wikipedia, 2009).

In an effort to broaden the autonomy of colleges and universities and to normalise high school examination-bound education, a new entrance examination was introduced in April 1991. In terms of this new system, the students' high school records accord for 40% of the overall admissions decision. In addition, this new system also gave individual colleges the right to decide how to weigh the applicants' college scholastic achievement test scores with those administered by the colleges themselves (AsianInfo, 2000).

2.6.4.2 Korean junior vocational colleges

Junior colleges offer two- or three-year post-secondary programmes and were established as a result of the increased demand for technical manpower during the period of rapid industrialisation.

Trade high schools located in local areas were upgraded to junior colleges in an attempt to widen the scope of support for local universities and to train/supply professional/industrial human resources in preparation for localised industrial development. Financial support has focused on students in the fields of natural science and engineering. The junior vocation colleges represent a merger of the former two-year junior colleges and the two to three-year trade high schools. Since their establishment in 1979, the number of junior colleges has, as of 2004, grown to 158 with an enrolment of 602 270. These colleges are now playing a major role as short-term higher education institutions. Their specialised courses are grouped into professional majors such as the humanities and social studies, natural sciences, engineering, arts and physical education, and medical health studies that all take two to three years to complete (Kim, 2005).

Despite the fact that junior vocational colleges focus on a practical education which is aimed at producing mid-level technicians, they do not necessarily represent a terminal point in education as they also provide an opportunity for those students who would like to continue their education at university level. For employed youths, they also provide avenues for continued education. As efforts are being intensified to ensure the relevance of junior college education, the percentage of the employed graduates of these colleges is increasing (Kim, 2005).

2.6.4.3 Colleges and universities in South Korea

Colleges and universities offer four- or six-year courses with the latter including medical and dental colleges. College education aims to promote the proliferation of knowledge for the betterment of both the nation and society as well as to prepare students for leadership roles. Colleges and universities have shown considerable quantitative and qualitative growth in the present decade.

There are over 600 fields of study offered at colleges and universities. These include literature, theology, fine arts, music, law, political science, economics, business administration, commerce, physical science, home economics, physical education, engineering, medicine, dentistry, public health and nursing, pharmacology, agricultural science, veterinary medicine, and fisheries. However, course selection does vary according to the specific institution.

Both international students and foreign learners of Korean origin are welcome and may be admitted at any level and at any school. In addition, all those learners who have a high school diploma or its equivalent are eligible for admission to the undergraduate programme (AsianInfo, 2000).

2.6.4.4 Korean graduate schools

The Education Act stipulates that a university must offer one or more graduate school offering research-oriented courses for graduate learners who aspire to academic or professional careers. Since 1997, there have been 116 general graduate schools attached to general universities and 476 professional graduate schools, including six graduate schools, established at open-admission

universities. Those students who complete the required credits and who pass two foreign language examinations as well as a comprehensive examination for doctoral degree studies are entitled to write dissertations (Kim, 2005).

2.7 TEACHER TRAINING

2.7.1 Pre-service training for teachers

Korean students who wish to become educators may choose between junior colleges, teacher colleges, four-year colleges, universities or graduate schools. Admission to these institutions is highly competitive and is determined by both grades and an entrance examination score. Colleges and universities offer bachelor's degrees after four years of study; two additional years in the same subject may earn a master's degree while three more years of study entitles the candidate to a doctorate. After obtaining a bachelors degree graduates are required to write a qualification examination and only then may they be employed as educators (International Student Exchange Programs [ISEP], 2008).

According to an announcement by the Ministry of Education and Human Resources Development on 1 October 2007, from 2009, new educators were to be appointed on the basis of an intensive three-stage qualification system. Teacher candidates would first to be required to sit for a selection-based written test, then write an essay test, and, finally, their practical class instructional ability would be assessed by means of both an in-depth interview and a demonstration test. This change constituted an attempt to improve the previous qualification system which had required two stages of evaluation only and with too much emphasis being accorded a candidate's ability to memorise by rote. By revising the qualification system the education ministry was seeking to select teachers of excellence who had adequate academic qualifications, good personalities and high levels of professionalism (Andrew, Howe, Kane & Mattison, 2007).

2.7.2 In-service training of teachers

The aim of the in-service training offered to educators is to provide training for certificates as well as professional job training in order to establish a sound foundation in educational theory

and methodology while, at the same time, enhancing the ability of educators to perform efficiently in the classroom. Training programmes are available for Grade I and Grade II educators, librarians (Grade I), nursing teachers (Grade I), professional counsellors (Grade I), vice-principals, and principals. Each programme lasts 30 days (180 hours) or longer (Andrew, Howe, Kane, & Mattison, 2007).

These training programmes are categorised according to the purpose of the training, namely, information digitalisation, curriculum formulation training, general training, and teaching training. The head of the programme is free to determine the course, the content, and the period of training contingent on the purpose of the training. The performance of educators is quantified at these training programmes for the purpose of utilising the data obtained as regards the promotion of educators and wage increases (Andrew et al., 2007).

Institutes providing teacher training include primary education training institutes, secondary education training institutes, educational administration training institutes, comprehensive education training institutes and distance education training institutes. In addition, teacher training institutes are established at universities, teacher colleges, local education offices or other organisations designated by the Ministry of Education and Human Resources Development in South Korea (Ministry of Education, Science and Technology (Mest), 2008).

In South Korea it is essential that EE prepare individuals to be responsive to a rapidly changing technological world, to understand contemporary world problems, and to provide the skills needed to play an effective role in the improvement and maintenance of the environment.

2.8 AN OVERVIEW OF ENVIRONMENTAL EDUCATION (EE)

Since the early 1970s, EE has made considerable progress in recognising an ecosystem approach as the underlying structure for fostering biodiversity and ecological awareness and, in some cases, environmentalism. Typically, as part of the overarching framework of science education, EE in schools represents an inclusive and multidisciplinary way for developing ecological awareness and fostering relations between learners and nature. Through EE, educators encourage citizens (including youths) to participate more fully in local policymaking and in protecting the

quality of the atmosphere, oceans, forests, and the soil (Mueller & Bentley, 2009:53).

In view of the fact that the environmental awareness of young people influences their actions in terms of the environment, not only in the present, but also when they reach adulthood, it is essential that they be encouraged to act in such a way as to benefit the environment. Accordingly, EE for young people, including children, is of the utmost importance especially as it represents a proactive movement directed at both the sustainability of resources and the formulation of innovative solutions to environmental problems. In other words education programmes in schools are one way of enhancing an awareness of the environment.

According to the ASCD (2009), EE may be defined as the teaching about the natural and built environment which provides a real-world context for learning by linking the classroom to the students' community. EE, thus, provides learners with the opportunity to engage in hands-on, active learning that increases their knowledge and awareness about the environment. As a result of the fact that environmental education encourages inquiry and investigation, learners develop critical thinking, problem-solving, and effective decision-making skills. In addition, environmentally literate learners become citizens who are able to weigh various sides of an environmental issue and make responsible decisions both as individuals and as members of their community. Quality, standards-based environmental education improves everyday life by protecting human health and encouraging the stewardship of natural resources.

2.8.1 Definition of EE

The first known definition of *Environmental Education in the school curriculum* was drawn up at the conference of the International Union for the Conservation of Nature (IUCN) in Nevada, United States of America, in 1970. This definition is as follows:

EE is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biological surroundings. EE also entails practice in decision making and self-formulation of a code of behavior about issues concerning environmental quality

(Bornman, 1997:58).

Wikipedia (2009) defines EE as follows:

EE refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary education. However, it is sometimes used more broadly to include all efforts to educate the public and other audiences, including print materials, websites and media campaigns. Related disciplines include outdoor education and experiential education.

In order to educate people about the environment, guidelines in the form of aims, goals and objectives of EE have been developed so as to assist policy makers, curriculum planners, educators and all those people involved in EE to focus on specific aspects of EE.

2.8.2 Goals and objectives of EE

Goals and objectives for EE were formulated by the representatives at the 1977, Tbilisi Inter-governmental Conference on Environmental Education held in Tbilisi, USSR (Soviet Russia) (UNESCO, 1977:26–27). They are as follows:

Goals of EE:

- To foster a clear awareness of and concern about the economic, social, political, and ecological 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 behaviour in individuals, groups, and society as a whole toward the environment

Objectives of EE:

- Awareness: to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems
- Knowledge: to help social groups and individuals gain a variety of experiences in, and acquire a basic understanding of, the environment and its associated problems
- Attitudes: to help social groups and individuals acquire both a set of values and feelings of concern for the environment and to motivate them to participate actively in the solving of environmental problems
- Skills: to help social groups and individuals acquire the skills necessary for identifying and solving environmental problems
- Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards the resolution of environmental problems

2.8.3 Principles of EE

Loubser (1992:93) summarises the principles and aims of EE. These principles and aims are currently being used in the formal education sector in South Africa.

According to Loubser (1992:93), the principles of EE are as follows: Environmental education must

- be interdisciplinary in its approach
- be a lifelong process
- address man and his total environment(natural and non-natural) and
- be aimed at changing people's attitude towards the environment.

2.8.4 Characteristics of EE

Ramsey, Hungerford and Volk (1992:36), quote Engelson who maintains that EE programmes may be described as follows:

- Action-orientated: involving students in the resolution of real environmental problems and issues
- Continuous: part of all subject areas at all grade levels but not precluding specific curricula and instructions focused solely on EE
- Experiential: using both a diverse array of learning approaches and the environment itself
- Future-orientated: concerned about future as well as present generations
- Globally orientated: considering the earth as a single ecosystem
- Holistic: dealing with the natural, manmade, technological, social, economic, political, cultural, moral and aesthetic aspects of the environment
- Interdisciplinary: drawing content from all disciplines
- Issue-orientated: dealing with issues with local, regional, national and international perspectives
- Neutral: approaching issues and problems without bias with the classroom as a forum in which all points of view should be heard

EE has the capacity to reform and transform education in many respects and, it is hoped, that in South Korea and around the world, it will produce environmentally literate citizens who have learned to live and work in harmony with the environment (Bornman,1997:58).

2.8.5 Practice of EE

Although diverse in approach and application, the practice of environmental education is characterised by certain essential elements and perspectives. The Association for Supervision and Curriculum Development (ASCD, 2001) quotes Disinger and Monroe (1994) when they maintain that EE

- is based on knowledge about ecological and social systems and draws on disciplines in the natural sciences, social sciences, and humanities
- reaches beyond biological and physical phenomena to consider the social, economic, political, technological, cultural, historical, moral, and aesthetic aspects of environmental issues

- acknowledges that understanding the feelings, values, attitudes, and perceptions at the heart of environmental issues is essential in exploring, analysing, and resolving these issues
- emphasises critical thinking and the problem-solving skills needed for informed, well-reasoned personal decisions and public action.

2.8.6 Education about, in and for the environment

Both environmentalists and environmental educators accept that EE is interdisciplinary and holistic in nature and application, and that its influence extends across the whole *school curriculum, school policy and school management*. As a cross-curricular theme, EE is concerned with learning about the environment, learning in and through the environment, and also learning for the environment (Bornman, 1997:60). Fien (1988; 1995) clarifies the above statement by explaining the concepts of education about, education in and education for the environment.

Education about the environment

The educational goal of education about the environment is to live responsibly and sustainably within the environment. Appropriate behaviour patterns and actions are essential if learners are to understand the way in which natural systems work and the impact of human activities upon these systems. This would include learning about political, philosophical, economic and socio-cultural factors as well as about the ecological factors that influence decisions about how to use the environment in a responsible way (Fien, 1988:11).

Education in the environment

Experiences in the environment, be they in a city street, a park, a farm, a forest or the school grounds or on the beach, may be used to give reality, relevance and practical experience to the learning process. An increased awareness of aspects of the environment may arise from any opportunities for direct contact with the environment. Opportunities to learn out-of-doors may also be used to develop both the skills necessary for data gathering – observation, sketching, photography, interviewing and using scientific instruments – as well as social skills such as group work, co-operation and aesthetic appreciation. Environmental awareness and concern may also be fostered by linking learning to direct experiences within the environment and by allowing

learners to become captivated by the complexity and wonder of natural systems or immersed in value conflicts about particular environmental issues (Fien, 1988:11).

Education for the environment

Education for the environment aims to promote both a willingness and an ability to adopt compatibility with the wise use of environmental resources. In so doing, education for the environment builds on education in and about the environment through the development of both an ethic as well as the motivation and skills necessary to participate in environmental improvement (Fien, 1988:11).

In the context of the teacher-learning situation education about the environment usually takes the form of conventional teaching which enhances the understanding and knowledge of pupils about the environment while education in (through) the environment usually refers to some form of field work or activity located outside the classroom. On the other hand, education for the environment is a more complex concept in terms of which learners are encouraged, either individually or collectively, to act in such a way so as to benefit the environment.

2.8.7 Teaching methods for EE

When choosing a teaching method and a learner activity in respect of EE, it is recommended that educators pose the following questions:

- What do the children need to learn?
- Is this activity the best way for these children to learn what they need to learn?
- Does the activity give them access to new knowledge and/or relevant skills?
- How does this activity connect with what will follow?
- What must be done after the activity in order to check and consolidate learning?
- How long will it take to perform this activity well?

The CAPE Conservation Education Programme has compiled a teacher education workbook which includes the following list of teaching methods that may be used for EE in schools:

- **Finding out: fieldwork, audits and other enquiries**

The enquiry methods involve learners going out of the classroom to collect new information that is not already available in either a report or on the internet. In fieldwork the learners try out, at a level appropriate to their grades, the investigation methods which the natural and social scientists use in order to explore social and ecological issues and the learners also attempt to find out how these investigation methods may be improved. A survey also represents a form of fieldwork. A survey enables one to develop a general view. For example, children may ask local residents about landscape change, or about the ecosystem services they use. Audits also represent another form of fieldwork and involve activities to find out what is in an ecosystem or to verify exactly what a situation is, using quantitative data. Audits involve measuring and counting in order to answer questions such as How much? or How many of each? For example, counting the number of different plant or animal species in a marked-off area.

- **Acting out: drama, role play and debate**

Dramas or dramatic plays may be of considerable educational value, be they in the form of either a school play or an environmental festival. Dramatic plays towards the end of a learning programme are a useful way of helping learners to draw concluding connections. In addition, dramatic plays may provide learners with an opportunity to take action, for example, the action of raising awareness about environmental issues and possible solutions among their peers and other audiences. Role plays are usually less formal than dramatic plays and, although they require less time than dramatic plays, they do still provide learners with an opportunity to learn through physical, emotional and intellectual involvement. Debating is more “cerebral” or abstract than either dramatic plays or role play but, nevertheless, debating may play a useful role in consolidation, and in providing learners with either an opportunity to make sense of and display what they have learned through individual or group projects, or classroom study, or to test their ideas against each other. Debates are particularly suited to exploring the complexity of environmental issues, to honing language use, reflection and critical thinking skills, and for showing that how essential it is that arguments be well-reasoned and backed-up.

- **Thinking it through: stories and mini-lessons**

Story-telling is an ancient educational method which is traditionally used in all societies to share

life lessons and cultural values. In addition, stories may engage the archetypal imagination of all. Learners may often find themselves right “inside” an engaging story and thinking from that position about the meaning of the story, the values that it reflects, and the way in which our collective stories need to change if we are to live more sustainably, is a powerful exercise in language use and critical thinking.

Mini-lessons, which refer to the old fashioned lecture and presentation method by the educator, may act as important education methods when used well. A well-structured presentation is an efficient means of sharing information with learners. “Chalk and talk” presentations may become a problem if they are the only teaching method used, and if their sole purpose is to pass on facts, terms or definitions for rote-learning.

- **Can do: reading and writing to learn**

It is essential that, where appropriate, EE activities contribute to both these learning outcomes, reading and writing. Without the basic skills of reading and writing, children are unlikely to acquire school-based information about the environment. In addition, the responsible, involved citizen envisaged by EE, is an individual who is able to read in order to find out more about the environment, its marvels and its issues, able to think clearly and logically and able to write when it becomes necessary to communicate about and address issues.

- **Try it out: experiments and action projects**

Experiments represent a form of enquiry that may take place in the classroom. As such, experiments may provide a concrete, hands-on learning experience, and provide children with the opportunity to try out the ways in which working scientists develop knowledge, find out about the environment, and come up with solutions to problems. Experiments may also enhance learning – seeing is believing! Action projects are strongly promoted in most EE programmes with many educators also finding that action projects are a natural outflow of EE lessons – once learners have learnt about an environmental topic, they often want to take action in response to the issue about which they have become concerned.

- **Work it out, make it work: problem-solving and design**

Deliberation refers to the weighing up of an issue for its relative merits in order to decide

whether it represents either a worthwhile idea or a way forward. In discussions learners deliberate with each other and their educator, although they may also grapple on their own to think through an issue. Deliberation is part of the active classroom language in terms of which the curriculum aims to teach critical thinking and reflective language use. Group discussions may help children to think more creatively and to come up with better solutions to problems collectively. On the other hand, problem solving exposes learners to the process of identifying a problem, following a given set of steps to guide them towards solutions, then designing and contriving these solutions, and, if possible, trying the solutions out, evaluating them, and making a decision about them (Rosenberg, 2009).

A study conducted by Ramey (2008:16) on early environmental education experiences contributes to the understanding of the importance of outdoor experiences in providing children with time to explore the natural world. The purported benefits of outdoor activities include :

- Children who play in natural settings, for example woods, fields and canyons, are more cooperative and more likely to make up their own games than those playing on flat turf or on asphalt playgrounds. Green areas promote creativity in children because they demand visualisation and the full use of the senses.
- Direct exposure to nature is beneficial for emotional health, it helps reduce stress, it creates a feeling of wellbeing and it may offer healing to children from a destructive family background.
- Green play areas promote concentration, self-discipline, and social interaction between children as well as more positive feelings towards others.
- Ultimately, outdoor play areas foster stewardship for the environment and an appreciation of the need to use natural resources respectfully. They also create a motivation to learn with children perceiving education as more than merely texts and tests.
- There are mental benefits to outdoor activities, with children developing an appreciation of outdoor fun, nature, scenery, sunlight and fresh air. This appreciation for outdoor fun may lead to increased physical behaviours and also help reduce the risk of obesity, heart diseases, diabetes and high blood pressure for all ages.

- Nature promotes a significant reduction in the symptoms of ADD (Attention Deficit Hyperactivity Disorder) in children as young as five years old, and it helps reduce stress and maintain children's mental wellbeing.
- Educators may use the play arena both to promote learning and to enhance the school curriculum. National studies indicate that, when outdoor environments are used to integrate a school's curriculum, the level of achievement is higher. A play arena increases student cognition while the richness and novelty of outdoors stimulate brain development and function.
- Outdoor activities reach the whole person – mind, body and spirit.
- Outdoor activities create a sense of belonging to a larger community, especially if there is a garden or a continuing project in the area.

Time spent in nature may also allow children to grow in ways that are important, whether measurable or not (Ramey, 2008:6)

2.9 IMPLEMENTATION OF EE INTERNATIONALLY

Several countries around the world are using a variety of methods in the implementation of EE. Accordingly, South Korea has the advantage of choosing from methods that have already been tried and tested in other countries and adapting these methods to suit their goals, aims and objectives in respect of EE. Some of the countries implementing EE include Malaysia, Hong Kong, Singapore, Thailand and Bhutan. Although geographically South Korea falls under East Asia and the countries discussed below are all Southeast Asian countries, these countries do still have much in common with South Korea.

The South East Asian countries (Thailand, Malaysia, Singapore, Hong Kong and Bhutan) are rich in flora and fauna. However, like South Korea, these countries are facing severe deforestation which is causing habitat loss for various endangered species. It has been predicted that more than 40% of the animal and plant species in Southeast Asia could be wiped out in the 21st century (Wikipedia, 2009:1). While the region's economy depends largely on agriculture,

nevertheless, manufacturing and services are becoming more important. Like South Korea, Southeast Asia has an emerging market. In fact, South Korea had one of the world's fastest growing economies from the early 1960s to the late 1990s and is still, together with Hong Kong, Singapore and Taiwan, one of the fastest growing developing countries in the 2000s.

Newly industrialised countries in Southeast Asia include Malaysia and Thailand while Singapore already has an affluent and developed economy. All these countries are also struggling to include EE in the school curriculum. They have, in fact, made numerous efforts to do so and are, indeed, still experiencing some constraints and challenges. Nevertheless, these countries may certainly serve to inform South Korea of ways in which to approach EE so that EE may take its place in South Korean education, as it has in Bhutan.

Bhutan is a country that has been enormously successful in the inclusion and implementation of EE. This has been made possible by the continuous support of various organisations and ministries such as the Royal Society for the Protection of Nature of which the objectives are to supplement formal learning on the environment, offer support in the development of curricula and modules for environmental education, raise environmental awareness among the younger generation, instil a positive attitude in citizens towards the environment, bring about behavioural change among the youth in respect of the environment and enhance school greening. As in Bhutan ongoing research is being conducted to find the best way to improve EE integration and implementation, both in the school curriculum as well as within the community. The discussions below are brief and focus mainly on attempts made by countries to include EE in their curricula. The discussions may serve to provide South Korea with some reference for the inclusion of EE into its school curriculum.

According to Tyson (1994:11), environmental curricula may take two forms. Firstly, there is the "infusion method" in terms of which environmental issues are dealt with throughout the total curriculum by being infused into any subject matter. This requires the systematic incorporation of EE into existing curriculum plans. One of the most important aspects of this method is the fact that environmental content(knowledge) and skills may be integrated into existing courses without interfering with the content of those subjects and skills prized by faculty members.

Secondly, there is the “block method” in terms of which separate and distinct environmental education courses are created (Tyson, 1994:11).

Many countries favour the infusion model as this model integrates EE content and skills into existing courses in such a manner as to focus on the content (and/or skills) without jeopardising the integrity of the courses themselves. However, a key component in the infusion process rests with the school concerned. Any comprehensive infusion strategy demands a great deal of co-operation on the part of the staff members who are going to be responsible for the infused programme (Tyson, 1994:11).

2.9.1 Malaysia

In Malaysia, there are a number of governmental and non-governmental bodies which are actively involved in educating people about the environment. As in all other countries in the world, as well as South Korea, human influence relate to the areas of biodiversity and conservation. Biodiversity loss as a result of human influence, such as illegal logging activities, fish-bombing, shifting cultivation sites, large-scale mining, and agricultural expansion has had an adverse impact on the environment and has resulted in a reduction in the habitats of several species of flora and fauna, the erosion of rivers, the loss of both traditional lands and ways of life for human populations. These losses affect food security, health, shelter, medicine as well as the aesthetic appreciation of the environment. In Sabah, one of the thirteen member states of Malaysia, wildlife hunting and the trade for food as well as pets and the use of the environment for medicinal purposes have all resulted in biodiversity loss. As a result, Sabah now has various pieces of legislation in place that are directed at protecting forests, parks, wildlife, water resources, and its cultural heritage. For example, river pollution in the form of the disposal of waste from a palm oil refinery resulted in the livelihood of the nearby villagers being affected because of both the decrease in the former teeming prawn, crab and snail populations and the despoliation of swamps through vegetation loss (Socio- Economic and Environmental Research Institute [SERI], 2010).

In 1998, the Ministry of Education in Malaysia made a decision to introduce EE into the

education system as a whole. This was carried out in the following two ways: 1) through the daily teaching and learning processes in the classroom; and 2) through co-curriculum activities which were conducted through the medium of nature clubs and other similar activities.

The Curriculum Development Centre (CDC) established by the Ministry of Education is an agency specifically charged with introducing EE into the curricula of both primary schools and secondary schools. The environmental programmes set up by the DoE and the Ministry of Natural Resources focus on field exposure and co-curriculum activities for students and teachers, and on promoting environmental activities within learning institutions. More specifically, these programmes provide field exposure to various ecosystems, hands-on training to learners and educators, the imparting of environmental knowledge outside of the classroom and the promotion of environmentally sustainable schools via the process of greening, governance, curriculum, and co-curriculum activities. The major outcomes of these initiatives have included the establishment of nature/environmental clubs, recycling projects, and the greening of schools, as well as activities aimed at achieving sustainable schools (Salih & Yahya, 2009:227).

Other recent policies, strategies and plans undertaken by the Malaysian Government to promote EE in education and national development include:

- The National Policy on Biodiversity(1998): This led to the study of biological diversity and related fields being incorporated into the curricula of both schools and institutions of higher learning
- The National Policy on the Environment (2002): This policy sought to realise several aims, including an in-depth, improved understanding of the concepts of environmentally sound and sustainable development, a caring attitude toward nature, the promotion of EE and environmental awareness throughout the education system and beyond as well as the introduction of information dissemination and training in line with Agenda 21(Agenda 21. 1992)
- National Integrity Plan (2004): This plan established a community institution charged with emphasising and increasing the awareness of environmental conservation (Ministry of Education Malaysia, 2009).

Various activities such as seminars, exhibitions, talks, and campaigns have also been conducted in order to create an awareness of environmental issues throughout the community. These activities have, to a certain extent, enhanced teacher commitment to EE and led to educators undertaking initiatives aimed at bringing environmental issues into their teaching of the various curriculum topics (Salih & Yahya, 2009:216).

The involving of learners in active science learning, in particular, by participating in community action, encourages learners to evaluate the advances in science and technology in a critical way. In addition, it influences their understanding of the relationship between the quality of life in general, the economic development of the nation state and natural environment, and helps them to appreciate fully the interdependency between the three evaluations, the quality of life in general, the economic development of the nation and natural environment. (Kusman, O'Toole, Reynolds & Bourke, 2009:12).

Treat Every Environment Special (TrEES), a local, non-profit environmental organisation, implements environmental projects with the aim of conserving the environment and reducing contributions to both climate change and biodiversity loss. While recognising the need for school programmes that would not only raise the awareness of the environment but also empower participating school communities to play an active role in conservation, TrEES initiated a pilot school programme in 2009. This programme focused on Taman Negeri Selangor, a forested park located in Selangor, which is renowned for its large variety of rare bird species. This park would provide a focal point for the students' efforts and enable them to feel a sense of ownership and pride in the park that was "in their backyards". In July 2010, TrEES reported that this project was currently well under way (TrEES, 2008).

Salih and Yahya (2009:221) report that the most recent policy on environmental awareness – a policy that is advocated by the prime minister – has been founded on the concept of *Islam Hadhari* (Civilisation Islam). In its true sense, Islam Hadhari means government by leadership in accordance with the universal principles of Islam. Islam Hadhari also emphasises social and economic development which is consistent with the tenets of Islam that seek to enhance the quality of life. These tenets offer 10 main principles, one of which refers to the safeguarding of

the environment.

Abu-Hola (2009:9) explains the discipline of the teachings of Islam in detail. Islam is based on fundamental principles of self-reliance which require the careful use and management of resources. Accordingly, any act causing damage to the environment is forbidden while any act which results in the development and flourishing of the environment is both encouraged and supported by Islam. Moreover, if an Islamic ruler finds that one species of animal or plant is beginning to disappear because of heavy use, he should ban its use and protect the species concerned within its original environment. Some of the main factors causing environmental damage against which Islam tries to fight and keep to the minimum include:

- Poverty –environmental damage is at its greatest wherever poverty is found. Islam fights poverty by encouraging a work ethic and condemning laziness.
- Overuse of environmental resources – in Islam it is a sin to live in abundance.
- Irresponsible use of environmental elements – Islam forbids the irresponsible use of resources.
- Environmental pollution – environmental pollution should be prevented. In this respect, Islam buries dead bodies in graves and covers them with soil to avoid the spread of chemicals and wastes which may result from the degeneration of the corpse.
- Fire – fire should be treated with caution although it is used in many life supporting activities such as cooking, heat treating stone for tools, heating shelters, repelling predators, cauterising wounds, communication (signalling), as a source of light (torches) and for preserving meat.

In Malaysia it is expected that environmental literacy will be strengthened and improved by implementing the Islamic perspectives and attitudes in respect of the environment and that this, in turn, would reduce the risks posed by environmental obstacles and problems (Abu-Hola, 2009:9).

In addition to publishing and disseminating environment-related materials (posters, brochures, quarterly bulletins, training modules and educational videos), the Department of Environment

(DoE) conducts several environmental programmes targeting schoolchildren and the youth, the general public as well as special groups(educators, local authorities, women, and senior managers of companies). A breakdown of the activities for each group is listed below:

School children and youth

- Enviro camps
- Environmental debates
- Sustainable school environment awards – awards are given to schools that have made an earnest attempt to improve the environment
- Cleanup projects
- Tree planting and landscaping
- Radio environmental quizzes
- Essay writing competition on the topic of the environment
- Painting competition

General public

- Malaysia Environment Week Celebration (21–27 October)
- Radio environmental quizzes

Special target groups

- Enviro camp facilitators' training programmes (environmental educators)
- Sustainable city programme (local authorities)
- Women's Conference on the Environment(women)
- Enviro walk (senior management of companies) (Department of Environment, 2008)

Ishak, Omar and Yacoob (2009:264) maintain that, while the overriding purpose of EE in Malaysia is the maintenance of a healthy, safe, clean, and green environment, the primary current aim of EE is to promote good environmental attitudes and values among students and the public. However, WWF (World Wildlife Fund) – Malaysia identifies three fundamental obstacles that are limiting the realisation of this aim:

- Apathy about Malaysia's natural heritage

- A plethora of NGOs or concern groups pushing for their subjects to be included in the school curriculum
- Lack of parental interest in environmental concerns which, in turn, adversely influences not only the interest of young people in EE but also society's interest in the subject

The WWF Malaysia has identified two central problems to promoting good environmental attitudes and values among learners and the public, namely, the Ministry of Education's (MoE) lack of emphasis on EE, and poor, or barely existent, coordination among MoE agencies – as well as nine consequences of these problems:

- Too much emphasis on examination-orientated subjects
- Lack of specific resources with which to plan and execute EE activities and ensure their sustainability
- Too great a burden placed on the current curriculum in the national education system
- Lack of proper training and capacity-building for teachers and education officers, particularly in terms of planning and executing EE
- Lack of an effective framework within which to set and implement EE strategies
- Too much work for teachers
- Poor implementation of outdoor learning
- Lack of awareness of environmental matters among students (WWF Malaysia, 2010)

It is essential that any efforts made to overcome these barriers focus on the following:

- Increasing public interest in Malaysia's natural heritage
- Obtaining consensus among non-governmental organisations(NGOs) on those issues which should be accorded priority in the school curriculum
- Improving parental knowledge of and interest in EE
- Ensuring that the MoE place greater emphasis on EE in the national education system
- Applying and practicing more holistic and balanced approaches in terms of the teaching and learning processes
- Allocating adequate resources to planning and executing EE activities to ensure their sustainability

- Developing more holistic and balanced curricula so that teachers have the time to focus on the core business of teaching
- Providing teachers and education officers with the type of structured training and capacity-building that will allow them to plan and implement EE
- Developing an effective framework within which to set and implement EE strategies
- Assigning balanced job responsibilities to teachers
- Improving the implementation of outdoor learning and
- Increasing the level of awareness of environmental issues among students (Ishak et al., 2009:267).

EE in Malaysia is now strongly committed to and geared toward addressing environmental challenges in order ensure its EE. The MoE is integrating EE into all curricular subjects as well as implementing various teaching and learning strategies aimed at enhancing the awareness of environmental protection. Nevertheless, Ishak et al. (2009:270) contend that the success of EE in Malaysia is still in jeopardy because of a lack of both human resources and teaching aids.

2.9.2 Hong Kong

In Hong Kong, as in South Korea, EE is not compulsory nor is it cross-curricular. Accordingly, the implementation of EE is at the discretion of individual schools with those schools that choose to implement it having Guidelines for EE in Schools to which they may refer. EE may be taught as part of the subject of general studies at primary school level, together with geography or science at the junior secondary level, and with either biology or chemistry at the secondary level. Schools also may choose to include EE in other subjects that are not examination subjects, for example, moral education, civic education or religious studies, or via extracurricular activities such as Environmental Week (Education Bureau, 2009).

The Curriculum Development Council visualises school learning as comprising nine key learning areas (KLA's), of which science is one such area. According to this document, the science KLA is composed of five learning strands – life and living, the material world, energy

and change, the earth and beyond, and science, technology, and society. Learning objectives that are consistent with the aims for EE are evident in three of the five learning strands. These learning objectives inform student learning from Key Stage 1 to Key Stage 4 in the science KLA. The learning objectives of Key Stages 1 and 2 are consistent with the contents of the general studies curriculum. However, continuity is not evident in the strands relating to *the material world* and the *earth and beyond*. In addition to gaining knowledge about the development of products and the impact of humans on the environment, students at the upper secondary level are expected to become responsible citizens and to demonstrate this by protecting both the local and global environments (Education Bureau, 2009).

Cheng (2009:30) mentions that the general studies curriculum at the primary level comprises six strands, of which people and environment is the strand most relevant to EE. At the lower primary level, students need to develop a concern for the environment. Having developed a greater understanding of the uses of energy, natural resources, and sustainable development, students in the upper primary school are expected to show concern for major local and national environmental issues. At junior secondary level, the subject of science (or integrated science) includes the general sciences and offers an opportunity for the inclusion of EE. However, Cheng's research suggests that, despite the fact that teachers are of the opinion that the subject of integrated science is a suitable subject for incorporating EE, they also find it too academic with insufficient coverage of EE.

Local research suggests certain teaching strategies, such as adopting the study of environmental issues, may help students identify both preventive and remedial measures with which to address environmental problems. However, it is recommended that the development of environmentally friendly attitudes be encouraged through the implementation of alternative assessment tasks that are more consistent with the teaching strategies proposed (Cheng, 2009:235).

The Environmental Protection Department (EPD) of Hong Kong has, over the years, progressed from building awareness to inspiring action. The EPD has focused on specific issues of concern, such as air pollution and waste reduction and, together with the Environmental Campaign Committee (ECC), the EPD has been organising school-based campaigns for students to learn

how to practise recycling energy, energy conservation and other green habits. The Student Environmental Protection Ambassador (SEPA) Scheme enrolls students each year to organise environmental activities at their schools and enables these students to develop environmental and leadership skills through training. The Hong Kong Green School Award encourages a whole-school approach to environmental protection with participating schools being expected to formulate a school environmental policy, implement environmental management and encourage staff, students and parents to adopt environmentally friendly habits. In 2007, several related programmes were organised together with the awards programme. In 2007, the EPD reported the following accomplishments:

- The “I love Hong Kong! I love Green!” campaign was launched with the aim of promoting a greener lifestyle.
- More than 17 000 students joined SEPA.
- Two hundred and thirty-seven schools joined the Hong Kong Green School Award
- \$1 billion was earmarked from the Environment and Conservation Fund to boost community support for and participation in environmental protection.
- The final Hong Kong Eco-Business Awards were handed out to 58 winners in November 2007, thus paving the way for the new Hong Kong Awards for Environmental Excellence (Environmental Protection Department, 2005).

Early in 2009 senior secondary education began to move from a four-year programme to a three-year programme and a new subject – to be taken by all senior secondary students. EE is one of the six core modules of the new subject being introduced in senior secondary education. The revamping of the EE curriculum at the senior secondary level may be a reflection of the recent emphasis on sustainable development within a local context. However, it is important that the effort to emphasis sustainable development within a local context be coordinated at other levels of education, namely, the primary and the junior secondary levels. In addition, the public examination system may need adjusting so that its focus moves beyond a sole reliance on pen-and-paper tests administered at a common date and a common time to performance assessment by other means as well. There is a lack of coordinated government effort and long-term planning in the provision of EE in Hong Kong and EE clearly requires much work in Hong Kong (Cheng, 2009:242).

2.9.3 Singapore

As is the situation in South Korea, economic expansion and escalating population numbers in Singapore imply the threat of pollution and the looming loss of nearly all remaining forested areas. It is, thus, essential that air quality, waste disposal, and the country's few water resources be vigilantly managed (Ministry of Environment and Water Resources - MEWR, 2010). The mission of the MEWR is to sustain both a clean and healthy environment and water supply for the entire population of Singapore. By focusing on pollution prevention and the sustainable use of resources, the MEWR seeks to raise public awareness about issues related to air pollution, solid waste management, water resources and waste water treatment, energy conservation and efficiency, and climate change. One way of increasing public awareness of the environment and educating the general public is through public education programmes and campaigns. In addition, it is essential that EE be formally taught in schools. In Singapore, at both primary and secondary levels, EE is generally incorporated into science and social science subjects, as well as into civics and moral education. The emphasis is on learners acquiring a knowledge and understanding of the environment and developing a sense of responsibility towards the environment (Environmental Challenge Organisation, 2006:1).

Themes in the social studies syllabus which are related to EE include the themes of people, places, and environments, time, change and continuity, and scarcity, choices, and resources. Students learn about people's interaction with the environment, the impact and consequences of that interaction on the environment over time, and the constraints faced in the use of scarce resources. At primary level students learn how Singapore meets her needs in terms of food, water, housing, and fuel. In addition, learners are exposed to the concepts of conservation, scarcity, needs and wants, land use, constraints faced in the allocation of resources and the need to care for the environment (Tan, Lee & Tan, 2009:244).

The concepts introduced at the primary level are revisited in greater breadth and depth in lower secondary geography, social studies, civics and moral education, and science curricula. Two of the objectives of the geography curriculum include the development of an informed concern

about both the quality of the environment and secondly, the development of an informed concern about the quality of the future of the human habitat. In this way the learners' sense of responsibility in respect of the care of the earth and its people is enhanced and the students gain a sense of appreciation and a feeling of responsibility for the quality of the environment (Tan et al., 2009:245).

Pollution, conservation of resources, energy and the environment, and the effects of climate change are all addressed through the formal education of learners. This learning is complemented by the environmental activities which are organised by a diverse range of organisations – commercial enterprises, non-governmental organisations, tertiary students' interest groups, government agencies and grassroots organisations such as the town councils. The Singapore Environment Council (SEC) is one of the non-governmental organisations that aims to create a lasting impact on climate change by collaborating with people, industries and governments in order to encourage and achieve sustainable urbanisation. The SEC reaches out to the public through its educational, community and industrial arms. Each arm provides a range of holistic programmes that raise the awareness of the natural environment and promote a greater sense of environmental responsibility. Since its inception, SEC has built strong partnerships with corporations, government agencies and other NGOs. These partnerships are vital for sustaining the environmental programmes that lead, eventually, to both positive action and change (Singapore Environment Council, 2010).

Most of the environmental programmes organised by the organisations, enterprises, NGO's and other groups mentioned above are innovative and have, as their focus, the promotion of public and learner interest in environmental issues. Through the involvement of different organisations and interest groups, learners in schools are exposed to a variety of community-based environmental programmes that supplement and complement their formal environmental curricula (Japan Environmental Education Forum (JEEF), 2007).

The National Environment Agency (NEA) is another of the organisations that is endeavouring to promote EE in Singapore by offering EE modules to schools. Pilot EE modules were introduced into four secondary schools in order to educate young learners on issues such as global warming

and climate change and the NEA is looking into working with these four schools to develop EE courses for other schools. Various campaigns, events and programmes such as “Let’s Bin it!” (a new initiative to curb litter) and the Clean and Green Singapore campaign aims to inspire Singaporeans to care for and protect their living environment by adopting an environmentally-friendly lifestyle. The Clean and Green Singapore campaign is characterised by exciting and educational activities such as school and community carnivals. The campaign underpins the primary thrust of instilling environmentally-friendly habits in every Singaporean (National Environment Agency, 2002:1).

Involvement in these programmes allows learners the opportunity to interact with others in the community, be exposed to diverse views about environmental issues, and to translate what they learn in school into their own lived experiences. In addition, community participation helps students to become more sensitive to the limits of unchecked growth within the economy and to appreciate the rights of future generations. It also helps them understand the need for sustainable environmental change and to the need to build on their sense of responsibility in order to have a better environment (Kusmawan et al., 2009:12).

Wong and Stimpson (2003) conducted interviews with key players and educators involved in the development of a cross-curricular EE programme for Singapore. Wong and Stimpson found that, despite rhetoric couched in progressive terms focusing on “awareness”, “attitudes”, “action”, “participation”, “experience” and “life-long learning”, the curriculum detail stresses information of a dominantly scientific nature reflecting a largely academic rationalist, rather than a socially critical approach. The interviews revealed three underlying themes that explain the curriculum in Singapore: (1) a pragmatic utilitarian concern for the urban environment of Singapore; (2) a school and examination system that is still largely focused on the traditional disciplinary knowledge; and (3) the overriding influence of government and the balance that government prioritises in terms of environment, economic development, social stability, nation building and external image. There is, thus, still room for improvement in the Singapore environmental curriculum.

2.9.4 Thailand

EE emerged in primary and secondary schools in Thailand with the implementation of the 1978 curriculum which focused mainly on environmental content in science and social science subjects. An EE development of greater significance took place in 1991 when the Ministry of Education formulated its Master Plan for EE (1991-1996) – the first plan of this nature for Thailand. The aim of the plan was that, by 1996, all Thai students and 60% of Thai people would be aware of environmental problems and, in this way, sustainable development would be realised. One strategy of the plan involved the integration of EE into the curriculum at all levels of the education system, both formal and informal, in a cross- curricular fashion (this is what South Korea needs to do). The importance of EE was highlighted in both the 1999 National Education Act and in the 2001 Basic Curriculum which state that learning in all subjects should incorporate an awareness of natural resources and environmental conservation (Dahsah & Kruatong, 2009:290).

In 2002, the United Nations identified the years 2005 to 2014 as the United Nations Decade of Education for Sustainable Development. In Thailand, the National Department of Environmental Quality Promotion (DEQP), which is directly responsible for EE in Thailand, responded by drawing up a second plan for EE in Thailand – the Master Plan for EE for Sustainable Development (EESD) 2008–2012. This EESD plan provided stakeholder organisations with a guide for developing EESD-related actions and for procuring the finances needed to promote EESD throughout Thailand. The plan

- is a plan for all organisations in Thai society and not merely for one organisation or for government
- emphasises the development of scholarly knowledge and an environmentally literate society
- highlights the equality of all organisations, both within and outside of the education system
- creates an awareness of the diversity of communities, societies, cultures and ecosystems.

Today, in practice, the delivery of EE in most schools takes place through projects and activities which are undertaken in cooperation with governmental organisations, NGOs, and the private sector (Dahsah & Kruatong, 2009:291).

EE in Thailand involves both government and private sector collaboration. However, schools also draw on community involvement. Various EE projects have arisen out of this involvement with all these projects promoting public participation in environmental management, both within and outside of the schools. These projects, which include the Dawn Project, the Rung Arun, the EE Project and Strengthening EE in Thailand project, were developed in collaboration with other organisations both in Thailand and overseas. All these projects have a common aim, namely, enhancing student and public understanding and awareness of environmental issues. The results of the projects have generally been positive although Thailand has yet to achieve its national aims for EE, and various threats continue to undermine the development of EE in Thai schools. Although most Thai schools do have EE policies in place and they also focus on supporting and developing EE in the classroom, the schools themselves identify a lack of both knowledge and materials as the main factors inhibiting their ability to develop EE fully. Moreover, the teaching and learning of EE in Thai schools still focuses on the transmission of content rather than on active learning processes (Japan Environmental Education Forum, 2007).

Dahsah and Kruatong (2009:298) maintain that, despite the fact that Thailand is planning to promote EE via a school based curriculum, this is unlikely to occur unless more attention is paid to the professional development of teachers. Thai educators need the opportunity to acquire more adequate EE-related knowledge and information as well as teaching, and technical (information and communication technologies) skills. It is recommended that South Korea take heed of this before commencing the implementation of EE in their schools as these are major constraints to the successful implementation of EE. As is the case in several other countries, Thailand has been fairly slow in integrating EE into its educational system. Accordingly, Thailand not only needs both to continue with and to hasten its efforts to provide deeper knowledge of the environment in its schools, but it also needs to make community acumen and local wisdom part of its knowledge construction. In essence, schools need to operate as central places within communities in terms

of the provision and processing of environment-related information, the setting up of projects and research as well as the provision of both financial and other resources. In addition, EE projects set up by agencies other than schools need to focus their efforts on the schools in their communities, by helping them develop and engage in appropriate activities, draw on and integrate local wisdom, conserve local historical sites, and seek to sustain the heritage of Thai culture (Dahsah & Kruatong, 2009:298).

2.9.5 Bhutan

In Bhutan EE is well established in formal, and even in informal education as the Bhutanese treasure their environment and look upon it as the source of life. The state religion in Bhutan is Buddhism and the maintenance of the environment in an unspoiled form accords with Buddhism. The basic principles of Buddhism include giving back to nature what has been taken away and respecting all forms of life. Adhering to these principles would not be difficult in South Korea as religions in South Korea are dominated by both traditional Buddhist faith and a large growing Christian population. Environmental protection is also an important issue which enjoys the strong support of Bhutan's Fourth King and, indeed, contributes to the Gross National Happiness (GNH) of the people. The ideology of the GNH links Bhutan's development goals with the pursuit of happiness (Tenzin & Maxwell, 2009:277).

As mentioned previously environmental issues and challenges in Bhutan are approached and tackled by different organisations including the Department of Forestry, the Nature Conservation Division, the National Environment Commission, and the World Wildlife Fund. Nevertheless, the responsibility of instilling environmental values and positive environmental behaviour in young children is seen as the obligation of both the Ministry of Education and the Royal Government of Bhutan. Accordingly, the ministry continually explores ways of providing young people with relevant EE (Ministry of Education, 2008).

Extensive research conducted by Tenzin and Maxwell (2009:278) state that the following five sections are the means by which the Royal Government is striving to conserve the environment in Bhutan by educating its people.

i) EE through the formal curriculum

The health of Bhutan's environment underscores the wellbeing of the country's people and, thus, contributes to the GNH. Therefore, if Bhutan is to maintain its pristine environment and enjoy the fruits of a healthy environment, it is essential that each Bhutanese receive a sound education about the environment. It is, thus, the thrust of the Royal Government to provide the concepts and knowledge of the environment through the formal school curriculum. The topics or concepts delivered by means of the formal curriculum in terms of both content and environmental activities cover the full range of environmental issues as they relate to Bhutan, and the topics and concepts have been developed over time and across subjects and grades.

In an attempt to provide meaningful EE to school age children, the Ministry of Education initiated the localisation of its primary curriculum in 1986 by launching its New Approach to Primary Education (NAPE). The NAPE was based on the principle of children taking an active part in their lessons and using the local environment of school, district and country as the context for learning. This approach proved to be extremely positive, and the entire curriculum has now been contextualised relative to Bhutan's environment. New materials on the environment have been developed gradually and implemented in other subjects in the schools. Localisation of a school's formal curriculum facilitates better learning outcomes with students enjoying their learning because it is contextualised to Bhutan.

In 2004, an EE programme termed Watershed Action Through Educational Research(WATER) was launched. This programme guides learners towards identifying some of the main social, environmental, and economic issues facing people in the local water catchment area in which they live. The implementation of this programme was piloted in 11 schools via integration into the formal curricula for science, English, social studies, and geography, and also into nature clubs. WATER has undergone a series of evaluations and revisions as an outcome of its piloting through three forums – the School Nature Club programme, the School Curriculum Programme, and the Non-Formal Education (NFE) Programme – an adult education programme. Educators' manuals and NFE tutor guides have been developed in conjunction with both the formal curriculum and the NFE curriculum. In order to give WATER an “institutional” context it will,

during the forthcoming major science curriculum reform in Bhutan, be integrated into Biology as a separate unit which will be known as Watershed Management (Tenzin & Maxwell, 2009:280). Programmes such as these provide students with the opportunity both to practise environmental citizenship in their own societies and to develop their own understanding in respect of their environmental rights and responsibilities (Kusmawan et al., 2009:12).

ii) Learning Context

Since the localisation of the curriculum into schools, teaching resources have been contextualised to the Bhutanese physical, social, and economic environments. This approach has improved the relevance of the school curriculum for learners in terms of both content and process with students learning their different subjects in relation to their immediate worlds. This process helps them gain a better understanding of content and a greater awareness of their surrounding and, thus, instils in them a deeper appreciation of their environment.

In keeping with this ideology, the implementation of EE programmes in Bhutan by DANIDA (Danish International Development Assistance) has been accompanied by an initiative designed to train educators, through a series of nationally based in-service programmes (NBIPs), on the way in which to infuse EE across the curriculum. A recent study on the needs of science education in Bhutan revealed the outcomes of this initiative in action. For example, educators were found leading learners out to collect waste and then, once back in the classroom, the learners learnt the concepts of sorting degradable and non-degradable waste with reference to the various sub-categories of waste. In some language classes, the educators were taking learners out to look at and listen to nature and then write an essay or poem on what they had seen and heard (Tenzin & Maxwell, 2009:281).

iii) EE through nature club activities

Almost all schools in Bhutan have now instituted nature clubs with each club comprising approximately 40 to 50 members. The Royal Society for the Protection of Nature (RSPN), a local NGO, has been one of the most active bodies supporting these nature clubs in schools and, to date, it has affiliated about 80 schools to its Nature Clubs Association. RSPN provides a degree of financial assistance and technical support, as well as in-service training for the

coordinators of the clubs. The RSPN has also been a pioneer in supporting the ideology of reducing fuelwood consumption by providing fuelwood-efficient stoves for community schools. Since 2006, RSPN has provided fuelwood-efficient stoves to 20 schools located in environmentally vulnerable areas (RSPN, 2009).

In general these clubs attempt to disseminate EE through the following activities:

- Literary competitions on the environment and environmental issues
- Plantation development
- School beautification
- Cleaning campaigns
- Environmental messages through billboards
- Celebration of World Environmental Day and World Water Day
- Environmental trips

These activities are designed to enhance the environmental awareness of learners in general and foster their understanding of the local environment in particular (RSPN, 2009).

iv) Whole-school approaches

Efforts have also not been spared to implement EE by involving all the members of schools through the School Greening Program. The concept underlying this programme was piloted in 2002 in 30 schools spread across the country. The aim of the programme has been to develop the natural physical facilities surrounding schools so as to enrich the formal curriculum and to make school environments more conducive for both positive living and learning. The School Greening Programme works not only in terms of greening the physical environment but also in terms of “greening” young minds. It is usually left to schools to develop the resources which they need to promote environmental awareness and to make learning enjoyable. Programme activities generally centre on fieldwork and include such activities as:

- Developing a nature garden (for local flowering and non-flowering plants to attract insects), a nursery, a compost heap, a pond, and a rock garden
- Setting up information notice-boards for local, national, and global events, and

issuing publications featuring the work of the students

- Encouraging learners to discuss environmental events during morning assembly
- Encouraging the school canteen to reduce both packaging and resource use
- Establishing waste-pits, waste-bins, and recycling centres to encourage learners and staff to dispose of waste properly and to recycle materials as well as to reduce resource consumption
- Carrying out energy and water conservation projects relating to school energy and water bills and finding ways to reduce bills
- Planning more outside lessons so that environmental stimuli may be used as part of teaching
- Organising eco-friendly camping/trekking experiences

These greening initiatives are actively maintained by the learners under the supervision of educators. Whenever possible, nature trails are incorporated into the nature garden (Ministry of Education, 2008).

v) EE through non-formal education

The non-formal education (NFE) system in Bhutan was first developed in 1992 as a joint venture between the Dzongkha Development Authority (now known as the Dzongkha Development Commission) and the National Women's Association. In 1994, the Ministry of Education formally took over the NFE, which is now known as the Non-formal and Continuing Education Division (NFCED). In 2003, the division began providing post-literacy courses. NFE classes are conducted in the evenings either in local school classrooms or in local community buildings, such as an outreach clinic. In the past, local primary teachers worked as NFE instructors but nowadays NFE enterprises employ their own instructors (NFE, 2007).

The NFE programmes were originally instituted with the aim of enhancing literacy achievements in Bhutan and they were conducted through alternative forms of education, such as those forms of education outside of the state school system and those offering adult literacy programmes. Accordingly, the NFE provided literacy education for those learners who had had no opportunity

to attend formal education or for those learners who had not succeeded in their studies because of unavoidable circumstances. The primary courses include literacy and numeracy, personal sanitation management, cleanliness and the conservation of the environment, the preservation of national traditions and culture, and rural income generation through farming. For this reason the national language is taught using topics immediately relevant to the learners. These areas of basic literacy and numeracy are completed in three levels within one year, and they are taught by one instructor only. NFE-based EE follows a similar process. Environmental concepts are generally delivered using an expository approach involving group discussion together with explanations provided by an instructor (Asia Pacific Cultural Centre for UNESCO, 2007).

Tenzin and Maxwell (2009:288) are of the opinion that the newly elected democratic government of Bhutan will face challenges as it tries to balance development while maintaining the cultural traditions and environmental protection as set out in its vision for Bhutan 2020. Bhutan's vision statement, *Bhutan 2020: A vision for peace, prosperity and happiness* sets out the nation's future directions for development and emphasises the role of decentralisation for its development. One of the most formidable challenges will be the lack of environmental educators who are capable of developing relevant and meaningful EE strategies in the Bhutanese school system. However, EE has already been formalised in both the primary and the secondary school curricula as well as in NFE education and, on 5 November 2010, the MoE released a circular for educator training in School Agriculture and Environment Programmes. This confirms the government's concern for and commitment to the environment. Clearly, there is much that the rest of the world may learn from Bhutan.

South Korea may do well to use Bhutan as one of its major sources of reference to guide the inclusion of EE into both schools and the community.

2.9.6 South Korea

The poverty in South Korea after the Korean War of 1950 meant that the people of South Korea tended to focus on economic development only and, thus, the importance of the environment in South Korea did not become a major issue until 1980. In both South Korea's first (1962–1966) and second (1967–1971) five-year economic development plans, the nation's major concerns

were the heavy machinery and chemical industries, construction and land reclamation projects. However, by 1980, visible environmental problems in the country as a result of these industrial expansions in the form of air and water pollution, the destruction of greenbelts around urban areas and the destruction of a diversity of species of flora and fauna became a matter of grave concern to the South Koreans and, thus, EE entered a new dimension in 1980. The historical development of EE in South Korea may be divided into four periods: the initial period (up to and including 1980), the formative period (1981–1991), the settlement period (1992–1999), and the establishment period from 2000 onwards (Choi, 1995:166).

During the formative period, the Ministry of Education in South Korea implemented its School EE Model programme in both primary and secondary schools, incorporating it into regular subjects and extra-curricular activities through the use of previously developed EE-related educational materials. The South Korean Society for EE was established in September 1989 with EE research in South Korean universities beginning to gain momentum at about the same time. The changes as a result of the School EE Model programme extended into the settlement period while the fourth and fifth national curricula, introduced in 1981 to 1987 and 1987 to 1992 respectively, included guidelines for EE (JEEF, 2007).

Chu and Treagust (2009:300) found that, at present, EE in primary schools is a multidisciplinary, integrated subject offered in Years 1 to 2 and an interdisciplinary, integrated subject offered in Years 3 to 6. During these years EE involves programmes that are not supported by textbooks and it may, thus, be integrated into either science or other related subjects (social studies, fine arts, morals and practical arts). Most environmental topics (907 in total) are included in the following subjects: South Korean language – 207 topics (23% of all topics); science – 10 topics (12%); and social studies – 92 topics (10%). The remaining topics are spread across other subjects and curricular activities. The environmental issues featured at this level of the schooling system are concerned mainly with methods of environmental conservation, natural environments, and environmental pollution.

Research by Chu and Treagust (2009:300) has shown that both students in middle school and students in high school learn science as a single subject. In middle school science students learn

about environment-related science topics which are focused on the natural resources. Environment, as a subject in its own right (102 hours per year), is available to middle school learners while a subject termed ecology and environment (80 hours per year) may be taken by high school learners. These subjects are, however, optional. The topics available in the middle school subject of environment include human beings and their environment, environmental problems/solutions, and environmental conservation. On the other hand, the high school subject of ecology and environment includes topics related to human beings and their environment, ecological systems, environmental pollution, and environmental problems/issues.

According to Chu and Treagust (2009:301) a positive in regard to both these subjects, ecology and environment, is the fact that a number of publishers have produced textbooks for them. Two sets of researchers have analysed the contents of these textbooks with one set of researchers focusing on the middle school texts while the other set focused on the high school texts. Both sets of researchers noted that the learning activities in the textbooks took into account attitudinal aspects of environmental sensitivity as well as the relationship between human beings and the environment. However, the researchers expressed concern at the lack of activities directed at developing the learners' values and beliefs about environmental issues, as well as about their political and legal responsibilities. In addition, the researchers were also of the opinion that the textbooks needed to include more content and activities relating to the environmental skills that students need to develop in order to conduct a critical analysis of environmental issues. In previous studies, researchers had stressed the need for both these subjects, ecology and environment, to focus on education for the environment. They had also found that there was a need for both the multidisciplinary approach as well as the interdisciplinary approach to environmental science to emphasise education about the environment.

In view of the fact that the older learners in the study who were taking science attained the lowest scores relative to responsible environmental behaviour, it is obvious that science educators need to emphasise both environmental knowledge and environmental attitudes in their teaching of science. Nevertheless, the students' environmental literacy is unlikely to be enhanced unless they are being taught by educators who already possess such literacy. Accordingly, it is essential that EE constitutes part of the pre-service and in-service education of educators.

Currently, 11.8% only of South Korea's 2 936 middle schools and 30.0% of the country's 2 100 high schools offer the subject of environment; the most popular optional subjects in middle schools are Han-Mun (Chinese letters with South Korean pronunciation) and computing. However, one reason why schools in South Korea do not offer EE subjects is the lack of suitably qualified educators. In addition, EE subjects are not offered to learners sitting for the university entrance examinations. Nevertheless, since 2000, EE teachers have graduated from South Korea's four national universities but 24 of them only had found employment by 2004 (School Accountability Framework Review, 2006).

Clearly, positive and responsible attitudes toward the environment are necessary if South Korea is to sustain its natural environment. This need is particularly compelling in view of the rapid industrialisation that has taken place in South Korea over the last few decades with this rapid industrialisation giving rise to various environmental issues. It is, indeed, these issues that confront learners in their everyday lives. Accordingly, it is essential that students be able to make responsible, informed decisions about the environmental issues that affect their lives, society, and the planet. However, for this to be possible, students need to possess sound empirical knowledge about environmental issues and they also need to acquire the values and skills that will allow them both to evaluate and to address these issues.

Nevertheless, in view of the fact that EE in South Korea's primary and secondary schools is optional, not all learners have the opportunity to obtain these knowledge and skill sets. It is, thus, essential that priority be given to revamping the EE curriculum by making EE programmes compulsory, especially at the primary school level. Younger learners are at an impressionable stage of their personal development and, therefore, more likely to be receptive to acquiring the attitudes and behaviours requisite to caring for the environment. In short, EE from early in the schooling system is a crucial aspect of environmental preservation. However, the momentum should not stop at that point. EE programmes need to be revamped and developed for implementation through all levels of both middle and high school so that these programmes may be better integrated into the science curriculum with the emphasis being placed on the chemical and biological aspects associated with environmental pollution and climate change. However, in order to be effective, this major overhaul of the curriculum must be accompanied by

complementary initiatives.

Firstly, the central educational authorities need to encourage a strong commitment on the part of schools to fostering their learners' environmental literacy. Secondly, appropriate changes need to be made to both pre-service and in-service educator education at all levels. Thirdly, greater numbers of qualified EE educators must be employed in schools and, finally, there needs to be substantial improvements in the EE resources available to schools, for example, better textbooks (Chu & Treagust, 2009:306).

In August 2009, President Lee Myung-bak announced that South Korea would be shifting its growth paradigm to an environment-friendly and energy efficient paradigm in order both to achieve sustainable economic growth and to protect the earth. This announcement signalled an abandonment of South Korea's manufacturing-based and export-oriented growth approach of the preceding 60 years.

The South Korean government has made some plans in its effort to move in the direction of this new paradigm. For example, the government plans to build one million "green homes", which will be entirely dependent on renewable energy sources for their power needs. In addition, the government envisages South Korea becoming the world's fourth largest producer of environment-friendly "green cars" by 2020. South Korea also plans to foster research into and exploitation of the natural resources in both the Arctic Ocean and the Antarctic Continent as part of its effort to secure offshore energy resources. The South Korean government also aims to support job creation and overcome the challenges arising from climate change and high fossil fuel prices through green growth, which helps reduce greenhouse gas emission and environmental pollution (Lee, 2008)

South Korea is not only carrying out national eco-friendly policies but it is also playing a leading role in global efforts for green growth by implementing the green growth policy in an extremely systematic manner. In other words, South Korea is diverting its national strategy from quantitative (economic and financial) to qualitative (more environmentally friendly) growth (Hunton & Williams, 2010).

Ro of Korean.net (2009) reported the following efforts made by the South Korean Government in order to improve its environment:

- Compared to other OECD members South Korea allotted an unparalleled amount of budgetary funds for green growth. South Korea is also turning the financial crisis into an economic opportunity through its ambitious plans. The South Korean government plans to expend as much as 2% of the national GDP on green investment by 2013 – the United Nations has advised its member states to allocate 1% of GDP in the field. According to the Korea Development Bank (KDB) South Korea's top 400 companies plan to increase their investment in environment-friendly facilities by 14.7% every year until 2012 (Ro,1 September 2009).
- The Office for the Four Major Rivers Restoration plans to build 33 eco-friendly fishways in four major rivers. In terms of the current project, in order to build eco-friendly fishways, these fishways will be constructed in accordance with the fishway construction standards which take into account the characteristics of the movement of the fish. In addition, the fishways will be built at the locations in which the fish actually move while the structure of the fishways will be determined after both the Environment Impact Assessment and consultation with ecological experts. The fishways will be used for ecological education and for collecting ecological data from the four major rivers through periodic monitoring (Ro,2 September 2009).
- The majority of newly registered vehicles, 56.5%, fall into the first grade for energy efficiency – running more than 15 kilometres on a litre of fuel. This marks a huge jump from 32.1% only in 2008. There has also been a significant increase in the number of new vehicles with lower engine capacities (less than 1,600 cc) and at least a 10% better fuel efficiency than the corresponding 2008 models (Ro, 8 September 2009).
- On 22 September 2009, the Seoul Metropolitan Government declared two of the busier thoroughfares in Seoul – Jongno in central Seoul and Teheran-ro in the south – were to be car free except for buses from 4 a.m. to 6 p.m. According to the Ministry of Environment, Seoul's car exhaust and greenhouse gas emissions were 20% less, respectively, on the 2008 car-free day (Ro, 22 September 2009).

- The Minister of Strategy and Finance Yoon Jeung-hyun, held the 22nd Crisis Management Meeting at the end of September 2009. During this meeting possible ways to improve green technology, green projects, and green enterprises were discussed. The meeting focused on details to attract investment to “Low Carbon Green Growth” related projects. The minister also stressed both the need to bring in a new law concerning green growth, and the importance of a revision of the tax code to support green enterprises and investors while also offering credit guarantees and government assistance to green enterprises (Ro, 05 October 2009).
- With the participation of 47 public offices and businesses the Seoul Metropolitan Government held its first transaction of carbon emission rights from 13 to 17 September 2010. The trading of carbon emission rights forms part of global efforts to reduce the emissions of carbon dioxide by imposing a limit on the amount of carbon emissions produced in factories and other workplaces. Each site is given a specific quota in respect of the levels of emissions allowed. If there is a chance that they will exceed their quota, companies are required to purchase emission rights from other businesses that produce fewer emissions (Ro, 29 September 2010).
- South Korea is building high-tech, environment-friendly homes which not only save energy, but also cut costs in the long run. An energy-saving green home which was constructed in September 2010 was the first of its kind to be built, not as a model home, but as an actual residence (Ro, 01 October 2010).
- On December 27 2010, during a meeting held by the Ministry of Environment, details of plans to reduce greenhouse gas emissions were announced. From 2011 the Ministry aims to achieve its goal of cutting greenhouse gas emissions by 30% by 2020. In order to do so, the ministry will introduce a comprehensive “green card system” to widely apply the existing “carbon point system”. Under the “carbon point system” people receive carbon points by saving water, electricity or gas, using public transport or purchasing green products (Ro, 31 December 2010).

While these efforts are laudable, the government now needs to take their efforts to the grassroots level and to educate learners about the environment, thus producing citizens who are environmentally literate and who are able to make wiser decisions about the effects of

development of their environment. Such citizens will be able to work actively towards reversing environmental degradation as well as being able to manage and use the country's natural resources more wisely. While South Korea has the advantage of the example of other countries, including those discussed earlier, to assist it in the rapid lift off of EE, nevertheless, the process of inclusion of EE into the school system will be neither quick nor easy. Accordingly, it is essential that swift action be taken immediately in order to ensure substantial progress within a reasonable period of time.

2.10 CONSTRAINTS TO THE IMPLEMENTATION OF EE

National policies that relate to environmental education are, themselves, informed by international EE policies such as the Stockholm Conference on Human Environment (1972), the Belgrade Charter (1975), the Tbilisi Declaration (1977), the Moscow Conference (1987), the Brundtland Report (1987), Agenda 21(1992) and the World Summit on Sustainable Development (2002). However, policies will be effective only if the expected outcomes are achieved in practice (Le Roux & Maila, 2004:234). Countries that have endeavoured to implement EE policies in formal education have experienced certain issues and challenges with regard to the implementation. Le Roux and Maila (2004) identify the following constraints in respect of their interpretation and implementation of EE. By being aware of these problems in advance and by ensuring that the problems are overcome beforehand South Korea should be able to implement EE more effectively.

2.10.1 Constraints related to the status and relevance of EE

Le Roux and Maila (2004:239) list the following constraints in respect of the status and relevance of EE:

- Inadequate knowledge about the environment and environmental issues
- Lack of understanding of the relevance of EE
- The “add-on” status of EE and a lack of recognition of the fact that environmental learning is integral to the curriculum

- Uncertainty regarding the status of environmental education within the curriculum (Le Roux & Maila, 2004:239).

In order to overcome these problems it is suggested that each school and each region have a focal person (EE coordinator) and that EE should be allotted time in the timetable. The appointment of EE officers in each region to oversee the implementation of EE as a policy priority would ensure some achievement at school level (Kethoilwe, 2003:82).

Makundi (2003:140) suggests the following solutions:

- Training of both curriculum developers and teachers on policy analysis, dissemination, monitoring and evaluating the curriculum.
- Formulation of national environmental education guidelines
- Equipping curriculum developers and educators with effective learning approaches and methodologies
- The compilation of curriculum guides for environmental education

2.10.2 Constraints related to the support of active environmental learning

Le Roux and Maila (2004:239) list the following constraints related to the support of active environmental learning:

- Need for support in the development of learning programme units
- Lack of monitoring of the implementation of workshop processes in practice
- Inability to generate a whole-school approach to active environmental learning
- Lack of support on the part of school management in respect of the introduction of environmental learning into the curriculum
- Lack of support and assistance on the part of educators in respect of the implementation of environmental education
- Lack of coordination of partner support
- Lack of educator confidence in implementing environmental learning

Examinations play a major role in influencing the content that is taught and the way in which it is taught in South Korean schools. Generally, examinations encourage and reward the use of conservative teaching styles and teacher-centred methodologies in the classroom. It is, thus, essential that EE planners consider the impact of examinations upon educator support for, and the implementation of, EE goals. It would seem that, unless it is possible to persuade educators to include questions which test the learners' environmental knowledge, attitudes and values, EE is not likely to be taught effectively (Ballantyne & Oelofse, 1989:10).

In addition, planning strategies must take into account factors affecting educator decision-making regarding their choices of teaching style and the use of teaching methodologies. Accordingly, workshops incorporating educators and planners should be arranged in order both to identify problems and to plan the strategies designed to introduce EE into the schools (Ballantyne & Oelofse, 1989:10).

2.10.3 Constraints related to learning support materials

Le Roux and Maila (2004:239) list the following constraints in respect of learning support materials:

- Lack of learning support materials
- Lack of funds with which to purchase learning support materials
- Lack of experience in the developing of environmental learning support materials (Le Roux & Maila, 2004:240)

It is vital that planners acknowledge the important role played by textbooks in the school system and that they utilise the textbook to further the goals of EE. An EE textbook could play a pivotal role in facilitating the coordination and integration of EE across the curriculum. In addition, such a book may also encourage educators to adopt the appropriate teaching methodologies which are indispensable in the acquisition of knowledge and the development of environmental attitudes and values (Ballantyne & Oelofse, 1989:11).

Ketlhoilwe (2003:82–83) recommends the following solutions:

- Within the infusion framework there is a need to clarify and examine EE related issues in relation to existing curriculum requirements
- An in-service training programme for educators, heads of departments and education officers should be put in place in order to improve the implementation progress
- Clear guidelines should be drawn up for secondary school education officers and school heads to provide them with the necessary support with which to interpret the requirements of the national policy for EE
- Enthusiastic educators ought to be motivated through more defined responsibilities (eg. appointment of an EE coordinator) to promote the status of EE in schools
- An effective monitoring system should be established to ensure that education and school heads play their roles in the implementation of EE
- The development of materials should be initiated and sustained to ensure that all stakeholders are equipped to implement the EE processes in schools

It is not possible for the environmental educator to create environmental literacy, nor is it possible for an individual ever to claim that he/she is fully environmentally literate. The process of achieving environmental literacy is an ongoing, life-long process (Clacherty, 1992:27).

2.11 CONCLUSION

In this chapter the literature reviewed was outlined. The South Korean education system from preschool up to higher education was discussed together with its long history. EE is being implemented in several countries which are all using the aims, principles, and goals of EE to guide them. A few of the countries that are implementing EE were briefly reviewed and the constraints they experienced pointed out together with some recommendations to overcome these constraints. EE in South Korea was summarised. It was also suggested that those countries sharing the geographical setting, culture, religion, customs and environmental degradation of South Korea be used as a benchmark for the inclusion of EE into the curriculum of South Korea.

CHAPTER 3

RESEARCH METHODS AND DATA COLLECTION METHODS

3.1 INTRODUCTION

This chapter focuses on the research methods and data collection adopted in this study.

The collective outcome of the first two chapters necessitated that an empirical investigation be undertaken. The research design is a quantitative, non-experimental survey design. The data collection tool used is a self-administered, translated questionnaire which was developed in order to evaluate the knowledge of South Korean educators regarding EE and their attitude towards the inclusion of EE in the school curriculum. In this chapter quantitative research will be discussed, as will be the procedures used for conducting the research in this study. In the subsequent chapter, the data analysis and interpretation will be presented, as well as the findings of the research.

3.2 RESEARCH METHODS

Research refers to the systematic process of collecting and logically analysing data for the purpose of establishing novel facts, solving new or existing problems, proving new ideas or developing new theories usually using a scientific method. Research methodology is both systematic and purposeful while procedures are not haphazard as they are planned to yield data in respect of a particular research problem (McMillan & Schumacher, 2006:9). Research methods refer to the ways in which data is collected and analysed (empirical evidence or information that is carefully gathered according to rules or procedures). The data may be quantitative (expressed as numbers) or qualitative (expressed as words, pictures, objects) (Neuman, 1997:7). The quality of the research findings is directly dependent on the accountability of the research methodology followed (Mouton & Marais, 1990:192).

According to Creswell (1994:2), a *qualitative study or qualitative paradigm* is an inquiry process related to acquiring a understanding of a social or human problem based on building a complex,

holistic picture, formed with the words, reporting detailed views of informants, and conducted in a natural setting.

Alternatively a *quantitative study or quantitative paradigm* is an inquiry into a social or human problem, based on testing a theory composed of variables, measured with numbers, and analysed with statistical procedures in order to determine whether the predictive generalisations of the theory hold true (Creswell, 1994:2).

Creswell(1994:7) recommends a single paradigm for the overall design of a study (i.e qualitative or quantitative) as using both paradigms in a single study may be expensive, time consuming and lengthy. The researcher in this study established that a quantitative approach would be the best way in which to capture the results of the data gathered.

3.2.1 Quantitative approach

Maree (2007:159) defines quantitative research as a process that is systematic and objective in its way of using numerical data from a selected subgroup of a universe (or population) only in order to generalise the findings to the universe that is being studied.

A quantitative methodology is approached by using a deductive form of logic in terms of which theories and hypothesis are tested in a cause-and-effect order. Concepts, variables, and hypotheses are chosen before the study is initiated and remain fixed throughout the study. (Creswell, 1994:7).

Mouton and Marais (1990:160) list the following advantages of quantitative research:

- It allows the researcher to choose concepts and to create words in such a manner that no more than a single meaning may be ascribed to the word that the researcher has chosen. In other words it is incumbent on the researcher to provide an explicit, operational definition for the concepts to be used.
- It allows the researcher to formulate a hypothesis before embarking on the investigation.

This hypothesis may be rejected, confirmed or accepted.

- This approach allows the researcher to be more objective as compared to personal interviews and to study a problem as an outsider.
- A structured interview schedule or questionnaire is used.

The disadvantage of this approach is that it allows little room for respondents to voice their own opinions about a particular issue. However, the language barrier in South Korea did mean that it was not feasible to ask opinions in this study as this would have involved translation and there may have been errors in interpretation.

3.2.2 Data collection methods

Two scientific methods were employed in this research, namely;

- A literature study
- The research survey technique using a questionnaire.

3.2.2.1 Literature study

A *literature search* involves reviewing all readily available materials. These materials may include newspapers, magazines, online databases, books, journals and any other published materials (StatPac, 2009).

According to Mouton (2003:87) a literature study is important for the following reasons:

- To ensure that a previous study is not duplicated
- To discover the most recent and authoritative theorising about a certain subject
- To find out the most widely accepted empirical findings in the specific field of study
- To identify the instrumentation available that has proven both its validity and reliability
- To ascertain the most widely accepted definitions of key concepts in the relevant field and
- To save time and avoid duplication and unnecessary repetition. An effective review of the available literature not only saves time but it also helps avoid errors and the unnecessary

duplication of previous results. In addition, it may provide clues and suggestions about the avenue to follow.

Literature may be divided into primary and secondary sources.

a) Primary sources

A primary source is a direct description of the occurrence by an individual who actually observed or witnessed the occurrence (Borg & Gall, 1989:115). According to Welman and Kruger (2002:35), a primary source comprises the written or oral account of a direct witness of, or participant in, an event, or an audiotape, videotape or photographic recording of the event. In other words, this representation of the event constitutes firsthand evidence of what actually happened. In this research study research reports, speeches, treaties and legislation were consulted.

b) Secondary sources

Secondary source materials in education include publications written by an author who was not a direct observer of, or participant in, the events described (Borg & Gall, 1989:115). According to Welman and Kruger (2002:35), a secondary source provides second-hand information about events. The individual has not witnessed the events him/herself, but has obtained the information either from someone else who did experience the event or who has him/herself obtained the information from a person who did, indeed, experience the event firsthand. Several secondary sources, including books, scholarly journals, magazines and newspapers, were consulted during this research.

3.2.2.2 Research survey

According to Creswell (1994:11), surveys include cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection with the intent of generalising from a sample to a population.

After carefully considering the various options, the researcher in this study decided that a

translated questionnaire would be the most appropriate research instrument for the purposes of this research.

3.2.3 Questionnaire as a research tool

The questionnaire is a tool or instrument used for collecting data. The subjects respond to the questions which have been posed in order to elicit their reactions, beliefs and attitudes. The researcher will either choose or construct a set of appropriate questions and then ask the subjects to answer these questions – usually in a form that requires them to indicate their responses (McMillan & Schumacher, 2001:40).

The first step in carrying out a satisfactory questionnaire study is to define the problem and to list the specific objectives to be achieved or the hypotheses to be tested. The conceptualisation of this research survey is to be theory driven with the aim of testing the hypotheses (Borg & Gall, 1989:424).

StatPac (2009) lists the advantages of written questionnaires as follows:

- Questionnaires are extremely cost effective as compared to face-to-face interviews. This is especially true for studies involving large sample sizes and extensive geographic areas.
- Questionnaires are easy to analyze. It is relatively easy to carry out the data entry and tabulation for nearly all surveys using the various computer software packages available.
- Questionnaires are familiar to most people. Nearly everyone has had some experience of completing questionnaires and they generally do not make people feel apprehensive.
- Questionnaires reduce bias as there is uniform question presentation and, thus, no middleman bias. In other words, the researcher's own opinions will not influence the respondent to answer questions in a certain manner. There are no verbal or visual clues to influence the respondent.
- Questionnaires are less intrusive than telephone or face-to-face surveys and the respondents are free to complete the questionnaires in their own time.

StatPac (2009) lists the disadvantages of written questionnaires as follows:

- One major disadvantage of written questionnaires is the possibility of low response rates. Accordingly, the findings may not be representative of the target population.
- Inability to probe responses. Questionnaires are structured instruments and they allow little flexibility to the respondents with respect to the response format.
- Nearly 90% of all communication is visual. However, gestures and other visual cues are not available with written questionnaires. This lack of personal contact may have various outcomes depending on the type of information requested.

3.2.3.1 Questionnaire designs

Baily (1994:108–110) maintains that the key word in questionnaire construction is relevance.

This relevance may be said to have two facets;

- Relevance of questions to the goals of the study
- Relevance of the questions to the individual respondent

In this study, the questionnaire is based on teaching and learning, the school environment, and the introduction of EE into the curriculum. The respondents are educators and, thus, they will be familiar with the terminology. Accordingly, they will be able to answer the questions without difficulty as compared to expecting members of the general public to answer the same questionnaire.

Baily (1994:107) identifies some of the problems associated with questionnaires and also possible solutions to these problems:

- Respondent feels that the questionnaire is not legitimate. Remedy: An eloquent covering letter or introductory statement legitimising the study.
- Respondent feels the information will be used against him/her – an invasion of privacy. Remedy: Omit unnecessarily sensitive questions. Assure the respondent of his/her anonymity.
- Respondent refuses to cooperate. Remedy: Provide incentives such as gifts or vouchers.

Maree (2007: 160) and Baily (1994:110) identify the following pitfalls in the drawing up of a questionnaire:

- Double-barrelled questions – Do not include two or more questions in one question.
- Ambiguous questions – Questions should refer to concrete and specific matters and elicit specific answers, if possible.
- Level of wording – The wording of question wording may significantly affect the answers received.
- Abstract versus factual questions – Questions should refer to concrete and specific matters and elicit specific answers, if possible.
- Avoid leading questions.

Statpac (2009) provides some guidelines in respect of questionnaire design that may help ensure a satisfactory response rate:

- Well-defined goals. Ask questions that directly address the research goals only.
- Keep questionnaire short. Use simple and direct language.
- Provide a well-written, covering letter. This offers the best chance of persuading respondents to complete the survey. Include clear and concise instructions on how to complete the questionnaire.
- Begin with a few non-threatening and interesting items – make the respondents want to continue.
- Place the most important items in the first half of the questionnaire.
- Hold the respondent's interest. Provide variety in the type of items used.
- Provide incentives as a motivation for a properly completed questionnaire.
- Use professional production methods for the questionnaire – either desktop publishing or typesetting and key-lining. Be creative. Try different coloured inks and paper.
- Ensure that the questionnaire is convenient. Always include a self-addressed postage-paid envelope.
- The final test of a questionnaire is to try it out on representatives of the target audience. If there are problems with the questionnaire they will almost always emerge at this juncture.

3.2.4 Nature of questions

There are two types of questions, namely, open ended and closed ended questions. An open ended question enables respondents to answer in any way they please whereas a closed ended question requires respondents to choose from a limited number of predetermined responses. The questionnaire used in this study consists of closed ended, dichotomous questions.

Maree (2007:164) and Baily (1994:118) identify the following advantages of closed ended questions:

- The answers are standardised.
- The answers are easier to code and analyse than open ended questions and this, in turn, saves time and money.
- The respondent is often clearer about the meaning of the question,
- The answers are relatively complete, and a minimum number of irrelevant responses are received,
- In terms of sensitive topics a respondent who may refuse to divulge sensitive information in answer to an open ended question may respond to a similar closed ended question,
- Closed ended questions are often easier for a respondent to answer as the respondent merely has to choose a category, while formulating an original answer for an open ended question may be much more difficult.

Maree (2007:164) and Baily (1994:119) identify the following disadvantages of closed ended questions:

- A respondent who does not know the answer may choose an answer randomly.
- The respondent may feel frustrated because there is no opportunity to clarify answers.
- There may be too many answer categories to print on the questionnaire.
- Differences in interpretations of the actual meanings of questions may go undetected.
- Variations in answers may be eliminated artificially by forced choice responses.
- There is a greater likelihood of a clerical error as the respondent may, for example, circle a two when he/she actually meant to circle a three.

3.2.5 Reason for selecting the questionnaire as the tool for this study

The translated questionnaire was selected for this study as it is the only suitable tool that may be used to obtain a large amount of information from a large sample within a short time. Translating the questionnaire and asking closed ended questions only made it possible to investigate the perceptions of South Korean educators regarding the inclusion of EE in the curriculum. Despite the language barrier the translated questionnaire was convenient and it was possible to administer it without undue cost. Questionnaires are also reliable, personal and self-administered. In addition, the problem of interviews may be avoided as the choice of words or body language used in interviews may unintentionally affect responses.

3.2.6 Reliability and validity

According to Bless, Higson-Smith and Kagee(2006:93), the central aim of a research design is to establish, with a high degree of certainty, the relationship between the independent and the dependent variables. The potential of a design to realise this aim is referred to as the validity of the design. On the other hand, reliability is concerned with the consistency of measures. An instrument that always renders the same score when used to measure an unchanging value and which, thus, may be trusted to give an accurate measurement is said to have high reliability.

According to Neuman (1997:145) there are several concepts, including reliability and validity, which have multiple definitions. This may create confusion unless a distinction is made between alternative uses of the same word;

- Reliability – The word reliability is used in everyday language. However, in terms of measurement reliability means that the results of a study are reliable. This, in turn, means that the method of conducting a study or else the results emanating from the study may be reproduced or replicated by other researchers.
- Internal validity – There are no errors internal to the design of the research project.
- External validity – The ability to generalise findings from a specific setting and small

group to a broad range of settings and people.

- Statistical validity – The correct statistical procedure has been chosen and its assumptions have been met fully.

3.3 RESEARCH GROUP

A population may sometimes be small enough for the researcher to include the entire population in the study. This type of research is termed a census study because the data is gathered from every member of the population.

However, the population is usually too large for the researcher to attempt to survey all of its members and, thus, a small, but carefully chosen sample, may be used to represent the population. Such a sample will reflect the characteristics of the population from which it is drawn.

According to Trochim (2006) sampling methods may be classified as either *probability* or *non-probability*.

- In probability samples, each member of the population has a known, non-zero probability of being selected. Probability methods include random sampling, systematic sampling, and stratified sampling.
- In non-probability sampling, members are selected from the population in some non-random manner. Non-probability sampling methods include convenience sampling, judgment sampling, quota sampling, and snowball sampling.

The advantage of probability sampling is that it is possible to calculate the sampling error – sampling error is the degree to which a sample may differ from the population. In non-probability sampling, the degree to which the sample differs from the population remains unknown.

Random sampling is used in this study. According to Welman and Kruger (2002:35), in the simplest case of random sampling, each member of the population has the same chance of being

included in the sample while each sample of a particular size has the same probability of being chosen.

The research group for this study was selected from Gyeonggi Province in South Korea with the research being confined to Suwon city as this is the area where the researcher lives. The research group included educators from both middle and high schools in Suwon city. A list of all the schools in Suwon city was requested from the Gyeonggi Education Office.

In order to ensure that certain characteristics of the population were adequately represented in the sample, stratified random sampling was used twice. Firstly, two lists were compiled – a list of middle schools and a list of high schools. This was done to ensure that there was a fair representation of both middle school and high school educators. The lists were arranged in alphabetical order (Korean) and systematic sampling was used to select every third school from the list, starting from the second school on each list.

From the list of 49 middle schools in Suwon, 16 schools were selected, namely, school numbers 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44 and 47. From the list of 39 high schools in Suwon, 13 schools were selected, namely, school numbers 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35 and 38.

Secondly, stratified random sampling was used for the target population. A target population of eight educators per school – four males and four females from each of the selected schools – were requested to complete the questionnaire.

Therefore, of the 88 middle and high schools in Suwon, 29 schools were chosen for the sample. Each school was represented by eight educators, thus resulting in a total of 224 teachers participating in the survey.

3.4 DATA COLLECTION PROCEDURE

The following documents were sent to professional translators to translate from English to

Korean as very few people in South Korea possess good English linguistic skills:

- Letter to the Gyeonggi Education Office requesting permission to conduct the survey
- Notification letter to the principals, informing them both about the research and about the fact that the questionnaires would be arriving at their schools
- Letter to the principal of each school stating
- The purpose of the questionnaire
- The researcher's contact details
- The researcher's sincere gratitude to the school for its assistance and co-operation
- Letter to the respondents indicating the aims of the research and assuring the respondents of their anonymity as well as the confidentiality of the research. These letters also contained the researcher's contact details and expressed the researcher's sincere gratitude to the respondents for their time.
- The questionnaire
- Reminder letters

The questionnaire was administered as follows:

- The researcher asked the permission of the Gyeonggi Education Office to conduct the survey at the schools selected for the study.
- After the consent of the Gyeonggi Education Office had been obtained, the researcher sent a translated, prenotification letter to the principals of the relevant schools informing them that they should expect the delivery of the questionnaires.
- The letters to the principal and the respondents, as well as the questionnaires, were mailed to the selected schools. The questionnaires were placed in self-addressed, stamped envelopes to enable the respondents to post their completed questionnaires back to the researcher.

According to Trochim (2006), the advantages of the mail survey is that the respondent is able to work on the instrument in private and at a convenient time.

- Two weeks later reminder letters were posted to the schools.

3.5 CONTENT VALIDATION OF THE QUESTIONNAIRE

The validity of a test is of the utmost importance. A test is valid to the extent that it lives up to the claims that the researcher has made for it. The following two types of validity, as defined by Borg and Gall (1993:120), are mentioned in this research:

- Content validity: A test has content validity to the extent that its items represent the content that the test is designed to measure.
- Construct validity: A test has construct validity to the extent that it may be shown to measure a particular hypothetical construct. Psychological concepts such as competency, intelligence, anxiety and creativity are considered hypothetical constructs because they are not directly observable, but rather are inferred on the basis of their observable effects on behaviour.

Content validation asks the following questions: What are the content areas addressed in this survey? Do the items in the questionnaire measure the content they are intended to measure?

In order to ensure content validity, experts in the field of research from the School of Education at UNISA reviewed the questionnaire to judge the relevance of each item.

The necessity for the inclusion of EE in South Korean schools will be addressed if the following holds true:

- Environmental literacy: The aim of the questionnaire is to check whether South Korean educators are environmentally literate, irrespective of pre-service or in-service training. Environmental literacy refers to an awareness of one's environment. It would not be possible for educators to develop environmental literacy in learners if they were not environmentally literate themselves.
- Teachers' perspectives on EE: The aim of the questionnaire is to check whether South Korean educators have any knowledge of environmental education, whether they deem it important to include EE in the curriculum as well as to establish the educators' views on the grade and subject into which EE should be integrated. In addition, the aim is to

discover their views about the relevance of EE.

- Teaching methods appropriate to EE: The aim of the questionnaire is to check whether South Korean educators are skilled in using methods appropriate to the teaching and learning of EE.

According to Jacobson (2006:10), environmental education techniques include issue investigation, citizen science, professional development, interactive Websites, and local school–community action projects. In the classrooms educators may use discovery learning, experiments, simulations, debates, and other techniques that employ the environment as a classroom. First-hand experiences may help learners to understand natural systems, the community, and environmental issues while the infusion of environmental themes into the curriculum will stimulate effective creative writing and language arts studies. In addition, the outdoors may serve as a laboratory in which to study mathematics and science.

- Environmental practices: To check whether the educators themselves are personally environmentally conscious and if they care about the environment and, in fact, take care of it.
- School environmental education policy: To check whether or not schools have formulated an environmental education policy and whether they have adopted good environmental practices.
- Environmental awareness: To check whether or not school practices promote environmental awareness by celebrating environmental days or weeks or by visiting places that promote environmental awareness, thereby making their learners more conscious of the environment and its importance.

If educators have not been trained, do not have knowledge of these issues and do not believe in the importance of environmental awareness, their learners will not learn to be environmentally responsible. Accordingly, the content validity of the questionnaire was ascertained before the research instrument was presented to the respondents. This was done by submitting the questionnaire to the researcher's supervisor who has several years of experience in the field of EE.

The construct validity of the instrument was investigated by means of factor analysis. The principle objective of factor analysis is to construct a smaller number of variables (factors) that succeed in conveying the information present in a larger number of variables (Wikipedia, 2009).

The following names were ascribed to the six factors which were derived from the variables in the questionnaire:

- Factor A: Environmental literacy of educators which consists of sixteen variables.
- Factor B: Educators' knowledge of EE which consists of ten variables.
- Factor C: Teaching methods of educators which consist of eleven variables.
- Factor D: Environmental practices of educators which consist of ten variables.
- Factor E: Environmental practices in schools in South Korea which consists of ten variables.
- Factor F: Environmental awareness at schools which consists of five variables.

3.5.1 Pretesting the questionnaire

Pretesting was carried out in order to establish the face validity of the questionnaire. The researcher administered the questionnaire to five middle school teachers. This pretest was conducted prior to the main survey. The purpose of pretesting the questionnaire was to assess the clarity, the validity and the reliability of each of the items contained in the instrument. Any blank spaces, inaccurate responses, inconsistencies or other weakness indicated a need to review the questionnaire.

3.6 RESEARCH ETHICS

According to Bless, Higson-Smith, & Kagee(2006:144), researchers have the right to search for the truth and knowledge, but not at the expense of the rights of other individuals in society. Similarly, participants have basic rights when they elect to participate in a research study – mainly rights to privacy and to protection from both physical and psychological harm. The goal of research ethics is to minimise the risk to participants.

Research ethics place an emphasis on the humane and sensitive treatment of participants who may be placed at varying degrees of risk by research procedures.

Bless, Higson-Smith and Kagee (2006:145) provides ethical guidelines for research. The most relevant of these guidelines include the following:

- Informed consent – Participants have a right to know what the research is about, how the research will affect them, the risks and benefits of the research and the fact that they have the right to choose to participate or not. In this study the respondents were informed of all the above by way of a letter.
- Confidentiality and anonymity – In this study all participants' information will be confidential while all the participants will remain anonymous.
- Deception – A researcher may conceal the true nature of the study from the participants. However, in this study all the participants were clearly informed of the true nature of the study.
- Discontinuance – It is essential that participants be given every assurance that they are free to discontinue their participation at any time without explanation.

3.7 PROCEDURE FOR DATA ANALYSIS AND PRESENTATION

Statistical methods are used to analyse quantitative data. Once the researcher has measured the variables, the scores(observations) on the variables(data) are usually transformed statistically in order to help the researcher to describe the data more succinctly and to make inferences about the characteristics of populations on the basis of the data from the relevant samples (Terre Blanche, Durrheim & Painter,2006:188).

Data comprise the raw material of the research. In quantitative research, the data consist of lists of numbers that represent the scores on variables. The first stage of data analysis is a preparatory stage during which the raw data are transformed into an electronic format using a computer

spreadsheet.

Raw data consist of a collection of unprocessed measurements such as a collection of completed questionnaires. Raw data are unordered, contain errors and missing values, and must be transformed into an ordered, error-free data set before being analysed. The preparation of data involves three tasks: coding, entering and cleaning (Terre Blanche, Durrheim & Painter, 2006:189).

Once the researcher has achieved a clean electronic database, the data may be analysed statistically. Terre Blanche, Durrheim and Painter (2006:193) maintain that there are two types of data analysis that may be performed:

- Descriptive data analysis – aims to describe the data by investigating the distribution of the scores on each variable, and by determining whether the scores on different variables are related to each other. This type of data analysis is carried out to assist the researcher in gaining an initial impression of the data that has been collected.
- Inferential data analysis – allows the researcher to draw conclusions about populations on the basis of the sample data.

A descriptive data analysis of the items in the study was carried out. The data was counted and quantified and percentages obtained by the Department of Computer Services at the University of South Africa.

Information about the number of returns and non-returns of the survey questionnaire was presented while special attention was paid to the number of respondents and non-respondents (Creswell, 1994:121). The response bias was then discussed. The response bias is a type of research bias where the respondent consciously or subconsciously, gives responses that they think that the interviewer wants to hear. The respondents may also believe that they understand the experiment and are aware of the expected findings, so adapt their responses to suit the experiment (Shuttleworth, 2009:1).

3.8 CONCLUSION

In this chapter the data collection process was discussed. The selection of the sample, the preparation, validation and reliability of the questionnaires as well as the reasons for choosing this type of research were all explained. In the next chapter, the results obtained from the survey will be discussed.

CHAPTER 4

REPORTING AND ANALYSIS OF SURVEY DATA

4.1 INTRODUCTION

In the previous chapter, the research design was explained. In this chapter, the reporting and analysis of the data are undertaken. The purpose of the analysis of data is to answer the research question (see chapter 1), namely, whether or not South Korean educators are informed about EE and what their position is regarding the inclusion of EE in the curriculum. The data is reported in table form. The percentage of respondents in each category, with respect to each question, is calculated in order to help the researcher to make valid generalisations in respect of the statistical results obtained from the sample to a much larger population. The results of the empirical investigation are clearly outlined in the tables below. The responses have also been ranked in order from highest to lowest agreement level with the responses with the highest agreement level being accorded a 1 while the responses with lower agreement levels are accorded lower ranks successively. The information presented in these tables is followed by a brief interpretation of the analysed results.

4.2 PRESENTATION AND DISCUSSION OF RESULTS

A total of 156 respondents participated in the survey out of an intended target of 224, thus giving a response rate of 69,6%. This response rate was extremely high especially in view of the fact that the survey had been administered through self administered questionnaires. Generally, with questionnaires, there is low return rate – sometimes even a return rate of less than 50%.

Accordingly, the response rate in this research study was quite good. There was an almost equal distribution in terms of gender with almost 54% of the respondents being female whilst almost 46% were male. The sample is a true representative of the gender distribution intended in the survey as the questionnaires at each school were distributed equally among the male and female educators. Once the biographical data of the respondents has been analysed the variables, which

are grouped according to the six factors listed above, will be discussed.

4.2.1 Biographical data of respondents

The biographical data on the respondents were obtained in order to gain an insight into the age, gender, academic qualifications, position held and years of teaching experience pertaining to the participants in the sample. The age distribution indicated in the table below shows that most of the respondents were older than 30 years of age:

Age group	Percentage
20–30 years	19,9
31–40 years	38,5
41–50 years	41,7

Therefore, most of the educators were mature and will, thus, be able to provide reliable information. In view of the fact that at least 80% of the respondents were older than 30 years of age it may, thus, be deduced that most of them would be fairly experienced workers. This was supported by the fact that at least 74% had had experience in teaching of more than five years – see table below:

Experience in teaching	Percentage
Less than 5 years	25,6
5–10 years	33,3
11–20 years	18,6
More than 20 years	22,4

Almost 40% of the educators had had more than 10 years experience whilst 25,6% only had had less than five years. Thus, the majority of the educators who responded to the instrument were experienced and would be in a good position to air their general knowledge about and attitudes towards EE and their views regarding the future position of EE in the South Korean school curriculum.

The majority of the respondents were teachers, ie, approximately 92% with a minority being heads of school and deputy principals. In most cases, the heads and principals of schools are responsible for administrative work and are not involved in the teaching of the learners. The academic qualifications of the educators are presented in the table below.

Qualification	Percentage
University degree	57,1
University degree + postgraduate school certification	8,3
Masters degree	33,3
Doctoral degree	1,3

It may be observed that all the respondents were in possession of, at least, a basic university degree.

4.2.2 Factor A: environmental literacy of educators

The overarching goal of EE is an environmentally literate citizenry. The test of the environmental literacy of an individual is the capacity of that individual to function successfully in daily life on the basis of a broad understanding of the way in which people and societies relate to each other and to natural systems, and how they may do so sustainably. This requires sufficient awareness, knowledge, skills and attitudes in order to incorporate appropriate environmental considerations into daily decisions about consumption, and lifestyle and to engage in individual and collective action.

If educators are not environmentally literate themselves, then instilling knowledge, attitudes, skills, awareness and action in learners will not be successful in achieving the goal of producing environmentally literate citizens.

The respondents were asked to comment on the following aspects of environmental literacy. The statements helped the researcher to gain insights into the environmental attitudes and environmental literacy of the respondents.

Aspect	Yes	No	Rank
Plants, minerals, soil, water and animal populations need to be conserved for future generations.	100%		1
The burning of coal results in the release of gases into the atmosphere which, in turn, affects the survival of living things and causes air pollution.	98,7%	1,3%	2
People must live in harmony with nature in order to survive.	98,7%	1,3%	2
All living things depend on air, water, food and land for survival.	97,4%	2,6%	4
It is important to repair leaking taps even if we do not pay for water.	95,5%	4,4%	5
Conservation is a responsibility to be shared by individuals, industries, social groups and all levels of government and education.	94,2%	5,8%	6
Tree planting days will increase public awareness of the necessity of trees.	93,6%	6,4%	7
Man has the ability to change the environment.	87,2%	12,8%	8
Family planning is important in order to avoid overpopulation.	50,0%	50,0%	9
Science teachers only should know how the environment works.	7,7%	92,3%	10

All the respondents agreed that plants, minerals, soil, water and animal populations need to be conserved for future generations and disagreed that science educators only should know how the environment works. The general consensus was that everyone should be involved in conservation. There were mixed feelings on whether family planning is important in order to avoid overpopulation with half of the respondents agreeing whilst the other half disagreed.

The respondents were then asked to comment on statements relating to environmental literacy in South Korea. The following results were obtained:

Aspect	Yes	No	Rank
South Korea has many environment problems.	96,2%	3,8%	1

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There is a need to spend more time teaching students about the environment.	94,9%	5,1%	2
Pollution is one of South Korea's biggest problems.	85,9%	14,1%	3
South Korea's education focuses on the acquisition of knowledge in order to obtain certification.	73,1%	26,9%	4
The South Korean education system teaches students about their impact on the environment.	55,8%	44,2%	5
There are numerous opportunities provided on a regular basis to South Koreans to learn about the environment.	14,7%	85,3%	6

Most of the educators agreed that South Korea is facing many environmental problems and that there is need to spend more time teaching students about the environment. These statements were agreed to by more than 90% of the respondents. It is, thus, possible to conclude that the educators agree that learners should be informed about EE. Furthermore, the respondents disagreed that there are numerous opportunities provided on a regular basis to South Koreans to learn about the environment.

4.2.3 Factor B: educators' knowledge of environmental education

According to Bornman (1997:65), EE

- builds awareness of the interrelatedness of the local and global environments. Such awareness will empower learners to understand the connections between everyday local actions and the wider environment.
- offers learners the opportunity to identify problems and encourages problem solving with learners learning to search for solutions to real issues. They also learn to examine issues of local and global significance within their political, cultural and socio-economic context and explore the underlying values in a sensitive and open-ended manner.
- generates action by encouraging individuals to take responsibility for the care and shaping of their own environments. Educational theory and practice become a reality.

- is part of a continuous, lifelong learning process. It is coherent and progressive and becomes a lifestyle.
- contributes to active and informed citizenship which is a further aspect of the social and personal environment. EE is one of the many lenses through which the individual may focus on active and informed citizenship. Values, concepts and skills such as decision making skills, which are central to both EE and citizenship, are incorporated into educational practice.
- tries to establish a healthy school environment which has much in common with a supportive school environment. This healthy school environment policy seeks to encourage social responsibility among members of the school community (educators, parents, Department of Education, etc) by fostering practices that reflect the principles of equity and participation.

The respondents were asked to comment on the following aspects of EE.

Aspect	Yes	No	Rank
Do you think EE is an important subject?	91,7%	8,3%	1
Does your school have an EE policy in place?	65,6%	34,4%	2
Have you attended courses or training in EE?	37,2%	62,8%	3
Were the courses indicated above presented by the Ministry of Education?	32,7%	67,3%	4
Did you study EE at university?	32,7%	67,3%	4

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The majority of the respondents were of the opinion that EE was an important subject while approximately 65,6% of the schools represented in the sample did have an EE policy in place. In terms of training 37,2% of the respondents only had attended any courses in EE while 32,7% only had studied EE at university. One may, thus, conclude that even the educators themselves have not had sufficient training in EE.

As indicated in the following table most of the respondents agreed that EE should be taught at

elementary school level.

Aspect	Yes	No	Rank
Do you think EE should be taught at elementary school?	90,4%	9,6%	1
Do you think EE should be taught at middle school?	56,4%	43,6%	2
Do you think EE should be taught at high school?	43,6%	56,4%	3

The majority of the respondents felt that EE should be taught at elementary school.

The respondents were asked to comment on the curriculum subject into which EE should be integrated. As indicated below more than half felt it should be integrated into science subjects.

Aspect	Yes	No	Rank
Do you think EE should be integrated into:			
Sciences (biology and physics) and technology	66,0%	34,0%	1
Social studies and government	55,8%	44,2%	2
Religion and morality	32,7%	67,3%	3
Mathematics	12,8%	87,2%	4
Languages (Korean and English)	12,8%	87,2%	4
Arts (art and music)	12,2%	87,8%	6

Most respondents tend to disagree that EE should be incorporated in either religion and morality, mathematics, languages (Korean and English) and the arts (Art and music).

Approximately 85,3% of the respondents indicated that there is a need to receive training in EE whilst 14,7% only disagreed. This may be attributed to the fact that most educators lack training in EE since they had not studied it during their training. Almost an equal proportion (84%) agreed that it would be possible for them to teach environmental issues in or through their own subjects. It, in turn, implies most of the educators are in agreement that EE may be incorporated into the curriculum.

In terms of attending a professional development course or training in EE the respondents indicated that they would prefer to receive training in the following areas:

Aspect	Yes	No	Rank
If you attended a profession development course or training in EE, would you like to be trained in the skills required to teach EE?	71,2%	28,8%	1
If you attended a professional development course or training in EE, would you like to be trained in the content of EE?	49,4%	50,6%	2

Clearly, most people would like to be trained in the skills required to teach EE whilst half only indicated the need for training in the content of EE. The reason for this finding may be that educators are confident they would be able to study and understand the content of EE on their own, without training. However, the skills required to teach EE are more difficult to acquire and, thus, it would be more beneficial for them to be empowered with these rather than with the content.

4.2.4 Factor C: teaching methods of educators

Environmental education

- uses a variety of teaching and learning strategies, learning and instruction methods as well as resources, including field work, simulations, information technology, and experiences such as camping and hiking.
- is learner-centred in the sense that students are allowed to contribute to the planning of their own learning experiences – a new trend in education
- is community orientated. Students and NGOs outside the schools are involved, whenever appropriate. In addition, there are museums, conservation agencies, municipalities and others places.
- is inclusive, providing subject matter, language, learning opportunities and assessment methods that meet the needs of all learners
- focuses on direct experience. Experiences are sensory, aesthetic and practical and, in addition, are focused, progressive and integrated with other learning within and outside of the classroom (Bornman, 1997:65).

In terms of teaching methods, as indicated in the table below, all the agreement rates were below 50%.

Aspect	Yes	No	Rank
Do you use the following methods in your lesson:			
Lecturing about the environment?	48,1%	51,9%	1
Discussing the environment?	35,9%	64,1%	2
Reading a passage about an environmental problem and finding ways to solve the problem?	30,8%	69,2%	3
Working in groups to solve problems or do projects?	30,8%	69,2%	3
Brainstorming a theme during a lesson introduction?	26,3%	73,7%	5
Dramatisation – demonstrating actions observed outdoors?	22,4%	77,6%	6
Experimentation?	21,8%	78,2%	7
Fieldwork – compiling a record of an outdoor activity and then drawing up evaluation reports	18,6%	81,4%	8
Projects – self discovery of issues such as the recycling of paper and tins	18,6%	81,4%	8
Debates – role playing and simulated situations	17,9%	82,1%	10

The method involving lecturing about the environment was used by 48,1% of the respondents only while 35,9% only utilised discussions about the environment. The integration of environmental issues into the curriculum is clearly not happening in the schools.

Almost half, that is, 56,4% of the respondents, agreed that it is their responsibility to teach environment issues in the normal classroom situation whilst 43,6% disagreed.

4.2.5 Factor D: environmental practices of educators

Good environmental habits are extremely important if the natural resources are to be conserved so that future generations will be able to use these same resources. If educators care for the

environment and adopt positive environmental practices themselves, this will better enable them to empower their students with knowledge about caring for and sustaining the environment around them.

In terms of environmental practices the following agreements rates were obtained.

Aspect	Yes	No	Rank
Do you do the following:			
Separate your garbage for recycling?	100%		1
Switch lights off when you do not need them anymore?	94,2%	5,8%	2
Encourage learners to write on both sides of the paper?	80,8%	19,2%	3
Give your old clothes to charity?	71,8%	28,2%	4
Take a shower instead of a bath to save water?	67,9%	32,1%	5
Use LPG instead of diesel or leaded petrol to reduce pollution?	26,9%	73,1%	6
Leave the computer on when it is not in use?	26,3%	73,7%	7
Leave the tap running while you brush your teeth?	20,5%	79,5%	8
Leave windows open when the air conditioner is switched on?	11,5%	88,5%	9
Buy products that are known to be harmful to the environment?	8,3%	91,7%	10

It emerged that most of the respondents are following good environmental practices themselves except that the majority do not use LPG instead of diesel or leaded petrol in order to reduce pollution.

4.2.6 Factor E: environmental practices in schools

It is important for learners to have access to clean and safe water and other facilities like toilets and wash basins so as to promote personal hygiene and to improve their learning ability. Non-access to clean water will have a negative impact on learners and also lead to poor sanitation. Collecting water in water tanks is useful in terms of school gardens and school grounds and this facilitates the saving of clean water.

The respondents were asked about aspects of the environmental practices at their schools. The following ratings were obtained.

Aspect	Yes	No	Rank
Are there adequate toilet facilities for learners?	97,4%	2,6%	1
Does your school have access to tap water?	95,5%	4,5%	2
Is recycling promoted at your school?	92,9%	7,1%	3
Are there adequate toilet facilities for teachers?	91,0%	9,0%	4
Is the drinking water safe for consumption?	87,8%	12,2%	5
Are educators made aware of ways in which to manage the school resources wisely, e.g. save water and electricity, recycle paper, etc?	84,6%	15,4%	6
Are the toilets clean and hygienic at all times?	84,6%	15,4%	6
Does your school educate students about the importance of water?	73,1%	26,9%	8
Are waste and recyclable materials used in classroom activities?	58,3%	41,7%	9
Does your school have water tanks in which to collect rainwater?	26,3%	73,7%	10

It emerged that 26,3% of the schools only have water tanks in which to collect rainwater. As regards the issues of adequate toilet facilities for learners, access to tap water, promoting recycling and adequate toilet facilities for educators at least 90% of the respondents acknowledged that these factors were being observed at their schools. One may, thus, conclude that adequate toilet facilities are being provided at schools for both learners and educators.

However, in terms of waste and the use of recyclable materials in classroom activities 58,3% of the respondents only acknowledged that there is need for schools to encourage the use of recycled products. Learners need to be made aware of the unlimited benefits of recycling. These benefits include the fact that, to a large extent, recycling prevents global climate change by minimising the amount of energy expended in industrial production. In addition, by reducing the amount of the energy used, recycling also reduces fuel usage which, in turn, reduces the amount of harmful pollutants in the environment. Recycling helps to preserve natural resources for future

generations and maintains the balance of the nature. Recycling also creates employment opportunities for more people who will be involved in the various stages of the recycling. These benefits, contributes to the economic development of South Korea. Hence, learners will come to understand that the small things they do may have a considerable impact on the environment and the country.

4.2.7 Factor F: environmental awareness at schools

Special environmental days focus the attention of both learners and educators on the need to take care of their natural and cultural heritage, as well as on human rights issues and environmental health issues. These special environmental days are a good opportunity to commit to learning more about the environment and ways in which we are able to help protect the environment. On these days both learners and educators can think about those issues that are of grave concern to humans and to take the time to share knowledge with others.

Firstly, the respondents were asked whether their schools celebrated the various environmental days. The following ratings were obtained:

Day	Yes	No	Rank
World Environment Day	31,4%	68,6%	1
Earth Day	29,5%	70,5%	2
Human Rights Day	23,7%	76,3%	3
Heritage Day	16,0%	84,0%	4
World Health Day	9,6%	90,4%	5
World WETLAND DAY	9,0%	91,0%	6
World Aids day	7,1%	92,9%	7

It emerged that very few schools celebrate these days with the percentages of respondents in agreement being well below 50%.

Secondly, the respondents were asked whether their schools observed certain environmental weeks. The following ratings were obtained:

Week	Yes	No	Rank
National Arbour Week	35,3%	64,7%	1
National Water Week	22,4%	77,6%	2
National Environmental Week	17,9%	82,1%	3
National Marine Week	9,0%	91,0%	4

Again it emerged that environmental weeks were not being observed by most schools with 17,9% only of the schools observing national environmental week.

However, approximately 7,1% of the respondents did acknowledge that their schools observed certain environmental days not mentioned in the questionnaire.

Thirdly, the respondents were asked whether their schools undertook certain educational outings. The following ratings were obtained.

Educational outings	Yes	No	Rank
Nature reserves	37,8%	62,2%	1
Environmental awareness centres	23,1%	76,9%	2
Recyclers e.g. cans, bottles or paper recyclers	21,2%	78,8%	3
Water purification plants	19,2%	80,8%	4
Agricultural sites	14,7%	85,3%	5

It appears that very few schools undertake educational outings with 16% only of the respondents agreeing that their schools were affiliated to any organisations that supported learner participation in action projects.

Environmental organisations continuously try to involve learners in various learning projects with learners being invited to participate in learning programmes that help active members

improve both their school and community environments. Learners usually become involved in environmental and community outreach through these clubs and organisations. In addition to taking action to solve environmental problems, these organisations provide an opportunity to meet interested members from other schools who are interested in caring for the earth. It is apparent that schools in South Korea have not realised the value of environmental days, environmental weeks, clubs and organisations.

4.2.8 Discussion of results

While South Korean educators are in agreement that resources need to be conserved for future generations (100%), that Korea faces many environmental problems (90%) and that more time needs to be spent teaching learners about the environment (90%), 37,2% only of educators have attended EE courses while a mere 32,7% have studied EE at university. Despite the fact that the majority of South Korean educators (84%) agree that it is possible to teach EE in or through their particular subjects, an analysis of teaching methods and school practices clearly reveal that there is no integration of environmental issues into the curriculum. The results of this study reveal that very little is being done in South Korea to incorporate EE into the curriculum.

4.3 CONCLUSION

This chapter presented the results of this research study. The findings of the study indicate that South Korean educators are not well informed about EE and, while they are positive about the inclusion of EE in the curriculum, the majority of educators are not trained to teach EE. The effective inclusion of EE into the curriculum of South Korean schools requires a full scale restructuring of the South Korean education system. The next chapter presents a summary of the findings, the conclusions and some recommendations in respect of the changes that would be required if the effective inclusion of EE into South Korean schools is to take place.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS FOR INCLUSION AND IMPLEMENTATION OF EE

5.1 INTRODUCTION

This chapter gives a summary of the findings, conclusions and recommendations in terms of including EE in the curriculum of South Korean schools. This chapter consists of four sections: the first section summarises the findings and conclusions of the research; the second section presents and discusses recommendations made by the researcher for ensuring the effective inclusion of EE in the curriculum of South Korean schools; the third section discusses the contributions of the study and, in the final section, suggestions are made for further research.

5.2 SUMMARY OF FINDINGS AND CONCLUSIONS

The research question to be answered regarding the inclusion of EE in the South Korean school curriculum is as follows:

“Are South Korean educators informed about EE and what is their position regarding the inclusion of EE into the curriculum?”

This section of the chapter presents a summary of the findings and the conclusions. It is, thus, further subdivided into six subsections according to the six factors, A to F. The first subsection, Factor A, presents a summary of the findings and conclusions regarding the environmental literacy of educators in South Korea. The second, Factor B, presents a summary of the findings and conclusions regarding South Korean educators’ understanding, interpretation and appreciation of EE. The following subsection, Factor C, comprises a summary of the findings and conclusions pertaining to the use of teaching methods in South Korean schools. The subsection, Factor D, presents a summary of the findings and conclusions regarding the

environmental practices of South Korean educators and the subsection, Factor E, presents a discussion of the environmental practices in South Korean schools. Finally, the section on Factor F presents a summary of the findings and conclusions concerning environmental awareness at schools.

5.2.1. Factor A – environmental literacy of educators

The questions on environmental literacy aimed to ascertain the environmental literacy and attitudes of South Korean educators irrespective of pre-service or in-service training, as it would not be possible for educators to develop environmental literacy in learners if they were not environmentally literate themselves.

Three general observations are made regarding the environmental attitudes and literacy of educators in South Korea as observed in the responses of the participants. The first observation answers part of the research question regarding educators' attitudes towards EE. The results show that the respondents displayed a positive attitude towards the environment and understand that natural resources need to be conserved.

The second observation is that a large majority of educators accept that it is not just science educators who should know how the environment functions, thus it can be concluded that the majority of educators accept that they have a responsibility to become environmentally literate, irrespective of the subject they teach.

The third observation refers to the fact that while the educators themselves have a sound understanding of the environment, and agree that South Korea has many environmental problems, they have failed to make enough effort or place sufficient emphasis on educating learners about the environment. Education in South Korea focuses on gaining knowledge in order to obtain certification and learners are not taught about Korea's many environmental problems or about the impact that humans have on the environment. In South Korea, more teaching time needs to be spent on improving learners' environmental attitudes and literacy, as 94,9% of the sample of South Korean educators agree on this. Consequently, more opportunities should be provided for

learners and, indeed Koreans per se, to learn about the environment. These observations allow us to accept hypothesis 2 (see Chapter 1), that South Korean educators have a positive attitude to the inclusion of EE in the curriculum. It can thus be concluded that South Korean educators would like EE to be included in the curriculum and for teachers to spend more time teaching EE in South Korean schools.

5.2.2 Factor B – South Korean educators' knowledge of EE

South Korean educators' knowledge of EE and their opinion on its inclusion in the curriculum in terms of which grade and subject they felt EE should be integrated into was investigated. Four observations were made regarding South Korean educators' knowledge of and opinion on the inclusion of EE in the curriculum. Firstly, an astounding majority (91,7%) of respondents indicated that EE is an important subject; this further substantiates hypothesis 2 (Chapter 1), that is, that South Korean educators have a positive attitude to the inclusion of EE in schools.

Secondly, most of the respondent educators (90.4%) indicated that EE should be taught at elementary school, which shows that South Korean educators do not understand the cross-curricular nature of EE. The respondents also favoured the inclusion of EE in certain subjects but were not in favour of the inclusion of EE in subjects like Mathematics, Languages and the Arts. The reason for favouring the inclusion of EE in certain subjects and not others is possibly because educators think it would be difficult, if not impossible, to include EE in these subjects; hence their favouring the incorporation of EE in subjects like the Sciences, Social Studies, Korean History, Religion and Morality. This assumption by the respondents that some subjects are more suitable for the integration of EE than others is a direct result of their lack of knowledge of EE. The final observation with regard to EE here is that the respondents indicated that they preferred to be trained in the skills required to teach EE rather than in the content. As mentioned earlier (see section 4.2.3), this could be as a result of the belief among the educators that the skills for teaching EE are much more difficult to acquire, whilst the content can be studied without external training and therefore there is a more immediate and urgent need to study the skills.

The third observation is that less than 40% of the respondents have had any training in EE. This observation addresses hypothesis 1 (see Chapter 1) of this study, that South Korean educators do not receive any pre-service or in-service training in EE. While the results show that 32,7% of the educators surveyed have studied EE at university and 37,2% of educators have attended courses or training in EE, which results in the rejection of hypothesis 1, results also show that 85,3% of the respondents agreed that there is a need to receive training in EE. Thus, even the educators who have studied or received some training in EE know that there is a need for more training, as they know that EE can be taught in and through their subject; however the respondents indicated that they do not feel confident to teach EE with the experience, knowledge and skills they currently possess.

This leads to the conclusion that, although a few of the respondents have some knowledge of EE, they are aware that the knowledge that they have is insufficient for the proper implementation of EE in schools. Accordingly, both pre-service and in-service educators in South Korea are in need of comprehensive training in EE.

5.2.3 Factor C – teaching methods

The teaching methods used by the respondent educators were investigated in order to determine what methods are used in the classroom. The results clearly revealed that various teaching methods that are appropriate for teaching EE were not being used by the respondents. While more than half the respondents agreed that it is their responsibility to teach environmental issues in the classroom, if and when they do so they do not use appropriate methods. The most commonly used teaching method, used by fewer than half of the educators, is lecturing about the environment, whilst other methods such as fieldwork, projects, debates and experimentation are used far less frequently. It is a common practice in South Korea for students to be the passive recipients of knowledge and they do not respond well when required to participate actively in learning situations. The pressure is increased when high marks are awarded for reproducing factual information and, where this occurs, educators who are perceived as successful are those who provide summarised facts during lessons and are able to motivate learners to learn them. Obviously this is in conflict with the goals of EE, which reflect a greater concern for the

development of environmental attitudes and values than for the teaching of environmental facts (Balantyne & Oelofse, 1989:11).

The choice of a conservative teaching style is further reinforced by the fact that noise is often used as an indicator of class control by teaching colleagues in South Korean schools. Learner-centred teaching, incorporating group work, role play and discussion, so necessary for the development of environmental values and attitudes, generates more noise than the use of teacher-centred approaches.

It can thus be concluded that, unless South Korean educators can overcome the fear that colleagues will interpret “busy” noise as an indicator of class control deficiencies, it is unlikely that more appropriate EE methods will be used in the South Korean classroom. The crucial ability to facilitate effective EE in the classroom using appropriate teaching methods needs to be urgently addressed in South Korea; accordingly, a paradigm shift should be made from passive teacher-centred learning to learner-centred learning using a variety of teaching methods and making learners active participants in the learning process. Once again, South Korean educators need to be trained in the use these teaching methods and to facilitate this type of learning.

5.2.4 Factor D – environmental practices of educators

If South Korean educators are environmentally conscious and care about the environment, they will try to preserve it and it will be easier to teach their learners to care for it as well. The only poor environmental practice found among the educators in South Korea who were researched for this study is the use of diesel or leaded petrol instead of liquefied petroleum gas (LPG). The South Korean government has allocated 18,3 trillion South Korean won(KRW) for an energy efficiency initiative with the goal of improving energy efficiency by 11,3% by 2012 and achieving a 16,5% increase in average new vehicle fuel economy. The market share of vehicles with larger engine sizes has gradually been increasing in South Korea causing the average fuel economy to decline (Lucas, 2008:1).

From the survey, it can be concluded that, with the exception of this one bad practice, South Korean educators surveyed in this research are very environmentally conscious. Such educators do care about the environment; however, they lack the skills and training needed to inculcate these positive attitudes and practices in their learners.

5.2.5 Factor E – environmental practices in schools

Investigation into the EE policy and environmental practices of schools revealed four distinct practices in South Korean schools, two positive and two negative. Firstly, there are adequate and hygienic water and toilet facilities for both South Korean educators and learners, making the school environmentally safe, healthy and hygienic. Secondly, recycling is promoted in schools and educators are made aware of ways to manage resources.

The third and fourth practices are the problematic ones. It was found that waste and recyclable material are not used in classroom activities. The South Korean government spares no cost for resources at school; hence, the abundance of resources. Accordingly, South Korean educators' lack of knowledge on the use of recyclable materials in classroom activities or their ignorance of the importance of using these materials in the classroom as part of improving the environment and encouraging learners to live sustainably could be some of the reasons for this problem.

The final observation on environmental practices in South Korean schools is that a particularly small number of South Korean schools collect rainwater in water tanks. Rainfall in South Korea is concentrated in the summer months of June through September. The average annual precipitation varies from 1,370 millimetres (54 inches) to 1,470 millimetres (58 inches) (Wikipedia, 2009:1). Consequently, South Korean schools need to be made aware that collecting this rainwater is beneficial for the environment as well as for the country. As mentioned in section 1.5.1, most people do not drink water from the taps as it is not safe for drinking. By reducing the water consumption in other ways, one of which would be to collect and use rainwater for irrigation, washing clothes, washing cars, feeding livestock or just watering the garden, it would be easier to purify the drinking water, as this would contribute to the availability of drinking water and less water would need to be purified. It would also substantially reduce the cost of improving the general water quality in South Korea, making it safer for people to drink,

thereby providing for a very basic human need.

It can be concluded that, while there are many good environmental practices in South Korean schools, there is much room for improvement. More environmental friendly policies and activities need to be incorporated into the South Korean school curriculum to make students more conscious of their actions and the ways in which their actions affect the environment.

5.2.6 Factor F – environmental awareness at schools

South Korean schools have a very serious problem in that they are not adequately promoting environmental awareness. The celebration of environment days and environment weeks were observed by a very small number of the schools surveyed. The most commonly celebrated are World Environmental Day, which is celebrated by a mere 31,4% of the schools, and National Environment Week celebrated by just 35,3%. These schools need to understand that there are very strong reasons why certain days or weeks have been declared as days or weeks for environmental awareness days or weeks by governments around the world. It is therefore up to the citizens and the schools in particular to observe and celebrate them in order to help keep the grass green and the skies blue with more trees and less pollution. The purpose of such days is to focus the nation on its ecological problems so that people are more aware of what they are actually doing when they throw a candy wrapper out of the car window, or leave their styrofoam cup sitting on the sidewalk. It is a way of restoring patriotism in a country and helping a our country ecologically by doing little things like recycling, volunteering to clean roads or ride a bike, walk or carpool to work, in order to conserve the environment. These are just a few of the many things that can be done in order to contribute to a sustainable environment and South Korean citizens and learners need to be made aware of this.

Another way to educate South Korean learners about the environment is by visiting places such as nature reserves, environmental centres, recycling plants and waste disposal plants. It was also observed that the schools surveyed do not expose their learners to these places by taking them out regularly on field trips to such places. Field trips provide entertainment and they also serve as a powerful motivator for learners. Breaking away from routine provides children with a refresher that might make them more focused back in the classroom. Besides the fact that field trips teach

important environmental awareness concepts and skills, they also have many other advantages. Field trips are considered fun, but the children learn as well. There are also plenty of opportunities to incorporate the field trip experience back into classroom activities after returning to school. Using presentations and slide shows and by answering questions, the learners can put into practice the lessons garnered on the field trip. Leaving the classroom for a field trip places the children in a different social environment and such interactions with new adults or other children teach them how to behave in different settings. South Korean students may then employ more self-control because it is a less contained environment than the classroom. Moreover, field trips foster a sense of teamwork and community among students. Affiliations to groups or organisations that support students' participation in action projects also foster a sense of teamwork and allow for interaction with new adults or other children. They also provide learners with numerous opportunities to actively participate in improving the environment and developing, among other things, their interests, abilities, leadership, and creative and problem-solving skills, making them better and more environmentally literate citizens who will contribute to environmental development, growth and sustainability, starting off with their own communities and possibly developing to improve South Korea as well.

It can be concluded that the promotion of environmental awareness at schools should be immediately addressed at South Korean schools, as such schools need to be made aware of the importance of observing environmental days and weeks, visiting places that promote environmental awareness and becoming affiliated to groups and organisations that provide opportunities for the participation of South Korean learners in action projects. This can be easily done while the South Korean Ministry of Education is changing the school education policies to include EE in the curriculum.

5.3 RECOMMENDATIONS

EE entails the reform of the school system, the school policy, the curriculum, classroom activities, teacher education and the role of the community – in fact it entails reforming the entire approach to education. The success of EE implementation in South Korea depends on strong support from school authorities, educational planners, policy makers, administrators and others

who are responsible for the education system (Ketlhoilwe, 2003:75).

5.3.1 Recommendation 1 – Formulate EE guidelines

The starting point would be for the South Korean Ministry and Human Resources Development, which is responsible for the formulation and implementation of all academic policies and activities, to formulate national goals for EE; that is, in the form of Environmental Education guidelines. In Hong Kong, although EE is not compulsory or cross curricular, guidelines for EE have been drawn up and schools are using these to incorporate EE into the curriculum and develop EE at the schools (see section 2.9.2). It is important that guidelines for EE in South Korean schools should be drawn up in order to assist them to develop EE policy and implement EE itself. It is important that all relevant role-players in South Korea are included in this process and are consulted when developing these EE guidelines, in particular teachers.

Such national EE goals could include the development of environmental awareness; the acquisition of knowledge and understanding and skills; and the acquisition of desirable attitudes and behavioural patterns in interacting with the environment in a manner that is protective, preserving and nurturing. Given that these goals will be articulated in national policy, teaching and learning, curriculum development and materials development, such processes must take these goals into consideration (Ketlhoilwe, 2003:75).

Like Hong Kong, South Korea can use these guidelines to include EE in South Korean schools as the starting point developing an EE policy and including EE in the curriculum. Once this has been done, just as EE is being slowly developed in Hong Kong by the Curriculum Development Council and Environmental Protection Department, EE in South Korea can be developed further.

5.3.2 Recommendation 2 – Develop an EE policy in South Korean schools

Once EE guidelines have been drawn up, every South Korean school can develop an EE policy of its own. The purpose of a school EE policy in South Korean schools is to raise the student's environmental awareness and give opportunities for South Korean students to develop their

research and enquiry skills across the curriculum, to encourage students to believe that both individual and collective action on environmental issues can make a difference and effect change to solve environmental problems, thus giving the learners an opportunity to study the environment from more than one perspective and sometimes through a common theme (Palmer & Neal, 1994:125).

The decision of Malaysia's Ministry of Education to introduce EE into the whole education system is an excellent one. In South Korea, this could also done in the same two ways: 1) through the daily teaching and learning processes in the classroom; and 2) through co-curriculum activities which are conducted through the medium of nature clubs and other similar activities.

A South Korean school EE policy can be based on the following:

- Developing an understanding of global interdependence and concern for the quality of the global environment in young South Korean learners.
- Involving learners in studies of local South Korean environments and actions to conserve local environments and/or improve their quality.
- Building on the experiences, perceptions, feelings and existing knowledge of South Korean learners and helping them to explore questions, issues and problems which arise from their own understanding of their environmental rights and responsibilities.
- Helping South Korean learners to value their natural and cultural heritage and their interdependence with people and environments in other parts of the world.
- Developing in South Korean learners the personal knowledge, skills and commitments which will enable them to participate effectively in social action for environmental protection and improvement.
- Helping South Korean learners to develop a sense of place and identity from their experiences in and understanding of the environment (Gough, 1992:18).

Malaysia's National Policy on Biodiversity, National Policy on the Environment and National Integrity Plan could also be adapted and included in South Korea (see Chapter 2).

5.3.3 Recommendation 3 – Appoint an EE coordinator

The next step is for the South Korean Ministry of Education to appoint to either at every school or to a group of schools in an area, an EE coordinator who works as an academic and an administrator in order to establish and implement a programme for EE in South Korea. EE coordinators could assist both the management and the educators of South Korean schools by introducing EE to the timetable, articulating the theories and values of modern environmentalism in the South Korean school curriculum, working closely with and implementing a vision for EE in South Korean schools, advising the educators on ways in which their learning areas could contribute to teaching EE, harmonising the various understandings, views and perspectives of the South Korean educators regarding EE, preparing a professional development plan for the South Korean educators and set up and communicating a strategy together with the South Korean Ministry of Education that offers opportunities for learning about, for, in and through the environment. EE coordinators could be very useful in terms of bringing about a smooth paradigm shift for educators in South Korean schools (Palmer & Neal, 1994:105)

5.3.4 Recommendation 4 – Develop a cross-curricular teaching curriculum

In South Korea, as in Hong Kong, there is a cycle of competitive examination systems which result in formalistic teaching that reduces opportunities for learners to engage effectively with environmental issues. This has a number of consequences: firstly, South Korean students' views are given little consideration and there is limited opportunity for them to question behaviours that may damage the environment. Secondly, because content-laden curricula are not always connected to real-life situations, in particular those related to EE, South Korean students do not link school learning to why and how they may act. As a consequence, this approach seriously limits the opportunities students have to take action themselves. The Seventh Curriculum must be altered and improved in order to incorporate EE (see section 2.5.1)

Swanepoel, Loubser and Chacko (2002:282) identified the ten most important concepts that should be included in courses designed to improve environmental literacy and EE, and these should be included in the South Korean school curriculum:

1. Basic understanding of the biosphere (air, water and land).

2. Understanding of the ecological perspective of nature and human beings.
3. Awareness of human interaction with the environment, and interrelationships within the ecosystem.
4. Knowledge of environmental changes brought about in South Korea and the rest of the world by industrialisation and urbanisation.
5. Understanding of activities to meet basic human needs
6. Awareness of renewable and non-renewable resources.
7. Knowledge of how to maintain environmental quality and quality of life.
8. An understanding of the ability to make choices to ensure minimum environmental damage.
9. Knowledge of decision making on environmental issues in scientific, economic, legal, social and political contexts.
10. Knowledge of environmental ethics as a way of life.

Palmer and Neal (1994:31) maintain that arrangements for the inclusion of cross-curricular issues as a whole cannot be left to the particular individual members of staff in the South Korean school. This assertion confirms that cross-curricular teaching does not reside in one subject or department or some members of staff. Thus, in order to bring about curriculum reform, all members of staff in South Korean schools need to work together. Initially, this will require extensive discussion and planning, as educators of various subjects and departments find ways to cooperate with other subjects and teachers in order to explore one theme. South Korean curriculum reform requires much more than the issuing of documents outlining changes in curriculum content. Educational change is a complex, demanding and personally upsetting affair which requires the unlearning of conventional attitudes, practices and assumptions of South Korean educators and the learning of new ones. Therefore, it needs to be worked on over a period of time (Posch, 1996:349).

Some of the topics that can be included in a South Korean curriculum that includes EE are the following:

- Places that we value and why; basic needs and resources.

- Important places in our community; actions to improve our environment; resources like space, water, electricity, transport and their use.
- Change in our environment; pollution; managing waste(reduce, re-use, recycle).
- Resources and services in a settlement (water, waste management, green open spaces) and difficulties for those without them; accessing food and water, past and present; wise use of resources.
- South Korean landscape, people–environment interactions and landscape change.
- Use and abuse of resources with a focus on water and energy in South Korea.
- Environmental issues and impact of society, for example, loss of biodiversity, disappearing wetlands, soil erosion, deforestation, extinction.
- Development issues: causes of poverty including environmental destruction, lack of access to resources, positive case studies.
- Natural hazards (droughts, floods) and environmental management; management and reduction of risk, for example, managing rivers and wetlands to reduce risk to people and ecosystems.
- Natural resources (e.g. marine life, water, soil and forests) in South Korea and worldwide, conservation, threats to and opportunities for conservation.
- Development issues: role of science and technology, including crop modification, the Green Revolution.
- Sustainable resource use: principles of Agenda 21, our dependence on natural resources, active participation in addressing environmental issues.
- Social and environmental conflicts in South Korea – power, control and discrimination in access to resources such as land, water; case studies.
- Global warming in relation to weather systems and human impact.
- Population growth and movement, poverty, employment, inequality in society and the environment.
- Coastal environments; the oceans, their exploitation and management; hazards and human responses; environmental management of hydrological systems, rivers and coastal resource management.
- Ecosystem and related concepts, interrelationships, processes, biomes, human impacts

and their consequences; natural resources use and management, land use conflict.

- Energy use and management; concepts of renewable and non-renewable resources; the environmental costs of energy provision; global warming; sustainability; new forms of energy and energy conservation.
- Development and sustainability at global and national scales: models, theories, strategies and case studies to address development problems.
- Settlement and sustainability issues in urban and rural contexts, including land redistribution and informal settlement, pollution, political influence, governance.
- Climate hazards and human responses, risk and vulnerability.
- Water in South Korea, sustainable use and management.
- Economic activities – response of people to environmental and social justice linked to economic activities (Rosenberg, 2009:14).

The New Approach to Primary Education (NAPE) being implemented in Bhutan can be used to help South Korean students to take an active part in their lessons and use the local environment of school, district and country for learning. The Watershed Action through Environmental Research (WATER) programme in Bhutan can guide South Korean students towards identifying some of the main social, environmental and economic issues facing people in the water catchment area in which they live. Bhutan's successful EE curriculum is an excellent reference source for developing an interactive cross-curricular teaching curriculum (see section 2.9.5).

5.3.5 Recommendation 5 – Training educators

Internationally, attaining the goals of EE have proved to be difficult to attain, particularly as the they are expected to be achieved in an education system in which schools are traditionally subject orientated and content is predominantly taught using teacher-centred methodologies. South Korean educators need to be trained for effective EE inclusion.

EE discourages teaching methods in which learners are the passive recipients of factual information only to be reproduced by rote memory during tests and examination. In contrast,

learners (in all subjects) are required to be active participants in the learning process and therefore South Korean educators need to be trained in some (or all) of the following methods: outdoor teaching strategies, guided discovery, experiments, role play and dramatisations, problem solving, case studies, data gathering and analysis, the use of audiovisuals media, environmental issue investigation, simulations, self-directed learning, cooperative learning, computer-orientated activities, creative writing, independent projects, community resource use and observations, for example field trips, demonstrations and bulletin board displays (Shulze, 1994:28).

All students do not learn in the same way. In addition, it is common for a class of learners to be at a variety of levels in any particular subject. Teachers need to use different teaching methods in order to reach all learners effectively. In section 2.8.7, various teaching methods are discussed that South Korean educators should be trained in. A variety of teaching strategies, knowledge of learner levels, and the implementation of strategies that are best for particular learners can help South Korean educators to know what teaching methods will be most effective for their class.

The localisation of the curriculum to South Korea schools is also necessary and teaching resources have to be contextualised for the South Korean physical, social and economic environments. In Bhutan, this approach of localising the curriculum has improved the relevance of the school curriculum for learners in terms of both content and process, with students learning their different subjects in relation to their immediate worlds. This process helps them gain a better understanding of content and a greater awareness of their surroundings and, thus, instils in them a deeper appreciation of their environment. In keeping with this ideology, the implementation of EE programmes in Bhutan by DANIDA (Danish International Development Agency) (see section 2.9.) has been accompanied by an initiative designed to train teachers, through a series of nationally based in-service programmes (NBIPs), on the way in which to infuse EE into the curriculum. South Korea can implement the same design in order to train their educators to infuse EE into the South Korean school curriculum.

EE implementation needs to be accompanied by substantive, supportive, collaborative educator professional development that is ongoing in nature. Robottom (1996:291) suggests that there

should be professional development for EE, which should be included in the programme for the professional development of South Korean educators. Professional development for EE should be

- enquiry-based – participants should reflect on their current practice
- participatory and practice-based – it should allow participants to identify problems with their practice and identify appropriate solutions
- critical – through critique participants can question the status quo and identify the opportunities for and constraints on change
- community-based – as environmental issues and educational situations are often unique and rarely susceptible to universal solutions
- collaborative – working collaboratively allows participants to identify more clearly the possible opportunities for and constraints on change

Even if South Korean educators were to be given more freedom to implement EE, the impact of their ability to exercise choice would be minimal unless they receive appropriate pedagogical content knowledge in this area. South Korean educators need to have a good understanding of environmental issues and the types of behaviour that lead to environmental damage. They also need to be aware of pedagogical strategies (e.g. local environmental actions and role-plays) that effectively communicate the problems and possible solutions to students in an engaging manner. As previously mentioned section 2.9.4, the implementation of EE in Thailand is being hampered for this very reason. Thai educators need the opportunity to acquire more adequate EE-related knowledge and information, as well as teaching and technical (information and communication technologies) skills. This problem must be avoided in South Korea. Although extensive professional development in EE may prove expensive initially, the cost of remediating serious environmental damage, some of which could result directly from a failure to educate South Korean educators effectively, may prove significantly greater.

5.4 OVERCOMING CONSTRAINTS FOR EE IMPLEMENTATION

The three most commonly experienced constraints on the implementation of EE internationally

(see section 2.10) are, firstly, constraints in respect of the status and relevance of EE. In South Korea this can be overcome by regularly evaluating both educators and learners. Secondly, constraints related to the support of active environmental learning can be dealt with through the active participation of South Korean schools in environmental activities. Thirdly, constraints in respect of learning support materials can be dealt with by initially using materials and resources developed by other countries and adapting these to the South Korean situation.

5.4.1 Evaluation

The first obstacle to implementing EE in the curriculum is the status and relevance of EE in the curriculum (section 2.10.1). The learner evaluation methods in South Korea should be changed in order for EE to be implemented successfully. South Korean educators need to give learners diverse tasks that promote problem solving, critical thinking and environmental action. No longer can South Korean education be geared only towards obtaining certification. Activities that promote learning about, in and for the environment and tasks that generate actions by encouraging South Korean learners to take responsibility for and care of the environment should be planned. These activities should be assessed on a continuous basis and be part of the requirement for graduation to the next grade; otherwise neither South Korean learners nor educators will make enough effort or place sufficient emphasis on the implementation of EE.

South Korean educators also need to be evaluated in order to determine the success of their training. The evaluation process will encourage South Korean educators to understand and facilitate EE effectively in the classroom and at the same time assist educators as they will be able to identify the problems and weaknesses in their teaching. Constructive criticism has the goal of improving some area of another's person's life or work; it helps that person to further improve their work or to improve their approach to future endeavours. Thus the evaluation of educators will serve to strengthen their ability to teach EE effectively and provide the ministries with important information on ways to adjust and improve the professional development programme of South Korean educators and produce the best results for the inclusion of EE in South Korean schools.

What could be evaluated? Evaluation could be based on assessing the achievement of certain values, skills and knowledge:

- Values like active and responsible citizenship.
- An ethic of responsibility and commitment.
- A sense of hope and ability to imagining new possibilities.
- Action competence – ability to put into action what they have learnt.
- Technical knowledge as well as insight and understanding.
- Practical and conceptual skills like enquiry, reasoning, drawing conclusions.
- Healthy school environments.

The following checklist should also be considered by educators and the individuals involved in the professional development of educators when evaluating the content of EE:

- Have I covered the goals and objectives of EE?(see section 2.8.2)
- Have I planned tasks which help learners to learn about the environment?
- Have I planned tasks which involve learning in and through the environment? (see section 2.8.6)
- Have I planned the activities which involve learning for the environment?
- What specific elements and levels of knowledge and understanding are covered by learning tasks?
- Do tasks generate actions by encouraging individuals to take responsibility and care for the environment?
- What attitudes do I aim to promote through planned learning activities?
- How do I ensure that the tasks and experiences build on each other progressively in each of the components of the overall model?(Neal & Palmer, 1998:153)

5.4.2 Environmental activities

The second constraint related to the support of active environmental learning can be solved by the active participation of South Korean learners in environmental activities. In Hong Kong, the Environmental Protection Department (EPD) organises school-based campaigns for learners, The

Environmental Protection Ambassador (SEPA) scheme enrolls learners to organise environmental activities at their school. The Hong Kong Green School Awards Programme encourages a whole-school approach to environmental protection, with participating schools being expected to formulate a school environmental policy, implement environmental management and influence staff, learners and parents to adopt environmentally friendly habits. In Malaysia, the Department of Environment (DoE) conducts several environmental programmes targeting school children and the youth, the general public and special groups.

In Thailand the delivery of EE in most schools takes place through projects and activities (see section 2.9.4) which are undertaken in cooperation with governmental organisations, NGOs, and the private sector. While this is not entirely effective, Projects like the Dawn Project, the Rung Arun, the EE Project and Strengthening EE in Thailand project were developed in collaboration with other organisations both in Thailand and overseas. All these projects have a common aim, namely, enhancing learner and public understanding and awareness of environmental issues, thus South Korean must not use these projects for the delivery of EE but for the enrichment of EE in South Korea.

In Bhutan, the Royal Society for the Protection of Nature (RSPN), a local NGO, has been one of the most active bodies supporting nature clubs in schools (see section 2.9.5). RSPN provides a degree of financial assistance and technical support, as well as in-service training for the coordinators of the clubs. EE implementation has also been enhanced by involving all the members of schools in the School Greening Program. This programme aims to develop the natural physical facilities surrounding schools so as to enrich the formal curriculum and to make school environments conducive for more positive living and learning.

Each of the Asian countries discussed in section 2.9 have groups or organisations, NGOs or government organisations that are actively involved in developing and conducting programmes that involve various environmental activities such as nature clubs, Enviro camps, cleanup projects, the Clean and Green Singapore campaign and “I love Hong Kong! I love Green” programmes. These are campaigns that encourage good environmental practices. An organisation like the RSPN in Bhutan should be formed in South Korea in order to provide opportunities for

South Korean learners to become more actively involved in a range of environmental activities in order to become involved in active environmental learning.

5.4.3 Resources

The third constraint on implementing EE is the lack of learning support materials (see section 2.10.3). Materials used to support the teaching and learning of EE can be designed by the South Korea educators; however, the environment itself should be used as a resource for learning and teaching. Singapore's National Environment Agency (NEA) has developed and still is developing and piloting modules that promote EE (see section 2.9.3). These modules could be adapted for the South Korean curriculum. The Department of Education in Malaysia publishes and disseminates environment-related materials which South Korean schools could also use (see section 2.9.1). In addition, Bhutan is successfully implementing EE with the assistance of an array of organisations and other groups, and has also published and piloted various EE resources (see section 2.9.5). It is recommended that South Korea, which will only be commencing the inclusion of EE into its schools in the future, use resources that have been developed and tested in other countries as a foundation for developing its own resource base.

Initially, resources that are obtained from other countries can be modified and adapted to suit the goals, objectives and principles of EE in South Korea. As South Korean educators, organisations and ministries become more au fait with EE they can begin developing their own resources and materials for EE, just as other countries have done (see section 2.9).

5.5 CONTRIBUTIONS OF THE STUDY

As mentioned in section 1.5.2, the results of this study are of particular significance to the curriculum planners in the South Korean Ministry of Education, educators, school principals, school management teams, universities, colleges of education, whole school evaluators and personnel engaged in professional development activities. This study substantiates the necessity for including EE in the school curriculum. It also provides clarity on the basic concepts, principles, characteristics and teaching methods of EE.

Another contribution of this study is that it provides guidance for curriculum planners at schools and universities regarding the designing of a curriculum that includes EE. The study discusses countries that are currently implementing EE successfully, and makes recommendations for the inclusion of EE in the curriculum; accordingly, curriculum planners can be empowered to re-orient the curriculum to include EE.

The summary, conclusions and recommendations of the study provide an important contribution to the individuals and teams involved in the professional development of educators, as they urge them to start providing training for educators in order to enhance educators' skills and knowledge in EE.

This study also contributes by informing the South Korean Ministry of Education and the Korean government of the status of EE in South Korea in relation to other countries in the world. It has also shed light on educators' perspectives on EE, as well as the qualifications they have in this regard. As the study has shown that South Korean educators have a positive attitude to the inclusion of EE in the curriculum, the South Korean Ministry of Education can now confidently move forward with the inclusion of EE knowing that their educators are in support of this educational reform.

5.6 SUGGESTIONS FOR FURTHER RESEARCH

Suggestions for further research derived from this study are listed below:

- Research should be conducted to examine the reasons why Koreans are not provided with opportunities to learn about the environment and methods for providing them with such opportunities.
- The reasons why the Ministry of Education of South Korea is not providing courses or training for both pre-service and in-service teachers in EE could be investigated.
- There is also a need to research the reasons why EE is not promoted at universities and why such a low percentage of the population studies EE at university.

- Teacher training in South Korea should be investigated, as educators do not use a wide variety of methods in the classroom. There is an urgent need for resources for training educators in the use of various teaching methods and the effective use of these methods in the South Korean classroom.

5.7 CONCLUSION

This chapter provided a summary of the findings and conclusions of the research and made recommendations for the inclusion of EE in South Korean schools. It also provided suggestions for further research and showed how the research question and hypothesis were answered by the research. It has reiterated that there is a paucity of effective environmental policies and a lack of training for educators in EE in South Korea. In explaining the importance of each of the factors A to F in the research, this chapter has also further elucidated why it is imperative that EE is included in South Korean schools as soon as possible.

If learners are to gain the sustainability literacy skills necessary for life in the 21st century, there will need to be a fundamental reform of the education system. Learning should not be limited to schools, colleges and universities. Learning is not a segregated set of activities, conducted at specific times of the day, in specific places, and at a specific stage of life. Instead, it should be integrated into the fabric of everyday living (Davies, 2010:10).

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APPENDIX A - LETTER TO THE GYEONGGI EDUCATION OFFICE

Date : _____

THE MINISTRY OF EDUCATION

GYEONGGI EDUCATION OFFICE

SUWON

TO WHOM IT MAY CONCERN

Dear Sir / Madam

REQUEST TO CONDUCT SURVEY

I, Kanniammah Govender (Elsa), am a Native English Teacher at Samil Middle School. I am currently studying part-time at the University of South Africa (UNISA) completing my Masters Degree in Environmental Education.

I humbly request permission to conduct a survey in Gyeonggi Province schools on the following topic:

“Inclusion of Environmental Education into South Korean schools”.

The survey is in the form of a questionnaire which will need to be administered to Korean educators in Suwon middle and high schools. The information is confidential as the respondents of the questionnaire will remain completely anonymous.

The questionnaire, as well as the letters to the principal and the respondents, explaining the purpose of the research, will be translated from English to Korean by a professional translation agency to avoid any inconvenience.

I have attached a draft copy of the questionnaire for your perusal and it will be a pleasure for me to send you a final copy of its translation if you may so require.

Your written permission allowing me to conduct this research will be greatly appreciated.

Thanking you

Yours sincerely

K. Govender

APPENDIX B - PRENOTIFICATION LETTER TO PRINCIPAL

Date :

The Principal

.....School

Suwon

Dear Sir / Madam

PRENOTIFICATION OF SURVEY

I, Kanniammah Govender (Elsa), am a Native English Teacher at Samil Middle School. I am currently studying part-time at the University of South Africa (UNISA) completing my Masters Degree in Environmental Education.

I WILL BE conducting a survey on the topic: “Inclusion of Environmental Education into South Korean schools”.

I will be sending questionnaires that I would please like 8 Korean educators (4 males and 4 females) at your school, to complete at their leisure.

The questionnaire aims to determine the views and opinions of teachers with regards to the importance of Environmental Education and the necessity of including Environmental Education into the curriculum. It also aims to establish the level of knowledge of Environmental Education amongst teachers.

The survey will be translated from English to Korean for convenience. Please be assured that the respondents of the questionnaire will remain anonymous. Also, the information and the results of the survey will be treated as private and confidential. It will be my pleasure to send the summary of the survey to your school if you so wish.

I will provide self- addressed stamped envelopes to facilitate return of the questionnaires.

If you have any concerns or questions, please do not hesitate to contact me by phone on

031 2443133(H) / 010 2654 1702 (M) or email: elsagovender@gmail.com

Your assistance is greatly appreciated.

Thanking you

Yours sincerely

K. Govender

APPENDIX C – LETTER TO PRINCIPAL – ATTACHED TO THE QUESTIONNAIRES

Date :

The Principal

.....School

Suwon

Dear Sir / Madam

REQUEST TO CONDUCT SURVEY

I, Kanniammah Govender (Elsa), am a Native English Teacher at Samil Middle School. I am currently studying part-time at the University of South Africa (UNISA) completing my Masters Degree in Environmental Education.

I am conducting a survey on the topic:

“Inclusion of Environmental Education into South Korean schools”.

I have a questionnaire that I would like 8 educators (4 males and 4 females) at your school, to complete at their leisure.

The questionnaire aims to determine the views and opinions of teachers with regards to the importance of Environmental Education and the necessity of including Environmental Education into the curriculum. It also aims to establish the level of knowledge of Environmental Education amongst teachers.

Please be assured that the respondents of the questionnaire will remain anonymous. Also, the information and the results of the survey will be treated as private and confidential. It will be my pleasure to send the summary of the survey to your school if you so wish.

Once the questionnaires are completed, they can be returned in the self- addressed stamped envelopes provided.

I kindly request that these questionnaires are returned, *as soon as possible*, to facilitate the continuation of my study programme.

If you have any concerns or questions, please feel free to contact me by phone on

031 2443133(H) / 010 2654 1702 (M) or email: elsagovender@gmail.com

Your assistance is greatly appreciated.

Thanking you

Yours sincerely

K. Govender

APPENDIX D – LETTER TO THE RESPONDENTS EXPLAINING THE PURPOSE OF THE RESEARCH

The Principal

_____ School

Suwon City

Dear Educator

RE: RESEARCH QUESTIONNAIRE

The researcher is conducting a survey on the topic:

“Inclusion of Environmental Education into South Korean schools”.

The questionnaire aims to determine the views and opinions of teachers with regards to the importance of Environmental Education and the necessity of including Environmental Education into the curriculum. It also aims to establish the level of knowledge of Environmental Education amongst teachers.

Please be assured that the respondents of the questionnaire will remain anonymous.

Also, that the information and the results of the survey will be treated as private and confidential.

The questionnaire can be completed in less than five minutes as there are NO questions that require a written response, simply cross(X) the relevant block.

When completed merely return the questionnaire into this self- addressed stamped envelope and send it off for postage.

It will be my pleasure to send the summary of the survey to your school if you so wish. I have attached a small token of appreciation for your time and effort.

Your prompt response will be greatly appreciated.

If you have any concerns or questions, please feel free to contact me by phone

031 2443133 (H) / 010 2654 1702 (M) or email: elsagovender@gmail.com.

Thanking you in advance.

Yours faithfully

K.GOVENDER

APPENDIX E - LETTER TO THE SCHOOL REMINDING THEM TO RETURN THE QUESTIONNAIRE

Date:

The Principal

.....School

Suwon

Dear Sir / Madam

REMINDER TO RETURN QUESTIONNAIRE

I am aware that educators are extremely busy, especially as it is the beginning of the school semester.

However, I humbly appeal to educators to please take a few minutes off their busy schedule to please complete my questionnaire and return it to me.

As you are aware, I will not be able to continue with my study programme without these and kindly request your assistance in this matter.

I do appreciate your efforts and if you have any concerns or questions, please do not hesitate to contact by phone on

031 2443133(H) / 010 2654 1702 (M) or email: elsagovender@gmail.com

Please remember to post the questionnaire back to:

Elsa Govender

c/o Samil Middle School

#104-1 Maehwang dong

Paldalgu

Suwon

Gyeonggi

South Korea

442-160

Your assistance is greatly appreciated.

Thanking you

Yours sincerely

K. Govender

QUESTIONNAIRE

INCLUSION OF ENVIRONMENTAL EDUCATION INTO SOUTH KOREAN SCHOOLS

Rationale

The questionnaire is intended to elicit your responses on :

- Your general knowledge and attitude towards Environmental Education
- Your view towards the future position of Environmental Education in the South Korean school curriculum

Request:

Please cross (X) the appropriate box.

Thank you!

QUESTIONNAIRE NUMBER

SCHOOL NUMBER

REFERENCE NUMBER

SECTION A

QUESTION 1: BIOGRAPHICAL DATA

Make a cross (X) in the relevant block

1.1	Gender	
	Male	<input type="checkbox"/>
	Female	<input type="checkbox"/>
1.2	Age group	
	20-30years	<input type="checkbox"/>
	31-41	<input type="checkbox"/>
	41-50	<input type="checkbox"/>
1.3	Years of experience in teaching	
	Less than 5 years	<input type="checkbox"/>
	5-10 years	<input type="checkbox"/>
	11-20 years	<input type="checkbox"/>
	More than 20	<input type="checkbox"/>
1.4	Position Held	
	Teacher	<input type="checkbox"/>
	Head of Department	<input type="checkbox"/>
	Deputy principal	<input type="checkbox"/>
	Other?	<input type="checkbox"/>
1.5	Qualification	
	University Degree	<input type="checkbox"/>
	University Degree + Postgraduate school certification	<input type="checkbox"/>
	Masters Degree	<input type="checkbox"/>
	Doctorate Degree	<input type="checkbox"/>

QUESTION 2 : ENVIRONMENTAL LITERACY

Make a cross (X) in the relevant block

	YES	NO
2.1 Do you agree with the following statements?		
2.1.1 Man has the ability to change the environment.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.2 Burning of coal releases gases into the atmosphere, which affects the survival of living things and causes air pollution.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.3 All living things depend on air, water, food and land for survival.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.4 People must live in harmony with nature in order to survive.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.5 Plants, minerals , soil, water and animal populations need to be conserved for future generations.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.6 Tree planting days will increase public awareness of the necessity of trees	<input type="checkbox"/>	<input type="checkbox"/>
2.1.7 It is important to repair leaking taps even if we don't pay for water.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.8 Conservation is a responsibility to be shared by individuals, industries, social groups and all levels of government and education.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.9 Family planning is important to avoid overpopulation.	<input type="checkbox"/>	<input type="checkbox"/>
2.1.10 Only Science teachers should know how the environment works.	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Are these statements about Korea true?	YES	NO
2.2.1 Korea has many environmental problems.	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2 Pollution is one of Korea's biggest problems.	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3 Korean education system teaches students about their impact on the environment.	<input type="checkbox"/>	<input type="checkbox"/>
2.2.4 There is a need to spend more time teaching students about the environment.	<input type="checkbox"/>	<input type="checkbox"/>
2.2.5 Korea's education focuses on gaining knowledge in order to obtain certification.	<input type="checkbox"/>	<input type="checkbox"/>
2.3 There are numerous opportunities provided regularly to Koreans to learn about the environment.	<input type="checkbox"/>	<input type="checkbox"/>

SECTION B

Make a cross (X) in the relevant block

QUESTION 1 : ENVIRONMENTAL EDUCATION

		YES	NO
1.1	Have you studied Environmental Education at university?	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Have you attended courses or training in Environmental Education?	<input type="checkbox"/>	<input type="checkbox"/>
1.3	Were these courses indicated in 4 above presented by the Ministry of Education?	<input type="checkbox"/>	<input type="checkbox"/>
1.4	Does your school have an Environmental Education policy?	<input type="checkbox"/>	<input type="checkbox"/>
1.5	Do you think Environmental education is an important subject?	<input type="checkbox"/>	<input type="checkbox"/>
1.6	Do you think Environmental Education should be taught at		
1.6.1	Elementary school	<input type="checkbox"/>	<input type="checkbox"/>
1.6.2	Middle school	<input type="checkbox"/>	<input type="checkbox"/>
1.6.3	High school	<input type="checkbox"/>	<input type="checkbox"/>
1.7	Do you think Environmental Education should be integrated into		
1.7.1	Mathematics	<input type="checkbox"/>	<input type="checkbox"/>
1.7.2	Sciences (Biology and Physics) and Technology	<input type="checkbox"/>	<input type="checkbox"/>
1.7.3	Languages (Korean and English)	<input type="checkbox"/>	<input type="checkbox"/>
1.7.4	Social Studies and Government	<input type="checkbox"/>	<input type="checkbox"/>
1.7.5	Arts (Art and Music)	<input type="checkbox"/>	<input type="checkbox"/>
1.7.6	Religion and Morality	<input type="checkbox"/>	<input type="checkbox"/>
1.8	Do you think there is a need for you to receive EE training?	<input type="checkbox"/>	<input type="checkbox"/>
1.9	Do you think it is possible to teach environmental issues in or through your subject?	<input type="checkbox"/>	<input type="checkbox"/>
1.10.	If you attend a profession development course or training in Environmental Education, would you like to be trained in...		
1.10.1	content of Environmental Education	<input type="checkbox"/>	<input type="checkbox"/>
1.10.2	skills required to teach Environmental Education	<input type="checkbox"/>	<input type="checkbox"/>

QUESTION 2 : TEACHING METHODS

		YES	NO
2.1	Do you use the following teaching methods to teach your lessons;		
2.1.1	Lecturing about the environment		
2.1.2	Discussing the environment		
2.1.3	Dramatization : demonstrating actions observed outdoors		
2.1.4	Experimentation		
2.1.5	Fieldwork: making a record of an outdoor activity and evaluating reports		
2.1.6	Case studies: reading a passage about an environmental problem and find ways to solve it		
2.1.7	Debates : role playing and simulated situations		
2.1.8	Brainstorming a theme during a lesson introduction		
2.1.9	Projects : self discovery of issues such as recycling of paper and tins		
2.1.10	Group work : working in groups to solve problems or doing projects		
2.2	Do you think it is your responsibility to teach environmental issues in the normal classroom situation?		

QUESTION 3: ENVIRONMENTAL PRACTICES

		YES	NO
3.1	Do you do the following ;		
3.1.1	leave the tap running when you brush your teeth		
3.1.2	take a shower instead of a bath to save water		
3.1.3	use LPG instead of diesel or leaded petrol to reduce pollution		
3.1.4	buy products that are known to be harmful to the environment		
3.1.5	switch lights off when you don't need them anymore		
3.1.6	leave windows open when the air conditioner is in use		
3.1.7	leave the computer on when not in use		
3.1.8	encourage learners to write on both sides of the paper		
3.1.9	give your old clothes to charity		
3.1.10	separate your garbage for recycling.		

SECTION C

QUESTION 1 : YOUR SCHOOL

		YES	NO
1.1	Is recycling promoted at your school?	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Are educators made aware of ways to manage school resources wisely, eg. save water and electricity, recycle paper etc?	<input type="checkbox"/>	<input type="checkbox"/>
1.3	Are waste and recyclable materials used in classroom activities?	<input type="checkbox"/>	<input type="checkbox"/>
1.4	Does your school educate students about the importance of water?	<input type="checkbox"/>	<input type="checkbox"/>
1.5	Does your school have access to water-on-tap?	<input type="checkbox"/>	<input type="checkbox"/>
1.6	Is the drinking water clean for consumption?	<input type="checkbox"/>	<input type="checkbox"/>
1.7	Does your school have water tanks to collect rain water?	<input type="checkbox"/>	<input type="checkbox"/>
1.8	Are there adequate toilet facilities for learners?	<input type="checkbox"/>	<input type="checkbox"/>
1.9	Are there adequate toilet facilities for teachers?	<input type="checkbox"/>	<input type="checkbox"/>
1.10.	Are the toilets clean and hygienic at all times?	<input type="checkbox"/>	<input type="checkbox"/>

QUESTION 2 : ENVIRONMENTAL AWARENESS

		YES	NO
2.1	Are the following Environmental Days celebrated in your school?	<input type="checkbox"/>	<input type="checkbox"/>
2.1.1	World Wetland Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.2	Human Rights Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.3	World Health Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.4	Earth Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.5	World Environment Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.6	Heritage Day	<input type="checkbox"/>	<input type="checkbox"/>
2.1.7	World Aids Day	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Are the following Environmental Weeks celebrated in your school?	<input type="checkbox"/>	<input type="checkbox"/>
2.2.1	National Water Week	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2	National Environment Week	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3	National Arbor Week	<input type="checkbox"/>	<input type="checkbox"/>
2.2.4	National Marine Week	<input type="checkbox"/>	<input type="checkbox"/>
2.3	Does your school celebrate any other environmental days not mentioned above?	<input type="checkbox"/>	<input type="checkbox"/>

2.4 Does your school undertake the following Education Outings?

YES NO

2.4.1 Nature reserves

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2.4.2 Environmental awareness centers

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2.4.3 Recyclers eg. cans, bottles or paper recyclers

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2.4.4 Agricultural sites

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2.4.5 Water purification plants : Waste management offices

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2.5 Is your school affiliated to any group or organization that supports learners in participating in environmental action projects?

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Would you like your school to receive a summary of the results of the survey?

YES NO

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Please return to: Elsa Govender, c/o Samil Middle School, #104-1 Maehwang dong, Paldalgu, Suwon, Gyeonggi, South Korea, 442-160.

THANK YOU !!