

TEACHING ENVIRONMENT EDUCATION IN THE SECONDARY LEVEL

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DECLARATION

I hereby declare that this dissertation has not been submitted for candidature for any other degree.

Pramila Maharjan

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December 31, 2012

DEDICATION

To my family

Without their love and respect, I would be nowhere.

APPROVED

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AN ABSTRACT OF THE DISSERTATION OF

Pramila Maharjan for the degree of *Master of Education in Environment Education and Sustainable Development* presented on December 31, 2012.

Title: *Teaching Environment Education in the Secondary Level*

Abstract Approved:

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This study attempted to explore the present practice of teaching learning of *Environment Education* in the Secondary Level Public Schools. The qualitative research approach was followed with interpretive research paradigm to conduct this research. I studied the teaching practices of *Environment Education* in the secondary level curriculum with the subject *Health, Population and Environment*, a major subject in grade nine and ten. More particularly, it revealed the understanding of environment education by teachers; teaching methods applied, use of teaching materials and problems encountered by teachers while teaching environment education and drew some implications on the basis of findings and conclusion.

The research was carried out in six different public schools of Lalitpur Sub Metropolitan City with nine respondents who are currently teaching *Health Population and Environment* in the secondary level. I used open ended questionnaire, participant observation and focused group discussion to collect the qualitative data. During the process of data collection and data analysis, I was highly engrossed with the respondents and their experiences.

After completing my study, I came up with conclusion that environment education is the most important aspect of education in present days so as to create awareness on environment degradation. Basically, environment education is being taught from the junior levels in schools infused in different subjects like Social Studies, Science, Nepali, and English. In the context of Nepal, environment education teaching is included from the primary level, whereas *Health, Population and Environment* is a particular subject which meets the objectives of environment education in the secondary level.

The study revealed the teachers understanding on environment education being important aspect which is imparted to students through *Health, Population and Environment* subject. The teachers have been teaching with limited teaching materials confined within classroom teaching and the method of teaching has been mostly through the lecture method. Although the teachers have been teaching in lecture method, students were found aware about environment, hygiene and sanitation. They are using dustbin in the classrooms and participated in road cleaning campaign which depicted the importance of environment education teaching but they still lacked in developing responsible behavior towards environment. This is because the education system in present context is focused on exam basis rather than preparing for their behavioral change.

The research also concluded with the implications deduced from the study. The teachers expressed their view of outdoor teaching to be more effective than direct classroom teaching in order to meet the goals of environment education. The teachers, currently teaching *Health, Population and Environment* in the research site expressed positive belief towards meeting environment education goals but they have been encountering various problems like lack of teaching materials and large class size. In

addition to that, teachers were found to be from different academic background irrelevant to subject matter who are currently teaching *Health, Population and Environment* resulting in the teaching difficulties in core chapters such as health portion.

Lastly, the research in the field of environment education is essential in order to probe various problems and possibilities which will help to protect and conserve our Planet.

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Pramila Maharjan

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ACRONYMS AND ABBREVIATIONS

CDC	: Curriculum Development Center
ECCA	: Environmental Camps for Conservation Awareness
EE	: Environment Education
EL	: Environment Literacy
FGD	: Focus Group Discussion
HPE	: Health, Population and Environment
LSMC	: Lalitpur Sub Metropolitan City
NCF	: National Curriculum Framework
NCS	: National Conservation Strategy
NEC	: National Education Commission
SD	: Sustainable Development
UNEP	: United Nations Environment Program
UNESCO	: United Nations Education, Scientific, and Cultural Organization

LIST OF FIGURES

Figure 1: The Environmental Behavior Model

Figure 2: The Palmers Tree Model

Figure 3: Conceptual Framework

CHAPTER I

INTRODUCTION

Chapter Overview

In this chapter, I have presented my interest of conducting this research in the background of the study section with a brief introduction to Education and Environment Education. I have related the importance of EE to everyday life. Moreover, I have specified the problem statement continued with the purpose of the study, research questions, rationale of the study, and delimitations of the study. This is the overview of my research study.

Background of the Study

Basically ... use textbooks alone as curriculum and deliver instruction as a routine task...instructional approaches used in the classroom are not interactive, participatory and meaningful to the learners...training programs conducted for the teachers...not been successful in transferring their knowledge and skills in day-to-day classroom instruction...emphasis on rote learning and lecture-oriented teaching...project works are almost non-existent. Thus, teaching and learning approaches have not been successful to foster the development of intelligence, creativity, lateral thinking and independent learning. (NCF, 2005, p. 14)

The above piece of text is derived from the National Curriculum Framework, 2005 published by Curriculum Development Center, Nepal Government, Ministry of Education and Sports. After reading this, I was compelled to think of how our education system is going on in the school level. This national level document is not

showing satisfactory achievement in teaching learning process. This is the impression by which I chose to conduct an investigation in the field of education. Moreover, I myself being a student of environment selected teaching learning related phenomenon as my research interest and area. There have been several researches conducted in EE; however the study to reveal the present practice of teaching EE in HPE is my prime concern in this research.

Education is the backbone of everybody's life. It is recognized as a process that makes human beings and society able to take new challenges in the changing world. It is one of the most important ways of teaching people how to tackle environmental and development issues. Education is the prerequisite for promoting the behavioral change and providing citizens with the key competencies needed to achieve sustainable development (Jeronen, Jeronen, & Raustia, 2009) Education can change people's values, attitude, behavior, knowledge and skills to support sustainable development. Education system can be distinguished as formal, informal and non-formal education systems. Mullins (1984) defines formal education as a socially approved sanctioning system in which participants are required to learn and demonstrate certain competencies (as cited in EECO, 2000). Non-formal education, in contrast, lacks a well defined set of educational features. Informal education does not necessarily include the objective and subjects usually encompassed by the traditional curricula (Dib, 1988). It means that informal education does not provide the degree or diplomas rather it just supplements for both formal and non-formal education.

The main responsibility of education is to form a habit. It is a gradual process from knowledge acquiring towards change in their attitude. Education refers to a set of values or ideals embodied and expressed in the purposes for which knowledge,

skills and attitudes are imparted and so directing the amounts and types of training that is given (O'Connor, 1957). Education is thus a prerequisite for bringing change in behavior. The actual goal/aim of education is to shape the human behavior (Hungerford & Volk, n. d.) so that they can bring positive change in their performance or habit. Similarly, Environment Education is the education in, about and for the environment (Lucas, 1979). Education is described as a process of bringing about a desirable change in attitude and behavior, whereas, EE is recognized as the process that would help individuals to acquire essential knowledge and skills to take positive action towards a better environment (Jain & Raghunathan, 2001). Education when provided in the field of environment can be termed as Environment Education. Therefore, environment and education are two complementary terms. Therefore, it can be said as the main objective of EE is to bring positive change in their behavior towards environmental issues. Environment is the surrounding and education teaches about the importance of environment and its interrelationship among one another.

EE aims to make individuals aware of their environment and its problems and helps them to understand the effect that human choices have on the environment linking education with the realities of life. Therefore, education is the mode, way of supporting the change in the attitude of individuals so that they change their behavior in a positive way. EE in this respect makes them committed towards the preservation of environment and helps to change their attitude towards environment conservation.

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

issues concerning environmental quality. Thus, EE is the best way of bringing conservation awareness and responsible behavior in human beings towards nature.

EE is a way to disseminate knowledge and skills concerning environmental protection where environmental education is necessary to prepare environmentally conscious citizens. Environmentally responsive citizen is one who is aware and sensitive to the total environment, acquires basic understanding of environment, has the feeling of concern for the environment, skilled for identifying and solving environmental problem and actively involves at all levels in working towards resolution of environmental problem (Hungerford & Volk, n. d.). Environmental Education therefore can play a critical role in solving environmental crisis.

It is difficult to find out whether environment encompasses education or vice versa. If seen as different entities, education is one discipline, which talks about the curriculum, textbooks, pedagogy, and so on whereas environment talks about the interrelatedness of physical components with the human beings and other organisms. Environment and Education when combined together can be defined as educating about environment just as other fields of education. Environment is where we survive and utilize the resources from. In the education system, we are providing or being provided the knowledge about conserving environment from any field of study like social studies, health, science, and so on.

Education is the means to civilization. Civilized citizens can create a peaceful, healthy and secure world from all aspects. Nowadays, people are becoming selfish towards the nature. They are consuming the natural resources in the haphazard and unwise way. If human beings are more knowledgeable, they will, in turn, become more aware of environment and its problems and thus be more motivated to act towards the environment in more responsible ways (Hungerford & Volk, n. d.).

Students are the main targets for whom we can create the awareness program for the conservation of the nature. And school is the initial and easy way of spreading awareness about the importance of environment. EE is thus aimed at educating individuals about nature conservation through change in behavior towards nature friendly activities. EE cannot achieve its goal till there are hindrances faced in its teaching and learning process. Teaching and learning process is directly linked with the outcome of its academic learning to its application. Teachers' perceptions and knowledge affect the learning outcomes. Since teachers are the active deliverer of knowledge to the students, their role becomes more prominent regarding its effect on students academic outcome.

Purpose of the research

The purpose of this study was to explore the present practices of teaching-learning process of EE in the secondary level. More specifically, the study attempted to reveal the problems encountered by the teachers about teaching Environmental Education in Health, Population and Environment curriculum.

Problem Statement

I was interested in conducting my research study in the field of education. This topic hit my mind only after a short argument with my two colleagues who are also teaching EE in their respective schools. During the course of discussion, I happened to ask them how they feel about teaching EE in the class. They were not satisfied with their teaching process. In fact, they were not satisfied with the whole HPE curriculum. One of them even told me that the students are not interested in studying EE subject. I again put a query to them, "Is EE curriculum not efficient in bringing environmentally responsible behavior in their life? They answered with a negative perception. They had a strong belief that the school curriculum of EE is not effective to fulfill the

required objectives as well as bringing about responsible behavior within the students. To exemplify it, one of them told me that teachers are not showing responsible behavior towards nature even though they teach environmental education. Students follow the footmarks of the teachers so it was not possible to bring about change in their behavior. With that short conversation, I became very sad. I was really worried about the education system of our country. EE is introduced in the school curriculum with the goal of behavior change with the individuals to act responsibly towards nature. Being myself a student of Environment Education and future teacher of the same, I was not satisfied with their beliefs. I was curious about the education system of our country. This forced me to think about the status of EE teaching and learning process in the present context and whether teachers and students are satisfied with the present process of teaching and learning? Are there any problems faced by them or not? These questions were important because the reason behind the negative perception towards EE teaching might be due to the problems they faced in the teaching learning process.

Research questions

With my assumption that there exist problem faced by teachers while teaching EE in the secondary level, I have developed my major research question as follows:
What are the practices and perceptions of teachers about teaching and learning of Environmental Education in the secondary level?

The subsidiary research questions are:

1. What is the present practice of teaching and learning process of HPE in the secondary level?
2. How do the teachers perceive Environment Education?

3. What are the existing possible problems of teaching HPE in the secondary level schools?

Rationale of the Study

Environmental Education is a compulsory subject only in the secondary level though it is included in the primary level through different subjects. It is combined with the health and population and jointly called Health, Population and Environment (HPE). It is not a separate subject since it is related to science, health as well as population. Therefore, it is generally found that this subject is less prioritized, while it is an equally essential subject like Mathematics, Science and English. Though Environmental Education is provided at different levels, expected outcome is not seen satisfactory. National Curriculum Framework for school level (2005) put forward the major criticisms in present curriculum to be its weak implementation at the classroom (p. 14).

Environmental issues are included in science, social studies as well as in English curriculum. Students are getting the knowledge about environment from various subjects in different ways. Therefore, the teaching process defines the differences in achieving its goals as well as the curriculum development distinguishes its objectives. It is also true that in the Nepalese context of teaching-learning process, teachers face problems regarding classroom teaching. They lack teaching materials, teacher trainings and classroom management skills. In this regard, teachers and students are facing problems in the process of teaching and learning of EE. Due to these problems, EE is falling behind in achieving its targeted goals. I, therefore, am interested in studying the current practices of teaching and learning EE in order to reveal the perceptions of teachers in teaching environmental issues within HPE curriculum. The findings will support the teachers, students, curriculum developers,

material developers and educationists to bring about improvements in the teaching-learning process of EE.

Delimitations

I have delimited my research study within Lalitpur Sub metropolitan city (LSMC) public secondary level schools. My research respondents were of secondary level teachers currently teaching in grade nine and ten. I delimited my study only within the present practice of teaching-learning process of EE under six themes; understanding of EE by the HPE teachers, importance of EE teaching, teaching method applied, teaching materials used, problems encountered while teaching HPE and teaching EE within HPE curriculum.

Chapter Summary

In this chapter I have discussed my interest in conducting the research in the field of education. I have provided a brief background to education and its importance along with the importance of EE. Further I have given the purpose of the study, problem statement and developed research questions on their bases. Lastly I ended the chapter with the delimitations of the study.

CHAPTER II

REVIEW OF THE LITERATURE

Chapter Overview

This chapter provides the related literature that supports my research in greater detail. Literature review is the process of knowing the previous studies as well as the consent to do the further research. I reviewed all possible literature from different sources like books, journals, articles, reports, previous studies and policies. I focused my literature review mainly under three headings. Firstly, I presented the thematic literature review to support my research questions. Secondly, I mentioned teaching-learning theories. Thirdly, I reviewed other research works which supported my research. I believe that research extends the periphery of knowledge. A critical, insightful and comprehensive review of research has many values for the researcher.

Defining Teaching

Teaching is said to be the noblest profession. It is noted to be so because teaching as a job involves the processing of individuals hoping to transform them into caring human beings and useful citizens. With a goal as important as this, the teacher is expected not only to work devotedly and patiently but to conform herself/himself, as well, into the very image that s/he wants her/his learners to emulate. Thus, what the teacher teaches s/he learns herself/himself. Teaching is a complex processes in the sense that learning, as its objective is a decision that a learner makes herself/himself. Without the learner's full involvement in the teaching-learning process, all teaching is futile, thus, most important learning principle is a self-activity. For teaching to become successful, the teacher should apply all the scientific teaching-learning

theories and principles and use true and tried methods while at the same time will be able to innovate as he/she sees fit to suit the teaching-learning process to the learner's nature and needs. Elkind stated that "Teaching is both art and science." Elkind further said that the art comes from the teacher's personality, experience, and talents whereas the science comes from knowledge of child development and the structure of the curriculum (Elkind, n. d.). There is both an art and a science dimension to effective teaching (Weisman, 2012). The ability of the teacher to interpret correctly and apply theories and principles makes teaching a science. On the other hand, the teacher's ability to translate them into effective teaching methods makes teaching an art.

The core of the process of teaching is the arrangement of environment within which the student can interact (Dewey, 1933, as cited in Vishwanath, 2006). It is the preparation of appropriate situation in which the students can acquire the required knowledge. According to Jyoce and Weil (1985), a teaching model is pattern or plan that can be used to shape curriculum or course, to design instructional materials and to guide a teacher's action (as cited in Vishwanath, 2006). A model of teaching consists of guidelines for designing educational activities and environments. It specifies ways of teaching and learning that are intended to achieve certain kinds of goals.

Model of teaching implies a way of teaching, involving systematically structured and logically sequential learning experiences and specific and meaningful teaching strategies developed in their own theoretical terms to accomplish a given objective or a set of objectives.

Teaching Learning Process

Teaching and learning is a two way process. In the simple understanding, teachers teach and the pupils learn. For Thomas and Harri-Augstein (1985), the approaches to teaching and learning are organized attempts to bring some kind of

meaning to our lives (Thanasoulas, 2002). Learning is a process which brings about a relatively permanent change of behavior. Learning is ubiquitous activity, hence it is present everywhere and can be formal, informal or non-formal. In the context of Nepal, teaching-learning process follows the traditional methods of teacher centered teaching rather than child centered approach (NCF, 2005). Direct instruction, conventional classroom management with less space for movement, rigid physical arrangements, small classroom size in comparison to the students number still prevail in most of the private and public schools. Regarding the teaching learning process, there is one popular saying that- "I hear I forget and when I see, I remember but when I do I understand" by Confucius, a Chinese Philosopher and reformer (551 BC-479 BC). This proves that the teaching learning process is two way and practical. Learning varies widely as per the learners' ability levels, interests, backgrounds and many other factors, all of which influence their level of content mastery in educational activities. Teaching learning does not only depend on teacher or student, it is the mutual relationship between these two.

Role of a Teacher in Teaching Learning Process

In the traditional definition, the teacher is the medium to impart knowledge to the students. Now the word teacher is taken as the facilitator who works as guide for students rather than the active and ultimate source of knowledge. Teachers are considered as a key factor in influencing and encouraging student' interest in environmental issues (Teksoz, Sahin, & Ertepinar, 2010). A teacher is a partner, a facilitator, a leader, a stimulator, a force, a master mind of student's successful learning (Kostova & Atasoy, 2008).

Constructivist learning perceives that the actual knowledge is social interaction and the meanings which the teacher and the students construct together are

the actual knowledge or teaching and learning. Teacher, who is believed to be more knowledgeable, is a mediator. Teachers in the real world come in wide range of different personalities, beliefs and ways of thinking and working (Thanasoulas, 2002). Thus, we cannot point someone who uses methods and models of teaching that differ from the ones in curriculum are necessarily a bad teacher. While teaching, the students, not teachers, should be regarded as a constructor of knowledge (NCF, 2005, p. 14). Teachers are facilitators who guide the students to generate or construct the new knowledge.

History of Environmental Education

Environmental Education is not a new discipline, but developed from the ancient times. It is evident that human beings have appreciated the value of EE as they were dependent on the natural environment for food, shelter and security. The institutionalized teachings of EE began in 1960s (Maharjan, 2000). The pioneering studies towards EE began after the Stockholm conference on 'Human and Environment organized in Sweden from 5 to 16 June 1972. The period was the initial time when human induced natural calamities were observed and serious concern was made in relation between the human and environment. EE was then a new emerging concept.

The first definition of the term “Environmental Education (EE)” was given by IUCN/UNESCO in International Working Meeting in EE in the school curriculum, held in 1970 at the Foresta Institute Carson city, Nevada, USA. It defines:

EE is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. EE also

entails practice in decision-making and self-formulation of a code of behavior about issues concerning environmental quality. (Palmer, 1998)

The world's first Intergovernmental Conference on Environmental Education was organized by the UNESCO in cooperation with the UNEP and was convened in Tbilisi, Georgia (Former USSR) from October 14-26, 1977. The declaration and recommendations of the Tbilisi conference helped to establish the nature, objectives and principle of EE as well as the main lines which its development should follow both nationally and internationally. According to this conference, the goals of Environmental Education are summarized in following three points (NAAEE, 2010):

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

Prior to any of the other definitions, Stapp et al. (1969) in a graduate seminar in the Department of Resource Planning and Conservation, School of Natural Resources in University of Michigan presented the definition of EE as Environmental Education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution (Stapp et al., 1969) The Belgrade Charter was adopted by United Nations Conference and provided a widely accepted goal statement for Environmental Education (EECO, 2000) as:

The goal of EE is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has

the knowledge, skills, attitudes, motivations and commitment to work individuals and collectively towards solutions of current problems and the preservation of new ones.

The Tbilisi Declaration (1978) and the EE models involve the idea that EE should be intended for all age groups since EE is a lifelong process.

Environmental Education in Nepal

Environmental Education was given an important place in putting the National Conservation Strategy of Nepal into effect. The Eighth Five year plan (1992-1997) provided environmental education at all levels of formal education, technical education, teachers training, non-formal adult education, and in-service program. EE in Nepal can be described in terms of formal, informal and non- formal education (Karki, 2000). In the formal education system, EE is taught in the integrated model or infusion model where environmental issues are included within other curricula.

EE is being taught in Nepal since 1999 with integration to health, population and environment since these three subjects are interrelated with each other (CDC, 2007). The curriculum of HPE has been developed with the recommendation of High Level National Education Commission, 1997 (CDC, 1999). Since then many works have been done in the primary education system but very few studies have been conducted in secondary level. In a report, 'Analysis of present curriculum of class 1-12' prepared by Curriculum Development Center (2003) shows that there is no problem with the secondary level curriculum. The School Leaving Certificate (SLC) examination system was modified in 2006 by deciding to take exam from grade 10 only while previously the exam was being hold from grade nine and ten. Then, the reformations in the curriculum in both grades were experienced. By the same report, 'Analysis of present curriculum of class 1-12' it is also seen that there is gap between

the SLC exam and the higher studies in its formulation of specific objectives. The higher level curriculum objectives seemed to be more ambitious as grade 10 curriculum objective is unable to meet the requirement of the higher studies.

Environmental Education is incorporated into primary school teaching in four subjects: Nepali, Social studies, Health education and Science (Palmer, 1998). In the secondary level, Health, Population and Environment (HPE) is taught as the compulsory subject (NCF, 2005) after recommended by High level Education Commission (2053) (Karki, 2000). In the higher secondary level, HPE subject is being taught as a subject to produce teachers efficient in teaching Environment in school level.

The objective of EE is to generate awareness, knowledge, attitude, skills, evaluating ability participation (Karki, 2000). These objectives can only be met when the behavior of an individual changes positively towards the environment.

Thematic Literature Review

In this section of literature review I have incorporated the brief description of Environment Literacy and the current scenario of EE teaching practice in Nepal and other countries.

Environment Literacy

Environmental Education in the context of some of the countries is termed as environmental literacy. The basic knowledge on environmental issues can be termed as environmental literacy. According to the Concise Oxford Dictionary, Literacy means ability to read and write. EL is defined as "basic functional education for all people, which provides them with the elementary knowledge skills and motives to cope with environmental needs and contribute to sustainable development (Erdogan, Kostova, & Marcinkowski, 2009). EL is conceived as "functional literacy"

(UNESCO, 1989). It means that knowledge on environment is the practical education. The children gain the awareness and understand their role in the conservation of environment. EL is a term used for EE in Bulgaria and other East European countries (Erdogan, Kostova, & Marcinkowski, 2009). Roth (1992) described environmental literacy as a continuum of competencies, understanding, skills, and actions, rather than a discrete attribute that one either does or does not possess as cited in (EECO, 2000). It means that understanding about the environment create the environmental awareness. Uusitalo (1993) has argued that knowledge construction can lead towards more attention in his or her behavior change (Jeronen, Jeronen, & Raustia, 2009). The three levels of EL as described by Roth (1992) are:

1. Nominal EL: In this level of EL, an individual acquire basis definition of environment and develops the awareness towards environment.
2. Functional EL: Functional EL seeks broader knowledge about environment, interactions between human being and environment.
3. Operational EL: In this level, an individual gather knowledge beyond the functional literacy. He or she becomes able to go in the action level and act for the environment protection.

Present Practice of Environmental Education Teaching in Nepal

EE is introduced from the primary level of school education including in science and other subjects, but it is a compulsory subject only in the secondary level. HPE is the compulsory subject School education is still provided through the direct classroom teaching by different subject teachers in the secondary level in the Nepalese schools. The mode of content delivery in present context is still in the traditional way and also the teachers are the active deliverer of knowledge to the students whereas the students are the receiver of the knowledge. It is, therefore, very

important to enhance the process of this giving and taking of knowledge between teacher and students.

The teaching and learning of EE is done through the multidisciplinary approach (Karki, 2000) by infusing EE in the HPE curriculum in the secondary level in the context of Nepal within the infused curriculum of HPE. Few environmental issues are incorporated in HPE curriculum and taught in the class. According to the national curriculum, objective of EE are to enable learners for thoughtful protection and wise use of country's natural resources, helping the individuals lead a socially harmonious lives in modern world and helping the modernization process of the country creating capable manpower for its development. In the secondary level, the teaching methods are demonstration, question answer, observation, field visit, drama, problem solving, project work, presentation and discussion, research and exploration as mentioned according to the student centered teaching. The evaluation is done on the basis of observation, record keeping, written exam, project work and incident study. The teaching hour per week allotted for teaching HPE in the secondary level is 4 teaching hours.

Practice of Teaching and Learning of EE in Other Countries

EE is seen as a holistic, interdisciplinary and multidisciplinary approach (Karki, 2000) in education in most of the countries. EE is also termed as nature educations, ecological education, outdoor education in various countries where as some of countries see it as value education. School Civic Clubs are introduced in Botswana to improve children's environmental knowledge, attitude and practices (Ajiboye & Silo, 2008). The curriculum approaches are also infused but study showed that the result produced was not as much as desired, where as the civic club demonstrated the effectiveness of this approach as against the more theoretical class.

In the context of Indian scenario, EE is imparted through infused curriculum while it is not seen satisfactory hence they are moving towards holistic approach (Sonowal, 2009); (Jain & Raghunathan, 2001). Presently, EE is included in school education though various environment-related programs and activities. Center for Environment Education (CEE), National Environmental Education Program (NEEP), etc. are effectively working for conducting the environmental activities throughout India. In case of Bangladesh, environmental studies is infused in general sciences and social sciences while in case of Bhutan, Maldives and Sri Lanka EE is given importance and included in formal education as integral part (Jain & Raghunathan, 2001).

Importance of Teachers' Knowledge on Teaching EE

Environmental Education is not taught as a separate subject rather in an infusion type of curriculum. Health, population and Environment is incorporated and made a single curriculum. Therefore, teachers have to teach health, population and environment in the same curriculum. Environmental issues are also included in science, social studies and English subjects but the learning objectives are different. The concept of the environment is given through the Environmental Education incorporated in HPE subject. Teachers may or may not have the conceptual knowledge about the environment related issues. Environment Education is an interdisciplinary subject which is, in fact, acquired for the behavior formation.

Teaching Method Applied in EE

According to them National curriculum designed for secondary level teaching of Environment under HPE subject, in Nepal, the methods applied are demonstration, problem solving, question answer, project work, presentation and group work, observation, research and exploration and role play method (CDC, 2007). School Civic Clubs are introduced in Botswana to improve children's environmental

knowledge, attitude and practices (Ajiboye & Silo, 2008). The curriculum approaches are also infused but study showed that the result produced was not as much as desired, where as the civic club demonstrated the effectiveness of this approach as against the more theoretical class. Moreover, learning by doing, outdoor teaching, experimental learning, data analysis are the methods found appropriated for EE teaching (Jain & Raghunathan, 2001).

Curriculum

Curriculum is the method in which a set of instruction is designed to achieve a set of objectives within a formal classroom (Smith, 1990,2000). Curriculum is guided and planned (Smith, 1990,2000). It is a guidance or package of objective, time, expected outcome set for particular subject or course of study. The definition of curriculum as cited in Grundy (1987), a program of activities (by teachers and pupils) designed so that pupils will attain so far as possible certain educational and other schooling ends or objectives (Barrow, 1984, p. 11). Based on the article written by Smith, curriculum is studied under four main ways of approaching curriculum theory and practice:

Curriculum as a body of knowledge to be transmitted. Understanding the term curriculum under this approach, curriculum is a body of knowledge-content and/or subjects (Smith, 1990,2000). In this sense, the teaching and learning is the process of transmitting knowledge to the student.

Curriculum as a product. In this approach, curriculum is understood as a product where the objectives of the curriculum are met. More specifically it is product oriented with respect to what people need to know in order to work, live their lives and so on (Smith, 1990,2000).

Curriculum as a process. In this approach, curriculum is understood as a set of documents for implementation. Simply, it is a process where knowledge is implemented and the curriculum is merely a process of interaction in the classroom.

Curriculum as praxis. Curriculum as praxis is the development of the process model (Smith, 1990; 2000). In this approach, the curriculum is the practice of bringing the knowledge into the level of its committed action. It is the developed itself through the dynamic interaction of action and reflection.

EE has been interpreted as both curriculum product and curriculum process (Gough & Gough, n. d.). EE is an interdisciplinary or multidisciplinary subject where formal curriculum may be applied as the product and non-formal as the continuous process.

Theoretical Literature Review

Under this literature review, I have discussed models of teaching, learning theories and models of EE. The teaching model deals with the process and methods of teaching. The EE models discussed in the literature review are the Environmental behavior model and the Palmer's tree model.

Models of Teaching/Instruction

Teaching or instruction is defined as the purposeful direction to learning process (Huitt, 2003). It is the guidance to the planning and instruction for the classroom teaching. Teaching models helps both teachers and students. Joyce, Weil, and Calhoun (2003) describe four categories of models of teaching/ instruction (as cited in Huitt, 2003). These models are

Behavioral systems. This model of teaching focuses on development in the mastery of subject matter or skills and brings required changes in behaviors. Direct instruction and mastery learning are involved in this model of teaching. Under direct

teaching, highly structured, teacher-directed; maximization of student learning time is applied. For master learning, enough time and quality instruction is given, nearly all students can master any set of objectives.

Information-processing approaches. This model is linked to concepts and principles developed in cognitive psychology (Huitt, 2003). It helps students to enhance making sense of new information and creating knowledge. The methods used in this model are as inquiry training/inductive thinking, concept attainment and intellectual development.

Personal development. This model emphasizes self-actualizing, self-awareness and directing destinies. For this model, approaches followed are facilitative teaching, increasing personal awareness and synaptics (Huitt, 2003). Student-centered teaching, developing the awareness on the individual potential and focus on the development and application of creativity are the features in the personal development

Social interaction. The models associated with the social interaction family focus on developing the concepts and skills needed to work in groups. Cooperative learning and role playing are examples of social interaction model for the development of behavior and values (Huitt, 2003).

Learning as a Process: Learning Theories

Learning theories deal with learning as a process. Basically, learning theories can be studied under three main categories or philosophical framework- behaviorism, cognitivism and constructivism.

Behaviorism. Behaviorist theory of learning underlies three basic assumptions. First, learning being occurred by changes in the behavior, second, environment shapes the behavior and third, the principles of contiguity and reinforcement are central to explaining the learning process. Learning is acquisition of

behavior through conditioning. Two possible conditioning is studied under behaviorism. They are classical conditioning and operant conditioning.

Classical conditioning. It is explained by Pavlov in his classical conditioning theory of behaviorism, where the behavior becomes a reflex response to stimulus as in the case of Pavlov's Dogs. Pavlov was interested in studying reflexes, when he saw that the dogs drool without the proper stimulus. Although no food was in sight, their saliva still dribbled. It turned out that the dogs were reacting to lab coats. Every time the dogs were served food, the person who served the food was wearing a lab coat. Therefore, the dogs reacted as if food was on its way whenever they saw a lab coat. In a series of experiments, Pavlov then tried to figure out how these phenomena were linked. For example, he struck a bell when the dogs were fed. If the bell was sounded in close association with their meal, the dogs learned to associate the sound of the bell with food. After a while, at the mere sound of the bell, they responded by drooling. It is termed as the classical conditioning theory.

Operant conditioning. It is a theory where there is reinforcement of the behavior by a reward or a punishment. The theory of operant conditioning was developed by B. F. Skinner. The word 'operant' refers to the way in which behavior 'operates on the environment'. Briefly, a behavior may result either in reinforcement, which increases the likelihood of the behavior recurring, or punishment, which decreases the likelihood of the behavior recurring. It is important to note that, a punishment is not considered to be applicable if it does not result in the reduction of the behavior, and so the terms punishment and reinforcement are determined as a result of the actions. Within this framework, behaviorists are particularly interested in measurable changes in behavior.

Cognitivism. Cognitivist theory views learning process as the brain-based learning. It is based on two main assumptions. First is that the memory system is an active organized processor of information and second is that prior knowledge plays an important role in learning. Individual learning is prioritized in cognitivist theory.

Constructivism. Constructivist theory views learning as a process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge or experience. In other words, "learning involves constructing one's own knowledge from one's own experiences." Constructivist learning, therefore, is a very personal endeavor, whereby internalized concepts, rules, and general principles may consequently be applied in a practical real-world context.

Social learning theory. Social learning theory believes that the learning occur from environment through the process of observational learning (McLeod, 2011). Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, and environmental influences. According to Bandura, children observe the people around them behaving in various ways. They pay attention to some of the people and imitate their behavior. They imitate the activity if the people or model gets positive reinforcement else they ignore the imitation. Bandura believed that the world and a person's behavior cause each other, while behaviorism essentially states that one's environment causes one's behavior.

Models of Environment Education

The development of educational models lies in order to build the responsible citizen towards nature. Teaching and learning is the key to achieve such educational goals which are set in the national level curriculum of EE.

From the literature, it is found that the study context of Finland education is provided by constructivist pedagogy, the teacher acts as the guide and supports the learning process of the pupils.

Various models are adopted and are being adopted in various countries. The main aim of the entire model is to develop environmentally responsible citizen of future. Mostly discussed models of EE are the Environmental behavior model (Hungerford & Volk, 1990), the tree model (Palmer, 1998), the house model (Jeronen & Kaikkonen, 2002).

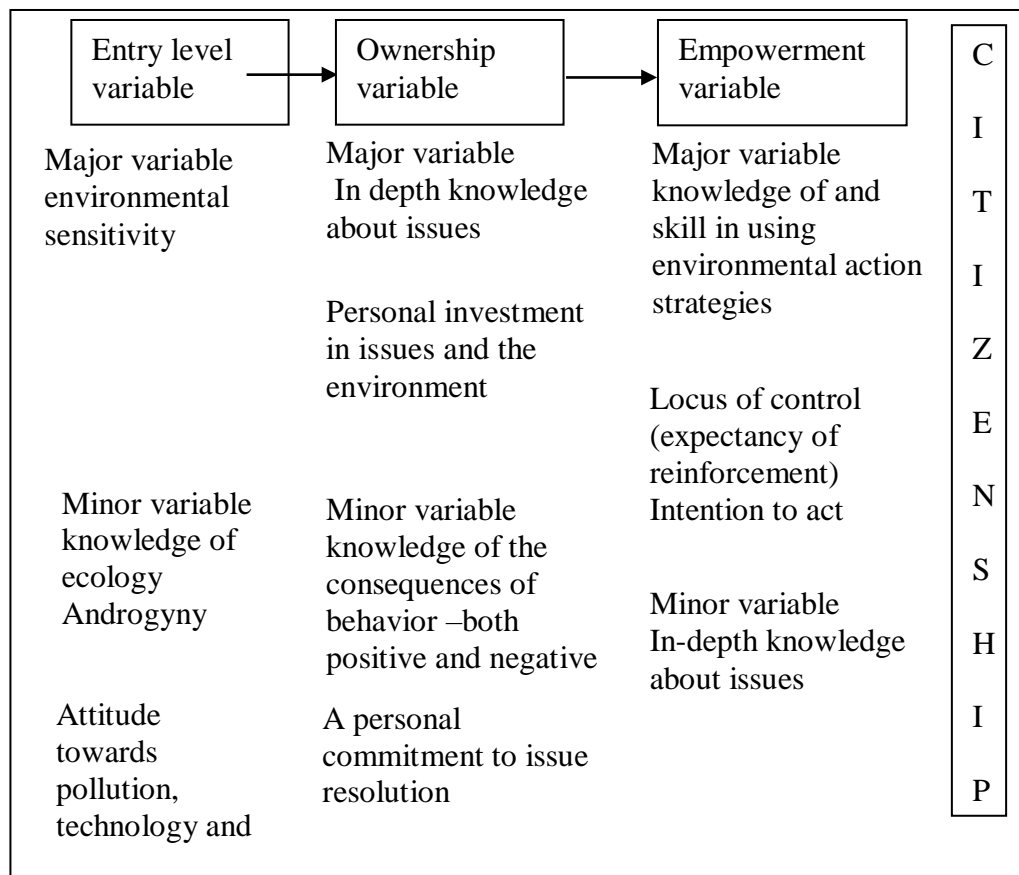


Figure 1. The environmental behavior model (Hungerford & Volk, 1990)

Environmental behavior model describes about the development of an environmentally responsible citizen interlinked with three variables. The entry level variable is environmental sensitivity and develops in the early childhood. Entry level leads to the ownership variables which gives one an in-depth knowledge about

environmental issues. Empowerment variables make one feel that environment is important and develops the behavior which is responsible towards nature. Uusitalo (1993) viewed knowledge as the important aspect in the Environmental behavior model of EE (Jeronen, Jeronen, & Raustia, 2009). Knowledge is the center and believed as the base of developing the change in the behavior in this model.

The Palmer's tree model. The Palmer's Tree model (Jeronen, Jeronen, & Raustia, 2009) describes that the implication of EE is based on root environmental problems.

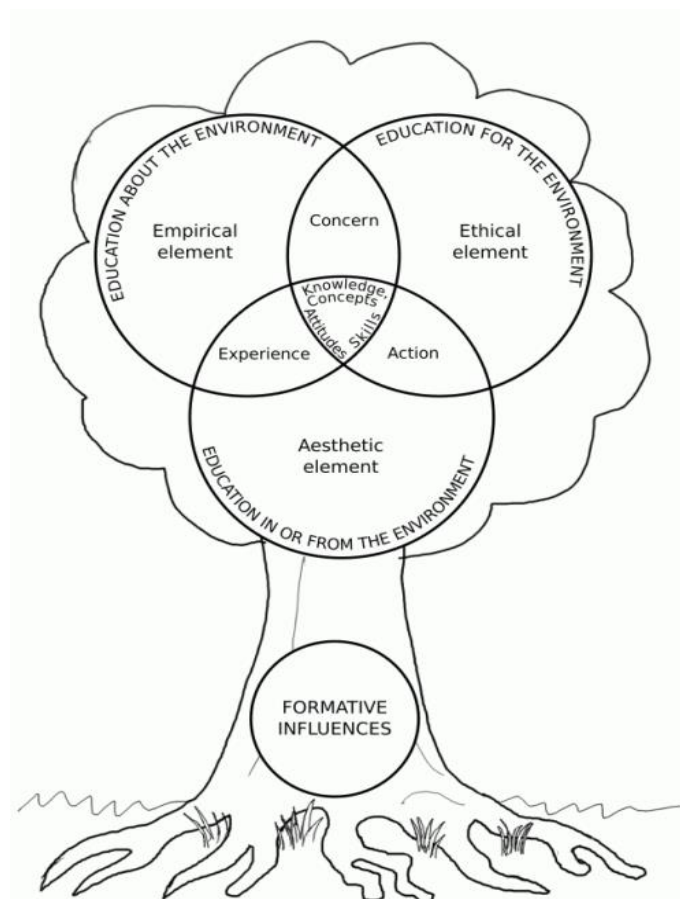


Figure 2. The tree model (Palmer, 1998)

The three major elements of the Tree model as mentioned by Palmer are empirical, ethical and aesthetic elements. The core of these three elements is EE comprise of knowledge concepts, attitudes and skills. EE is provided in, for and about the environment according to this model. Pantzar and Siebert, 1995 views aesthetic

and ethical element to be important in the tree model of EE (as cited in Jeronen, Jeronen, & Raustia, 2009).

Conceptual Framework

EE is considered an essential subject form the primary level of school education system although it is not devoid of problems. The present practice of teaching and learning of EE is interlinked with various aspects like present practice, teaching methods applied, materials used during teaching EE, teachers' understanding about EE. I applied interpretive inquiry as qualitative research method to get information interacting with them.

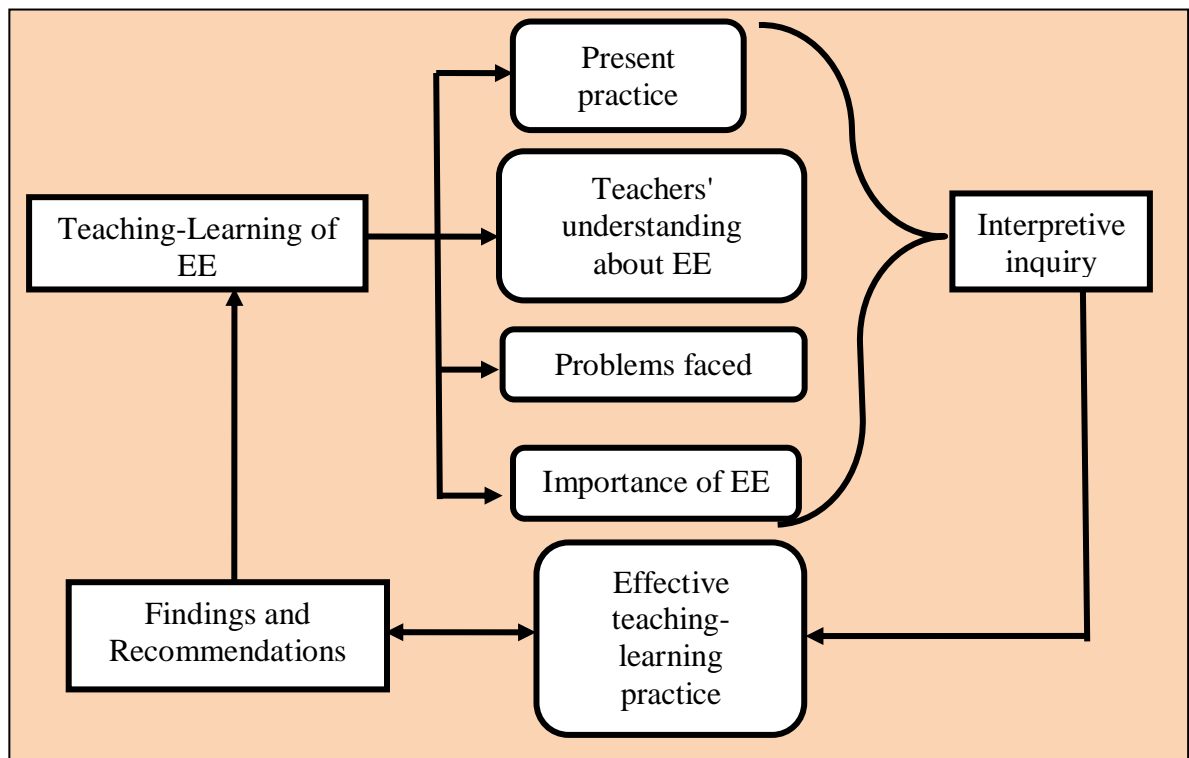


Figure 3. Conceptual framework

The findings from my research work will be helpful to know the existing gap between the present practice of teaching and learning of EE. The recommendations will help in the improvement of the teaching and learning practices of EE.

Chapter Summary

Review of research literature enables the researcher to get familiarized with the existing studies as well as gaps within. This chapter dealt with the review of related literature such as books, journal articles, thesis and internet browsed sources. I have presented the thematic literature review and reviews of learning and teaching theories. I concluded the chapter with the diagrammatical presentation of my conceptual framework.

CHAPTER III

RESEARCH METHODOLOGY

Chapter Overview

In this chapter, I discuss the methodological aspects of the research. I begin the chapter with my philosophical considerations. Then I discuss the methodological approach which incorporates research design, strategy of inquiry, study area and participants, tools and techniques of data collection, data collection strategy, data analysis and interpretation, and quality standards. I end this chapter with ethical considerations.

Defining Research

Research is the creation of new knowledge by the use of existing knowledge in a systematic manner. The three main processes of doing a research are searching for, reviewing, and evaluating information which generates new knowledge. It is also an ongoing process which develops new knowledge and leads to another research. According to Young (2007), social research is defined as a scientific undertaking which, by means of logical and systematized techniques, aim to discover new facts, analyze their sequences, interrelationships and develop new scientific tools, concepts and theories, which would facilitate reliable and valid study of human behavior (p. 30).

Black (1993) opines, " Educational research can be viewed as an endeavor to expand understanding of teaching/ learning situation" (p.1). It deals with the gesture, behavior, attitude, willingness, psychology of the participants/respondents.

Educational research is basically conducted in the education field where teaching and

learning is studied. In my research, I have studied the practice of teaching and learning in the secondary level schools with regard to the HPE subject.

Qualitative Research

Basically, educational researches are of two types- qualitative and quantitative. Qualitative research is simply understood as non-quantitative research (Best & Kahn, 2006). But it is not always true. Qualitative research also results in some quantification. Qualitative research believes in the multiple realities while the quantitative research is based on the numerical data. Lincoln and Guba (1985) refer qualitative research as naturalistic inquiry (as cited in Best & Kahn 2006, p. 247). It means that the research is conducted in the natural settings with the deeper understanding of the subject being studied. Qualitative research thus refers to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things (Berg, 2007). Similar to it, Creswell (2003) says, qualitative inquiry employs different knowledge claims, strategies of inquiry, and methods of data collection and analysis (p. 179). Qualitative research is an interpretative research (Creswell, 2003), with the inquirer typically involved in a sustained and intensive experience with participants. What do interpretive researchers do then? They begin with individuals and set out to understand interpretations of the world around them (Cohen, Manion, & Morrison, 2000). Qualitative research takes place in the natural setting (Creswell, 2003). The respondents or participants are interviewed or observed in their natural setting such as home, office, school etc., which provided the researcher the actual experiences of the respondents.

Philosophical Considerations

According to Hitchcock and Huges (1995), philosophical assumptions give rise to methodological considerations; and these in turn give rise to issues of

instrumentation and data collection (as cited in Cohen et al., 2000, p. 3). This clarifies that the philosophical clarity guides researcher throughout the research. It is also true that the research is affected by certain philosophical considerations which are carried out by a researcher and they influence the methodological considerations. I believe that my philosophical consideration influence my work, so I present my philosophical considerations in terms of ontology (nature of reality), epistemology (the relationship of the knower to the known), and axiology (the role of value in inquiry).

My Ontology

As Richards (2003) says that ontology is literally the science or study of being, is concerned with the nature of our beliefs about reality (p. 33). Ontology finds out the reality of people through the interpretation of their views. I believe that in this world, subjective reality exists. One thing which is true for one people may be wrong for another or let's say their belief about the reality may be different. In this regard, my ontology resides on multiple realities. I believe that in my research, respondents have different views, knowledge and beliefs regarding their teaching experiences.

My Epistemology

According to Richard (2003), epistemology is the science or study of knowledge (p. 35). Epistemological assumption says that the knowledge is gained through the interaction of the knower (researcher) to the known (respondent). Epistemology finds the knower's truth from external and internal world and how they acquire knowledge. Knowledge varies from person to person because they have different experiences, standpoints, and their cultural contexts also differ. The laden knowledge within the known can be dug out through the interaction with them. Qualitative research takes place in the natural setting (Creswell, 2003). So, my respondents were in their natural setting that was in schools where their actual

experiences were dug out. Teaching experience is rather the experience collected by individuals. In this research context, different experiences during the teaching process were gathered to identify the perceptions acquired by the teachers teaching Environmental Education.

My Axiology

Axiology is a branch of philosophy dealing with ethics, aesthetics and religion (Guba & Lincoln, 2005, p. 200). It is concerned with the science or study of truth or words (Richards, 2003). In my research, axiology was concerned with the value of my respondents and their values were described in terms of multiple realities. Using my research tools like interview, observation and FGD, I interpreted their views in order to generate the findings. In this regard, my values were embedded in my research as well as inclined towards my respondents. I valued their views, beliefs and knowledge. I did not avert the views of the respondents and put in interpretation the same as they express.

Methodological Approach

Methodology, as defined in Strauss and Corbin (2006), is 'a way of thinking about and studying social reality' (p. 3). Methodology links a particular philosophy to the appropriate research methods and bridges philosophical notions to practical and applicable research strategies (Byrne, 2001). It works as a bridge between the philosophical assumption and the research methods implied in a particular research.

Research Design

I choose qualitative research approach to collect information from my respondents to meet the purpose of my study on exploring the practices and perceptions of teaching-learning process of EE. Quality refers to what, how, when, and where of a thing (Berg, 2007), which means that the qualitative research is to

conduct detailed investigation in certain thing. Maxwell (2005) defines research design in qualitative research as interactive process that involves "tracking"-back and forth between different components of the design, assessing the implications of purposes, theory, research questions, methodology and validity threats for one another (as cited in Pant, 2009). It means that there is no fixed design in qualitative research condition. It is a cyclic process which has flexibility to change and modify the research according to the will of the researcher.

Strategy of Inquiry

The qualitative research using interpretive paradigm intended to reveal the present practice of the teaching-learning of EE. I dealt with the teachers experience of their daily life, how they perceive teaching environmental issues within the HPE curriculum and what knowledge they acquire about environmental issues. Interpretive inquiry is characterized by a concern for the individual (Cohen, Manion, & Morrison, 2000). It means that the individual's views and perceptions differ from another. This research is based on the acceptance that there is "no one right" interpretation of meaning (Pant, 2009). It is the characteristic of interpretivism or interpretive inquiry paradigm to give equal value to the meaning of all the individuals.

Study Area and Participants

The public schools from LSMC were selected as the study area and the secondary level teacher teaching HPE were selected as the research participants. LSMC with 22 wards consist of 16 secondary level public schools. Among 16 secondary public schools I selected 5 sample schools purposively. They were: Prabhat Higher Secondary School, Shramjit Kishor Secondary School, Namuna Machhindra Secondary school, Patan Higher Secondary School and Yashodhara Boudha Secondary School. First of all, I interviewed the teachers teaching EPH in those

schools and then I observed their classes because I wanted to see how the teachers were delivering the curriculum. I observed their teaching in grades nine and ten in each of the schools. Altogether, I took five schools as sample schools and nine teachers as research participants.

Research participants are the main source of information in the qualitative research because qualitative research is the study of the views of the people. With regard to the selection of sample size, Patton (1990) writes:

There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know the purpose of the inquiry what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources. (p.184)

Sample size relates to how many people or units to pick for study (Pant, 2009). In qualitative research, the question of sample size is less important (Pant, 2009), as it is focused on exploring or describing a situation, issue or process in depth. Therefore, I chose nine respondents using purposive sampling. Creswell (2003) addresses that the purposively sampled participants or sites provide best help to the researcher understand the problem and the research questions in qualitative research (p.185). According to Miles and Huberman (1994), the selection of participants and site include four aspects: the setting, the actors, the events and the process (as cited in Creswell, 2003). The setting is the place where the research takes place, actors are the participants or respondents, the event here is the questions or interview or observation be conducted and the process is how the event is conducted. More priority was given to the respondents who have the richness and willingness for information. For the richness, I visited the schools and interviewed the teachers and students for more than one time which provided me sufficient data. I found the willingness of the

respondents by knowing that they provided their time and permission for their class observation. I continued my inquiry of information till the required information was achieved.

Tool and Techniques of Data Collection

There are basically two types of data- primary and secondary. I used both primary and secondary sources of data. Since my research approach was qualitative, I chose interpretive paradigm and collected the information from the respondents in their natural settings. I visited the schools and observed their classes. Therefore, my research paradigm is also a naturalistic inquiry. Qualitative data is collected through three basic techniques – (1) in-depth, open ended interviews, (2) direct observation, and (3) written documents (Patton, 1990). I chose these three types of data collection procedures. Besides, I also included FGD. More specifically, the following tools were used for collecting data.

Open Ended/ Face to Face Interview

Conducting a good qualitative research is a difficult art (Corbetta, 2003). It is difficult not in a sense to agree the interviewee to accept for interview but to make him or her ready for talk. Creswell (2003) divided interview as face to face, telephone and group interview. Face to face or in-depth interview is conducted when there is less possibility of doing participant's direct observation. I conducted face to face interview with teachers in their natural settings that is in their schools. I used semi-structured and open-ended questions intended to elicit views and opinions from the teachers so that they would feel comfortable and flexible in answering my questions.

Observation

Observation is another effective tool in qualitative research performed in naturally occurring social situations. Observation is a process in which researcher

makes filed notes on the behavior and activities of individuals in the research site. Observational data give the facts of the natural settings. They reveal the facts which are not known through the face to face talk with the respondents because what they say to do, they may not do in actual situation. For my research purpose, I prepared the guiding observation tool to note the classroom instruction, teaching materials, knowledge of content and classroom management.

Focus Group Discussion

A focus group is an informal discussion among a group of selected individuals about a particular topic (Wilkinson, 2004). A focus group as a research method, involves more than one participant per data collection session. As such, the focus group method of data collection is sometimes referred to as a focus group interview, a group interview, or a group depth interview. Broadly speaking, focus groups are collective conversations, which can be small, or large (Kamberelis & Dimitriadis 2008, p. 375). Focus groups are group discussions which are arranged to examine a specific set of topics (Kitzinger, 1994). Focus group interviews involve a group of 6-8 people who come from similar social and cultural backgrounds or who have similar experiences or concerns.

Data Collection Strategy

In this phase, I visited the field and collected the necessary information. For the collection of data for my research, I went to the selected schools, met the teachers and conducted interviews and observations in their natural settings. Firstly, I introduced myself as a researcher and revealed my purpose of research and pleaded them to participate in this research. I conducted interviews and put unstructured questions to them. I took their consent to use the tape or video. I frequently visited to them until I got the required information. I prepared observation checklist to observe

their classes. I also held the informal interviews with the students to check the data collected by interviewing the respondents (teachers).

Data Interpretation and Analysis

Data analysis is the process of making sense out of text and image data (Creswell, 2003). In qualitative research, the data are in the respondents' own words in noted or recorded form. It is the researcher's duty to provide meaning and interpret them in order to generalize them. It is a very important part in qualitative research and involves a series of processes. The processes, as applied in my research, are described briefly:

Step 1: Organize and prepare the data for analysis

At first I collected data from the field visit through interviews with the respondents and observation. I used guiding questions and observation checklist. The data were raw which noted down in their own words. I transcribed the interviews being taped, rewrote the data translating in English language and organized them in a tabulated form.

Step 2: Read through all the data

The next task I performed was to obtain a general idea out of the information I got from the respondents and to reflect on its overall meaning. It was the time to make meaning out of their views.

Step 3: Begin detailed analysis with a coding process

This is the process of basic idea generation or draft preparing for theme generation. Coding, in qualitative research, is organizing the information into "chunks" (Rossman & Rallis, 1998, p. 171, as cited in Creswell, 2003). In this process, I grouped the chunk of words providing general term as a code.

Step 4: Use of the coding process to generate a description of the setting or people as well as categories or themes for analysis

In this step, I generated six basic themes for my research on the basis of the idea developed from the codes developed in step 3. I conducted analysis of the data on the same theme and concluded with findings as well.

Step 5: Advance how the description and themes will be represented in the qualitative narrative

Here in this step I went on describing the data with the various meaning to their views. I presented the sayings of the respondents in their own words in a narrative form according to the theme. I also described the natural setting and their gesture and posture, their expressions to give the actual meaning of their views.

Step 6: Making meaning of the data

In this step of my research data analysis, I started interpreting the views of the respondents relating to various literatures supporting or opposing to it.

In qualitative research, data analysis commences during the data collection process (Cohen, Manion, & Morrison, 2007), I collected the data and started managing them in the thematic way during the period of data collection. In qualitative data analysis, it is often the case that interpretation and analysis are fused and, indeed, concurrent (Cohen, Manion, & Morrison, 2007). Data are in the raw form in the respondents' own words which consists of meaning. Researcher needs to interpret the meaning from that information which is the final and important step in the data analysis process.

Quality Standards

Research is a process to bring new thing out of the existing thing in a different way. In this process, the researcher is challenged of the questions of reliability and

validity of his or her findings. Both qualitative and quantitative research needs reliability and validity testing. In quantitative research, the finding comes same in the research done by different researchers. In contrast to the quantitative research, qualitative research gives different findings in the same research done by different researchers. Therefore, reliability in qualitative research can be regarded as a fit between what researchers' record as data and what actually occurs in the natural setting that is being researched, i.e. a degree of accuracy and comprehensiveness of coverage (Bogdan & Biklen, 1992, p. 48, as cited in Cohen, Manion, & Morrison, 2000). Testing of reliability and validity confirms the quality of research. In the context of qualitative research, reliability and validity are considered on the basis of credibility, applicability or transferability, consistency or dependability and neutrality or conformability (Golafshani, 2003).

Credibility is a similar term given to the internal validity as of the quantitative research. The validation of the research finding is done through the participants' eyes in the credibility criteria (Trochim, 2006) i.e. the participants are the source of the legitimizing of the research findings. I conducted member checking for legitimizing the findings of my research. In member checking, the researcher checks the findings and interpretation with the original respondents during or at the end of the research (Kellett, 2005, as cited in LES, 2012). I took my research findings to the respondents and verified their sayings whether they were accurate or not.

Transferability or applicability is parallel to the external validity, which refers to the degree to which the result of the qualitative research can be generalized or transferred to the general context or settings (Trochim, 2006). I gave a thick description of the settings and participants in order to have applicability of my findings to other settings.

Dependability or consistency in qualitative research means the consistency or reliability of the data. The consistency in the research conducted in the similar setting should result similar in order to verify its dependability. For this purpose, I made frequent visits to the participants and the class. I made a thick description of the participants' views to make my data reliable.

Conformability or neutrality refers to the degree of the result being confirmed or corroborated by others (Trochim, 2006). It is understood as alternative to objectivity in quantitative research. It is the process of making research free from the researcher's personal biasness. For the process of confirming the data, I applied checking and rechecking of data during the study. I also used peer debriefing to enhance the accuracy of the findings. I discussed as well as shared my research work with my research supervisor, professors and friends who provided me with some valuable insights to check the conformability of the data.

Ethical Considerations

Educational research comes under the social research. The process of a study in a social research is best promoted by a research plan or design which aids in achieving optimum reliability and efficiency, with a minimum of bias (Young, 2007). While conducting a social research, we have to be careful about the ethical issues so that the personal bias could be reduced. The prior agreement was taken from the school principal, teachers, parents, and students. The names of the teachers and students were kept confidential as per their request. References and citations were taken under consideration while quoting their sayings. Every activity done during the course of research was kept fully confidential.

Chapter Summary

This chapter is the base of my research as the research methodology and design is the foundation of the research. I chose qualitative research approach with the interpretive research method. Philosophical considerations direct the researcher to develop the methodological considerations. Researcher's view towards the research and its respondents affects the whole research. Purposively selected samples were interviewed and observed as per my convenience. The verification of the data was done by cross checking the qualitative data provided by teachers by observation and interview with the students. The chapter ended with ethical considerations which valued and respected my respondents.

CHAPTER IV

RESULTS

Chapter Overview

This chapter incorporates the information collected from the research respondents after conducting the interviews and observations. I have coded the views and expressions of the respondents without any diversion. For this, I formulated six themes to answer my research questions as follows:

1. Understanding Environment Education
2. Teaching EE within HPE subject
3. Teaching methods applied
4. Use of teaching/instructional materials
5. Importance of EE in the secondary level
6. Encountered problems associated with teaching HPE

Understanding Environment Education

Most of my respondents were aware of environment through various means but it was found that they were not concerned with the environment in reality. They were found to be teaching the subject with their own knowledge. A few of them were aware of the present context of environmental activities. Deep defined Environment Education as educating students about the environment such as population control, cleaning environment, etc. Rajesh elaborated Environment Education as educating children about the importance of environment as well as giving them concept of sustainable development. Nisha also defined EE as the educating mode which makes students aware of the environmental issues. They will be able to know how to

conserve the environment and keep the surrounding clean. Rama defined EE as education through which we impart the environmental knowledge to students and make their habit to keep their environment clean. She added, "My students frequently conducted the road cleaning campaign. They are habitual in keeping the school environment clean." Manish defined EE as teaching students about the environmental entities, their values and prevention measures. Shiva defined EE as making students aware about the environment, keeping them clean, protecting the natural heritage, population control and so on. According to Krishna, EE is to give students knowledge about importance of environment, population, pollution, natural resources etc. He exclaimed, "EE is also to make students aware of not throwing wastes on the road as well as not spitting here and there". Rita defined Environment Education as imparting knowledge about the environment protection, necessity of cleaning school and home environment. Sita said that EE is to teach students about the various entities of the environment such as environmental pollution, population, and natural resources and so on.

Teaching Environmental Education within the HPE Subject

Sita is a BEd in Economics and Population, so she said that environment teaching was related to her educational background. Some of the time she gets difficulties in teaching health but takes help of science teacher. Rita is a BA majoring in Home Science and Economics and BEd in Health and Physical Education. She has been teaching Environment since the time of its introduction in the school curriculum. She said, "Environment is a vast subject because it is related with three different disciplines; health, population and environment. I faced difficulty in the beginning but now I feel easy. Most of the time, trainings are also provided by District Education Office as well as by NGOs".

Rajesh is a BEd in Accounts and Economics. He thought that for teaching the most important thing is the dedication and willingness towards the subject, so he claimed that he was teaching Environment in his own will. He accepted that he had less knowledge of health so most of the times he took help from the science teachers.

Deep holds master's degree in Nepali and Political Science and doctorate in Finance Administration. He took Master teacher training at the beginning of Teaching Environment for the school curriculum. He said, "Environment is the practical subject and becomes easy by teaching with lots of practical examples." He further added that the education system is based on examination at the end of the session so teachers focus on exam questions while teaching. The time for completing the course is another burden for the teachers. He himself tried to teach with practical methods like discussion, presentation, but these take a lot of time and the course remained incomplete. He poured his bitter experience that there is no such provision to take students to the nature and teach them practically out of the class.

Rama holds one year BEd in Environment Education, so she claimed that she doesn't face any kind of teaching learning problems while teaching Environment. She taught mostly by sharing her practical experiences. But she highlighted that teaching by practical experiences was not sufficient. The teacher must provide the students with updated knowledge regarding environmental issues.

Krishna is a BEd in major Geography. He had been also teaching for a long time and taught Environment Education since its introduction in the school curriculum. He claimed that he taught students with lot of examples though the practical work was not possible in the traditional way of teaching. Despite the lack of practical work he claimed that he was teaching students with lots of examples, justification and illustrations. He showed me the evidences of project works done by

the students such as drawings and chart works on environmental pollution; population and biodiversity. It proved that he was making students learn in a practical way.

Nisha holds one year BEd in Population and due to the relevance in her educational background she has been selected to teach EE. She said, "I have done BEd in Population and have the teaching license of the secondary level, I have been chosen for teaching this subject." Manish, BA, BEd in Nepali, also teaches EE on the basis of experience. "HPE is quite related to nature and can be taught with more literature, hence I am teaching this subject", he explained. Their views showed that HPE teaching was done by teachers from different academic backgrounds, not solely from environment, population and health background. Practically, it was observed that all the teachers were found teaching HPE as an extra subject regardless of being major subject.

Teaching Methods Applied

The respondents were asked to share their views on how they teach environmental issues in the classroom environment. Most of them answered that their primary teaching modes were lecture, question answer and discussion. A few of them answered that they applied discovery method. Rajesh asked the students to list out the birds, animals, herbs, trees, etc. found in their village during long vacation time like Dashain, and summer and winter vacation. This made the students discover the ecological diversity under the topic of 'biodiversity'. The students discovered a variety of species by themselves and learnt in a practical way. Sita implied mostly lecture and note taking method of teaching. Though, it is a practical subject, she was not doing practical but applied practical in the class as per need basis. She said, "Sometimes, materials are not available for conducting practical works". Similarly, Rita mostly used lecture and discussion methods and some of the times field work and

project work. The school took the students to the Central Zoo for field visit.

According to Rajesh, he mostly used question answer method and group work method of teaching. Deep mostly applied interaction and group work. He provided them with most of the examples and made them discuss the topic in the class. He said, "I form different groups and divide the work and they prepare their work in groups and present in front of the class." It showed presentation method was also used as a student centered approach and feedbacks were collected and discussed for their improvement.

Rama said that she applied observation method, lecture method, question answer method, problem solving and play way method while teaching EE in the class. In her class observation, I found her applying play way method to teach biodiversity in grade ten. She asked each student to choose one name of any animal; then asked them to make two questions about the animal. After the given task was completed, each student was asked to raise their question one by one to their friends and the answers were collected. In this way, the characteristics of each animal was learnt in order to fulfill the objective of the lesson.

Krishna used questionnaire, interaction and demonstration method. He stated that most of the time, the class did not go according to the plan. So, sometimes planned method may not work and another appropriate method must be applied. Nisha mostly applied discussion and question answer method. During my class observation, too, I found her applying question answer method.

Encountered Problems Associated with Teaching HPE

Under this theme, I asked my respondents about the problems in the teaching of environment, health and population. Deep said that environment teaching was itself a challenge. "It is considered a simple subject so that anyone in the school can teach

this subject" he exclaimed. He admitted that there was no specific subject teacher for teaching HPE in schools. He added that it was the bitter truth that HPE is taught as the additional subject while it is the core subject in the secondary level. He also added that students are from the poor socio economic background which also affected the actual learning outcomes. They learn about the environment preservation in class but when they reached home or stayed out of school, the result was seen negative. They did not follow what they learn in the classroom. Nisha said, "Sometimes, while teaching health portion, it becomes difficult". She added, "In grade nine, reproductive part of health is included which is directly linked with science so I face problem while teaching because of non specific background like Population, so I cannot explain deeply at that time". Furthermore, she added, " Students also don't concentrate because of hesitation". To match the similar view to Nisha, Rita and Rama responded in the same way. Rajesh told that he faced problems while teaching health related topics. During those times, he sought help from health and science teachers. Another problem he pointed out was the number of students which hindered them to do practical activities in the class. "Class size affects applying the proposed method in the class for particular subject, which delays in the completion of the course", said Deep. Manish, Krishna and Shiva told me that teaching HPE is interesting as it is practical and can be taught by providing many practical examples.

Importance of EE in the Secondary Level

Sita said that Environment Education is very important for the school curriculum because it teaches students about the importance of environment by how to keep it clean. She emphasized that the curriculum was introduced lately and without proper homework. She even blamed the government for not making proper policy in the education system.

With similar view to Sita, Rita expressed, "The environment education is lately introduced in the secondary level curriculum". Similarly, Rajesh told, "Environment is a very interesting and important subject". He added that the subject can be taught by the practical experience and day to day examples could be provided to the students, so it was interesting. He also expressed that the environment is very much essential thing to us as we live here and need to care it. Students are also taught to keep the environment clean in the HPE subject. He said, "It is better to have the subject rather than not". His views made me feel that the subject was not effective but better rather than not teaching to the students.

Deep also expressed in the similar way like Rajesh but he was hopeful about this subject. "Students have at least started to talk about the environment. School alone cannot do everything", he expressed. Shiva said that in this changing world environment subject plays vital role. He added that the students are young and if we teach them from the young age it became very easy to shape their habit. Rama explained, "EE is very necessary in today's context as it imparts knowledge about pollution control to the student. It also helps in forming habit of the students." Krishna agreeing to the importance of Environment Education to the students stated that the Environment Education is introduced late in Nepal.

Nisha also found environment education as an important subject. She believed that the change in students' behavior is being observed which is due to the environment subject. Students are actively participating in the road cleaning campaign and many students use the dustbin in class and school compound, so the school environment is clean. Like others, Manish also accepted that EE is very essential in the school level. He said, "I have found it effective in teaching EE in the school level,

but should not be limited only in the books. It should be made practical and students should be made more active in environmental activities."

Use of Teaching/Instructional Materials

Sita mostly did not use the teaching materials. She said that it took time and sometimes teaching materials were not easily available but she used them as the lesson demands and according to their availability. She mostly used newspaper cutouts, posters, and charts as teaching materials. Rita did not use teaching materials at all because she did not find use of teaching materials effective as students were also not very attentive in the class. Rajesh said, "I don't make teaching materials myself rather I ask students to prepare". Students prepare the charts and drawings from the book which he used in the class as the teaching material.

Deep said that teaching materials were essential but they were time consuming in application. Instead of using materials, he taught them with lots of examples and deep interaction among each other in the class. Rama sometimes used materials but she did not think teaching materials are required every time. She used newspaper and magazine cutouts, and sometime she made students prepare the teaching materials. She thought that teaching materials were required according to the topic.

Krishna occasionally used teaching materials made by him and most of the times asked students to prepare the teaching materials. Nisha used charts, posters, pamphlets, booklets and news papers as teaching materials. Sometimes, practice teachers also brought teaching materials which she used for other classes. She gave me an example of the nurse from Patan hospital, who came for internship and conducted class to the students about the reproductive system. She brought the real embryo which was a miscarriage. That event made the students understand about the embryo in a practical way. Sita did not usually use the teaching materials but

whenever required or available she used teaching materials. She also said that the school did not provide sufficient teaching materials. Manish expressed that he hardly used teaching materials. He claimed that he was quite experienced and had confidence to explain the subject matter to the students without the need of teaching materials.

Chapter Summary

In this chapter I have presented the views of respondents in the thematic way in their own words by transcribing them into English. I have included their expressions with their own feelings as far as possible. The data collected from interviews were verified and supported by the observation and FGD.

CHAPTER V

ANALYSIS AND DISCUSSION

Chapter Overview

This chapter analyzed and discussed the information collected from the research respondents in order to deduct the general idea. The qualitative analysis, as per my study, was done with careful consideration of the gesture, expressions, and verbal communication of my respondents. The implications of these analyses on relevant theoretical literature are also discussed. I presented the discussion and analysis of the views of the respondents collected from interview and observation being based on the following six themes:

- i. Understanding Environment Education
- ii. Teaching EE within HPE subject
- iii. Teaching methods applied
- iv. Use of teaching/instructional materials
- v. Importance of EE in the secondary level
- vi. Encountered problems associated with teaching HPE

Understanding Environment Education

The respondents were aware of EE as they all said that EE is to educate children about the environment. I found that they were conscious about the teaching and learning process of the HPE subject. They expressed that teaching or educating the students regarding environmental aspects through book was how they impart EE. This showed that the teachers were confined to the text books and focused only exam oriented approach. Some of them also put forward their views about the behavior

change in the students through EE. This resembles the definition provided by IUCN/UNESCO which says EE entails the behavior formation. Even though they accepted the positive behavior formation in the students through EE teaching, I found the litter in the classroom as well as around the school premises during my observation. The teachers were found to be known about the purpose of EE introduced in the secondary level to make positive attitude towards environment. To answer my research question, they had understanding of the EE from the contextual basis only. They were not clear regarding the infusion of Environmental Education in various subjects. No one responded with the broader understanding as HPE is the infused curriculum. While analyzing their expressions and views, they were imposing that they were quite educated in the EE area, depicting the attitude of expertise. They claimed that they were rightly selected for teaching EE. From the interaction with them, they were found well trained to teach the particular EE subject in the classroom but they had less knowledge regarding EE as an interdisciplinary subject. They attached different meanings to people depending on their continuum of understanding and school of thought. Therefore, they had differences in understanding of EE and were adjustable with the definition developed by Tbilisi Declaration, The Belgrade Charter, and Curriculum Development Center.

Teaching EE within the HPE Subject

EE is imparted through infused curriculum (CDC, 2007). EE is a multidisciplinary subject (EECO, 2000), and included in all the subjects. In the context of Nepalese curriculum, EE used to be included in all the subjects but later in 1999, it was taught as integrated subject; Health, Population and Environment in the secondary level. All the respondents were trained however they have not received any kinds of training particularly for the EE from the national level. Most of the

respondents expressed their views regarding the difficulties in teaching the health portion of the HPE subject. Both male and female teachers were facing problem in teaching the health related topic such as reproductive system in the classroom. In their view, students were also hesitated to acquire the knowledge regarding the reproduction topic in the classroom. They believed that if the classes were run in the practical way, besides than the lecture method, students would entertain the class without showing any hesitation. According to one of the respondent's sharing, an intern nurse demonstrated the foetus in the class to teach the reproductive system. In her view, the class was found very interesting and the students learnt without any hesitation. This is just an example of the effectiveness of use of practical methods for effective teaching. Most of the respondents had similar kind of problem. Within the HPE subject, they encountered the problem while teaching health part in the class. In practice, some of the teachers were taking help of the science teachers. Similarly, it was also found that various environmental organizations like ECCA, Eco clubs, some engineering colleges were doing environmental activities in schools which made the students participate in conservation activities. But, those activities were for short term as their part of assessment. After completion of their assessment, the school had to return to its original form which confined students just within the classroom teaching and learning activities. Respondents (teachers) expressed their view that if they were provided with training, it would enhance their teaching and learning activities.

Teaching Methods Applied

All the respondents were found to be applying different methods of teaching in EE inside the classroom. Most of them were found following the lecture and the discussion methods. From the observation of their classes, however I found group work method, question answer and play way methods were also being implemented.

Among all the respondents, one of the respondents was found to apply the question answer method to teach the biodiversity chapter in grade ten. Question answer method is a prescribed method in the secondary curriculum in the Nepalese context.

According to the secondary level curriculum for HPE, lecture method is not incorporated as the appropriate method. Interaction method, question answer method, group work, presentation and role play methods are appropriate methods according to the Secondary Level Curriculum. According to their opinion, it could be inferred that following the methods seriously indicated in the curriculum, they could hardly finish the course on time. Some even blamed the administration and found faults of students for not finishing the lesson in time. They complained that the students were not serious in the HPE subject and considered the subject as easy one. From the class observation, teachers were found to be content based while teaching, preparing the student to pass the exam and applying one way mode of classroom delivery. Besides this, teacher or school administration needs to take students in outdoor or nature study which would enhance the way of teaching.

From my observation of the class, I found variety in the teaching and learning activities in the classroom. I found presentation method, play way method, question answer method as appropriate strategies for teaching EE. The class size was big or the number of students was high so the group work was not possible but I found that Rajesh and Rama tried to include all the students' participation within the 40 minutes time of teaching. Listening to the view of Krishna, it could be deduced that the class plan gets unbalanced by the teacher's improper timing to enter and leave the class. This hampered the classroom delivery and could not meet the actual goal of the lesson.

Use of Teaching/Instructional Materials

Teaching materials are the aids for the teaching and learning process. Students learn more if they see the thing rather than only hear about. Teaching materials are hence essential in the teaching and learning process. All the respondents were not preparing and using the teaching materials. Some of them were making students prepare the teaching materials and using them as teaching materials. Among them, Rajesh, Krishna and Nisha were using available newspaper cutouts, charts, bulletins, ECCA provided charts, pamphlets, etc. I agreed with the variety of material used by teachers made the teaching effective since the effective teaching varies according to person to person (Thanasoulas, 2002). Most of them were found using teacher's guide in the beginning but later due to the regular teaching it was not found necessary to use every time. This raised the question in the teacher's professionalism. Regardless of that, teachers always needed to be cautious of using supportive materials while classroom teaching.

Use of creative teaching materials, quality of such materials, effective teaching techniques employed by the teachers, resources available for them, and use of such resources during the teaching and learning processes shape the teacher's performance (Subedi, 2003). Entering the class without any lesson plan makes the class ineffective. There will be the risk of not fulfilling the goal of the lesson. According to the respondents' views, the instructional materials were inadequate for the effective teaching learning of HPE. School administration as well as the concerned governing level of the public school lacks the proper policy and monitoring regarding the use of teaching materials in the class. Rajesh and Krishna usually let students make charts which were later used as teaching materials. However, it could not be argued in a sense that teachers becoming lazy to design the materials. With the proper guidance to

the student, teacher and students can work out for the preparation of teaching materials. The teacher is not the sole person for the knowledge. None of the respondents were found to be using the local resources as teaching materials. This showed the lack of teacher's initiation or the lack of proper training on the part of designing teaching material.

Importance of EE in the Secondary Level

During the interviews with all the respondents, everyone pointed out the importance of EE for the secondary level students. The students have started talking about the importance of environment after getting knowledge from the HPE subject. This showed the impact of EE through HPE. According to the views of the respondents, they were satisfied with the maximum number of student clearing the exam in HPE. Teachers were encouraging students to go through text books and focused on achieving high scores in the assessment. This definitely did not meet the actual goal of EE of generating the positive behavior in an individual towards the environment. From the respondents view, HPE teaching had been introduced the habit of using dustbins in the class and were managing dust, garbage in the house at least by not throwing in the streets.

Nevertheless, in the observation, I found that the classroom and school periphery was dirty. This showed that the actual goal of EE, to bring the change in behavior is still to be questioned. Although, in my opinion, these responses of the respondents made clear that HPE has raised knowledge regarding EE concerns among the students. Environmental organizations like ECCA was found actively supporting schools for formation of eco clubs through which paper recycle and reuse was found, flower planting and dustbins were provided to schools. Biogas plant was installed in the school by the students of engineering college as their project which was used by

the school for cooking purpose. This showed that the non formal and informal environmental activities are effective to change the attitude of the children and participate actively in the environment conservation. EE is for developing positive attitude towards nature through the environment conservation practices. For this purpose, HPE is included as a compulsory subject in the secondary level curriculum.

Encountered Problems Associated with Teaching HPE

As all the teachers had long experience of teaching, they responded that they were not feeling difficulty in teaching HPE. Some of them acclaimed HPE to be a practical subject so can be taught on their personal experiences. This showed that the teachers were putting less effort in the preparation like teaching materials and lesson plan for the class. They did not provide recent news and updates related to the environmental activities. I observed that the public schools were the target of the organizations and colleges to imply their environmental research or projects. In this regard, schools were found inactive. Schools were not conducting any out of school studies relating to environment. Teaching HPE is a challenge as it is taught with the objective to change the negative behavior of the students towards environment and building the positive behavior within them.

It was found that the respondents (teachers) were satisfied with the teaching in the sense that students write well in exam and bring good results in the subject. But during the classroom teaching, it is problematic as they have to be based on SLC board exam. They hardly can teach them out of class by managing tours or excursions. It was also hampered by the closing down of schools due to political obstacles such as 'Bandh'. School administration was not found taking initiatives regarding such kinds of activities. Students learnt more from nature rather than course books and indoor classroom teaching. The class size affected the teaching learning

process, the smaller class sizes have shown improved student's behavior and achievement scores (Whittington, 1985; Achilles & Bain, 1986, as cited in Subedi, 2003). From the respondent's response, the students studying in the schools were of poor, uneducated and migrant social background, which also affected their behavior. They were not properly taken care of by the family so they had no proper concern towards environment. They also showed that there existed a gap between the studious and not studious students which created misbalance in meeting the expected learning from the lesson.

Chapter Summary

In this chapter, I made the analysis of the data collected from the respondents and interpreted them with the support of literature. I presented the analysis of the respondents' views and agreed and disagreed in reference to the literature. Later, I have provided my views to support the data. In all the process, I was based on the literature. This chapter leads to the summary of the whole research with the final conclusion which is presented in the next chapter.

CHAPTER VI

FINDINGS, CONCLUSION AND IMPLICATIONS

Chapter Overview

This concluding chapter is mainly devoted to the findings deduced after the theme based analysis of the research questions. The conclusion is the outcome of the overall research. Findings and conclusion provide the way out to the implications of my research.

Findings of the Study

I have come up with the list of findings and presented them according to the themes in the data interpretation and analysis on the basis of research questions as follows:

Understanding Environment Education

From the teacher's response, the common understanding of EE was found to make the students aware about the environment which they learnt per the contents in the curriculum. In their understanding, the EE study in the class was confined within the HPE subject only. They found students less active in the environmental activities. HPE, despite being a practical subject, was not practiced like nature study or outdoor education. The respondents were not conscious regarding their self habit formation towards the positive attitude for EE. Teachers recommended applying the contextual curriculum and EE to be evaluated on the practical basis. Project works were given to students which were not evaluated in the students' academic achievement. Use of teaching materials entirely depended on the teacher's skill and the requirement of the course content.

Teaching EE within HPE subject

EE is imparted as an infused curriculum within other subjects. HPE is the specific subject in secondary level to teach EE. Respondents (teachers in this case) were found to be teaching HPE without actual knowledge of EE since they were not trained for teaching HPE subject. Moreover, teachers currently teaching HPE were from different academic background such as major in Nepali, Health, Population social studies, and geography but without the specific knowledge in EE. This showed the lack of specified teachers in EE teaching. Teachers were advocating for the practical based teaching of EE but it was found that the teaching was focused on getting the SLC graduation. Government policy also supported for the exam orientated teaching of EE.

Teaching Method Applied

Most of the teachers were found to be applying lecture method but this method is not appropriate in today's teaching context. Other teaching methods applied found during research period were discussion, presentation, role play and question and answer. The teachers were aware of many student centered methods but due to lack of time, resource, class size, students' interest, less effort was seen in the classroom instruction.

Use of Teaching/ Instructional Materials

Regarding the use of teaching materials, most of the teachers were teaching EE in the classroom without any teaching/instructional supports. According to their views, adequate teaching materials were not provided by the school administration. This showed the negligence of school administration. Regardless of this they were teaching with local resources like newspaper, pamphlets and textbook. The teachers found it easy to teach using the teaching materials.

Importance of EE for the Secondary Level Students

From the data and its analysis, all the respondent teachers emphasized that the EE study was very important for everyone. The teachers and students were found aware about the importance of environment. EE is introduced by integrating within HPE in the secondary level in Nepalese Education System with the basic objective to change the behavior of the students positively towards environment. Regardless of this, the tangible impact of the behavior change in the students was not seen through the teaching of EE within HPE because the teaching was focused on preparing students to pass the exam.

Encountered Problems Associated with Teaching HPE

The major problem encountered by teachers in teaching EE was the large class size, inadequate teaching materials, indoor teaching, socio economic background of the students, school administration and exam based teaching. HPE was introduced in secondary level to impart EE to students through conservation and protection of the environment but education system is found limited within the class. This made the students learning reserved within the class and exam. This hindered to meet the goal of EE in the secondary level. In my research schools, the teachers expressed that the students were from low socio economic background which made them less concern towards environment as their families are less educated and economically poor.

Conclusion

This study concluded with the finding that teaching and learning are mutual processes in which the students and the teachers both act as the knowledge seekers. EE is highly discussed issue from the day of realization of environmental degradation. The importance of EE has been highly advocated in today's world since the evolution of the environmental awareness as the prime necessity. The Study explored that

teachers/respondents were aware of EE and its importance for the secondary level students. The teachers were interested in teaching the environmental issues but due to lack of teaching materials they were not applying the appropriate methods. HPE was found to be considered an easy subject both by teachers and students. The students have been conceiving that the HPE subject was not the difficult subject to pass, which is clearly supported by the academic records of the students. Teaching was mostly based on teacher's personal experience.

Secondary level HPE studying students have realization of its importance in their daily life. Students are participating in the conservation activities such as plastic collecting and selling, paper recycling, use of dustbin in school and so on due to the collaboration of environmental related organization. Secondary level curriculum introduced EE through HPE; however, this is particularly not enough to change the behavior of the students. In conclusion, teachers agreed that teacher's instructional strategy, teaching/ instructional materials, teachers understanding of EE is one of the prime factor affecting the students learning outcome. Therefore, the teachers are required to be provided content specific trainings.

Further Implications for Future Research

Qualitative research with interpretive paradigm was applied to conduct the research to explore the present practice of teaching EE within HPE subject. The findings have provided more ways for the future research in the area of teaching and learning of EE in formal as well as informal education system. The following implications can be drawn from the research:

1. HPE teaching must be made more practical. Written examination should not only be the criteria for the evaluation of the students learning outcome for the whole year learning. Rather project works should be introduced as the criteria

of measuring their level of knowledge. HPE curriculum and the current evaluation system need to be restructured for this acquired change.

2. Teachers' trainings need to be organized and the school administration needs to give concern towards school cleaning, awareness programs, and conservation activities. The students should be made more active in outdoor study. Rather, HPE should be made more like nature study or outdoor education.
3. Many research studies have been done ever since the EE has been raised as an issue. My research focused mostly on exploring the present practice of secondary level EE and its problems faced by the teachers. Further researchers may be interested in exploring the relation between the attitudes of EE teachers towards students, environment and the environmental issues, etc.
4. Researches need to be conducted to know the relationship between the class size and availability of teaching materials to the teachers. It will show the effects on the students EE learning outcome. The findings from my research revealed that the large class size is hindering the students' learning outcomes. Hence, the study related to the learning outcome and the class size with regard to HPE will be an effective research in future. This research is qualitative study circumscribed only in the schools of LSMC secondary level public schools. Further research can be conducted with wider geographical areas in both public and private schools following the quantitative research methodology

Chapter Summary

To sum up the whole research study, EE is a multidisciplinary and infused curriculum. In the Nepalese context, it is incorporated within the HPE subject in the

secondary curriculum. EE is very essential in the present context as the environmental issues are being raised day by day. EE, through school education, is not sufficient, rather should be made more like the nature study. The study revealed the present context of HPE in the secondary level and teachers' understanding towards it.

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APPENDICES

Appendix I: Reflection

Interview

I conducted in-depth and open-ended face to face interview with the teachers to get the required information. I began my data collection procedure in the fields (sample schools) from Prabhat Higher Secondary School situated in ward no. 18; I went to the school in the morning. Since, the Principal Madam was in personal visit to Japan, I talked to the Vice Principal. I introduced myself to him and also related my purpose of being there. After introducing to him and telling him about the purpose of my study, he said that the environment teacher was he himself for grade X. This made me easier to talk with him. He told me that Nisha was teaching EPH in grade IX. After my short introduction they had their assembly time. He engaged himself in the assembly and I waited for him till the assembly was over.

After the assembly, he gave time to me. I interviewed him that time and fixed observation class for next day. On the same day I also had a brief introduction with R5 because she had to go to the class for that day but gave me time for next day. Another day I went to the school at the scheduled time. I interviewed her on that day and got her schedule for observation class.

After visiting Prabhat Higher Secondary School, I went to Shramjit Kishor Secondary School, situated at ward no. 17. There, I met the Principal. I introduced myself and cleared my purpose of visiting the school. He told me to meet the EPH teacher who was my respondent Rajesh. He was very nice and welcomed me warmly. He asked me about my purpose more clearly. I explained him what I was interested in. Then he became ready to answer my queries. I started my interview with very

informal talk. He was somehow busy that time so he could not give me full time on that day. He gave me time for next day. Since the school was running its secondary classes in the morning shift, I was called in the morning time. I went to meet him at his convenient time next day. I continued and completed my interview with him at that time.

My next sample school was Shramik Shanti Higher Secondary School, situated at ward no 17. I went to the school and introduced to the principal. He was quite positive towards me. Due to the time of admitting the new students in grade eleven and twelve, he was quite busy with new students. However, he entertained me and introduced me to the environment teacher who was my respondent Sita. I did conduct my interview in her convenient time. She was free in the morning time because the classes of grade eleven and twelve had not begun at that time. This made me easy to get her time. She was very frank and responded to me with direct answers. After the interview, I got schedule from her for the class observation.

My fourth sample school was Namuna Machhindra Secondary School situated at ward no. 18. I was familiar with the school because I had conducted focus group discussion with the teachers and the students in my third semester's community research work. The Principal Madam was very cooperative. She helped me without any hesitation. She allowed me to visit and re-visit the school many times. I interviewed Deep and Rita from this school. Since I knew them from much earlier, I felt easy in communicating with them. First I interviewed Deep and fixed his class for observation on the same day. Luckily, he had a class on that day so I did interview and observation on the same day with him. I, however, could not meet Rita on that day. So, I took her contact number from Deep and called her. She agreed to present in an interview on the next day. I conducted interview with her and asked her to fix

about the classes for observation. She gave me time a few days later as she was taking leave for some days due to her personal problem. I waited a few days for her class observation.

The next sample school for my research which I chose was Yashodhara Boudha Secondary School situated at ward no.12. I went to the school and talked to the Principal Madam. She was very cooperative in nature. She agreed to help me and provided me time for other day. I went to take her interview and observed her class. After each interview with the teachers, I cross checked their sayings by asking checking questions to the students from the class in which the teachers taught. After the class observation also I interviewed the students.

Next interview I took was with Manish. I talked with him about my purpose and he easily agreed to give his opinion on my questions. I talked with the students in order to verify the views of my respondents.

In this way, I came to finalize my field work of collecting data required for my research work. Altogether I interviewed with all my research participants more than two times.

Class Observation

Immediately after the interview with the teachers, I observed their classes. I observed Nisha's class. I found no materials being used though she used text book. She started the class by asking for the homework. She thoroughly went to all the benches to check the homework. A few of the students had done homework. She gave oral orientation to all the class. Then she began the class on the topic 'natural resources'. First, she explained the term 'natural resources' providing examples. Then she pointed to each student and asked questions like 'what is natural resource?' She continued to ask the questions till the satisfied and complete answers were given. Then she again explained it in detail. Then she asked whether they understood or not. Then she continued the class with the types of natural resource. She drew a table on the board to explain the types of natural resources. She explained each type with example and repeated the same process of asking question. Lastly, she wrote some questions on the board for their homework.

I observed the class of Rama, it was grade ten. There were 19 students. The classroom was littered with papers. The class size was small, students were quiet and the number of girls was higher than of boys. I found only two boys in the class. She asked everybody to take out their home task. It was actually group work and asked for presentation on that day. They were not prepared for that. I found her very soft. Her voice was low. The class was on 'biodiversity'. At first, she wrote the topic on the board. Then she asked each student to be in pair and write the question under each animal like elephant, one horn rhino, etc. Students were busy in doing their work. They made each questions and wrote their names in each piece of paper. Then she collected those papers form the students. She named the animals and those who wrote

the question on that animal stood up and answered the question one by one. The students answered all the questions correctly.

Next I observed the class of Rajesh. The class was in the morning so I went to the school in the morning at 6 am. The class started at 6:15. I entered the class. He introduced me as a new student. Students were excited as well as surprised. I didn't react and went to the back bench and sat quietly. The class was big and there were 85 students present on that day. The class was on 'quality of life'. He started the class with the review of the previous class. He used his note book instead of text book. In the beginning, he asked one student to tell about the quality of life. She explained the quality of life with examples. Like the class of Nisha, he used question answer method. He asked each group of student to tell one point and explain it by another member from the same group. After the students answered, he added more examples to clarify the point. In this way, he finished all ten points of quality of life. He took extra 10 minutes in his class.

I observed two classes of Deep. His class was in the first period. Since he was the campus chief, he was busy in the school; therefore he took the first period. On the first day, I observed his class on 'quality of life'. He made one group to present their group work. Two girls were presenting in front of the class. The students were deeply interacting in the class. I found the class very student centered, he was not active and just listened to the students. When the students had confusion in the quality education, he clarified them. In the next class, he taught on the status of environment. In that class, he used text book and made the students make notes. He was dictating and students were coping down. I was surprised at this and I put a query. He answered me that due to the presentation method I applied, the course was late and exam was nearby so he had to follow the lecture method.

Focus Group Discussion

First I took the permission from the Headmaster of Namuna Machhindra Secondary School, a public school, and conducted FGD. She was very kind and cooperative towards me. I conducted my FGD with 6 participants in total; two teachers and four students. I involved one female and one male environment teacher. Both of them were very experienced and serving in the school for more than 20 years. I took four students from grade IX and X. FGD was done on the topic "Teaching and learning of EE in the Secondary level". FGD opinion form was provided to the participants to collect their simple opinion on the discussion.

Appendix II: Guiding Questions

- 1) What do you know about Environment Education?
- 2) How long have you been teaching HPE?
- 3) How did you start teaching EE? What other subject(s) do you teach besides EE?
- 4) How do you feel teaching Environment as a subject within HPE?
- 5) Have you taken any training particularly related to environment teaching?
- 6) Did you find any difference after taking that training? Did it bring change in your teaching process? What kind of change? How?
- 7) While teaching in a class, do you prepare lesson plans for each day? If yes, why; and if no, why not? Do you think lesson plans make a difference in the teaching process?
- 8) Which teaching methods do you use to teach Health, Population and Environment Education subject in the class? Why do you use that teaching method?
- 9) Do you use teaching materials? What kinds of teaching materials do you use while teaching environment part in the classroom?
- 10) Have you ever discussed the inadequacies about teaching materials with the principal?
- 11) Within HPE subject of secondary level, do you find the ratio of the content among health, population or environment to be equal? Why and how?
- 12) What do you think about the evaluation system of HPE? Do you find any lacking in it? What kind of? What is your experience of practical exams in the secondary level HPE course?
- 13) Have you ever noticed the responsible environmental behavior in students like using dustbin, cleaning school, not throwing litter in the class, etc.? If yes, do you think EE of secondary curriculum is supporting to bring environmentally responsible behavior among students? Do you think the teaching method which you imply in the classroom teaching for environmental issues bring environmentally responsible behavior among students?
- 14) What kind of problems have you encountered while teaching HPE?

Appendix III: Classroom Observation Checklist

Respondent: School's name: Date

Grade: Topic No. of students.....

Attributes	Characteristics	Yes/No	Remarks
<i>Class Structure</i>	Reviews previous day's course content		
	Gives overview of day's course content		
	Summarizes course content covered		
	Directs student preparation for next class		
<i>Methods</i>	Provides well-designed materials		
	Employs non-lecture learning activities (i.e. small group discussion, student-led activities)		
	Invites class discussion		
	Delivers well-planned lecture		
<i>Teacher-Student Interaction</i>	Asks for student input		
	Involves a variety of students		
	Demonstrates awareness of individual student's learning needs		
<i>Content</i>	Appears knowledgeable		
	Appears well organized		
	Explains concepts clearly		
	Selects learning experiences appropriate to level of learning		
<i>Other Comments</i>	Effective or ineffective teaching practices observed		

Special Note:

Appendix IV: Details of Respondents

Details of Respondents

<u>Respondents</u> (Pseudonyms)	<u>Gender</u>	<u>School's Name</u>	<u>Ward No.</u>
Deep	M	Namuna Machhindra Secondary School	18
Rita	F	Namuna Machhindra Secondary School	18
Rajesh	M	Shramjit Kishor Secondary School	17
Krishna	M	Prabhat Higher Secondary School	17
Nisha	F	Prabhat Higher Secondary School	17
Sita	F	Shramik Shanti Higher Secondary School	8
Shiva	M	Shramik Shanti Higher Secondary School	8
Rama	F	Yahodhara Boudha Secondary School	6
Manish	M	Patan Higher Secondary School	22
Total respondents=9	5 M and 4 F	Total 6 schools	5 wards