

**ENVIRONMENTAL EDUCATION IN ELEMENTARY
SCHOOLS IN MIZORAM : AN ANALYTICAL STUDY**

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Submitted

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DECLARATION

I, P.C Lalremruati, hereby declare that the subject matter of the dissertation entitled 'Environmental Education in Elementary Schools in Mizoram: An analytical study District', is a record of work done by me, that the content of this dissertation does not form a basis for the award of any previous degree to me, or to the best of my knowledge, to anybody else, and that the dissertation has not been submitted by me for any research degree in any other University or Institute.

This dissertation is being submitted to Mizoram University, Aizawl for the award of Master of Philosophy in Education.

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CONTENTS

	Page No.
Candidate's Declaration.....	i
Acknowledgement.....	ii
Contents.....	iii-viii
List of Tables.....	ix-xi

CHAPTER- I : INTRODUCTION

1.1.0 Environment.....	1-2
1.1.1 Environmental Education.....	3-6
1.1.2 Environmental Education at the Elementary Level... 6-10	
1.2.0 Rationale of the Study.....	10-12
1.3.0 Statement of the Problem.....	12
1.4.0 Objectives of the Study.....	13
1.5.0 Operational Definitions of the key Terms used.....	14
1.6.0 Delimitation of the Study.....	14
1.7.0 Organisation of the report.....	14-15

CHAPTER- II : REVIEW OF RELATED LITERATURE

2.1. Introduction.....	16
2.2. Studies conducted in India.....	16-23
2.3. Studies done Abroad.....	23-28
2.4 Conclusion.....	29

CHAPTER – III : METHODOLOGY

3.1.0	Method of Study.....	30
3.2.0	Population.....	30
3.3.0	Sample.....	31
3.4.0	Tools of Data Collection.....	31
3.4.1	Environmental Awareness Scale.....	31-35
3.5.0	Statistical Treatment of Data.....	35

CHAPTER – IV: ANALYSIS AND INTERPRETATION OF DATA

4.1.0	To prepare a brief Analysis of the Contents of Textbooks on Environmental Education at the Elementary level...36
4.1.1	Analysis of the Contents of Textbook on Environmental Education of class 1.....36-38
4.1.2	Analysis of the Contents of Textbook on Environmental Education of class 2.....39-40
4.1.3	Analysis of the Contents of Textbook on Environmental Education of class 3.....41-42
4.1.4	Analysis of the Contents of Textbook on Environmental Education of class 4.....43-44
4.1.5	Analysis of the Contents of Textbook on Environmental Education of class 5..... 45-46
4.1.6	Brief Analysis of the Contents of Textbook on Environmental Education of class 6.....47-48

4.1.7	Brief Analysis of the Contents of Textbook on Environmental Education of class 7.....	49-51
4.1.8	Brief Analysis of the Contents of Textbook on Environmental Education of class 8.....	51-52
4.2.0	To examine the Mode of Transaction of Environmental Education at the Elementary Level.....	53-54
4.3.0	To examine the Teaching Aids available for Teaching of Environmental Education at the Elementary Level.....	54-55
4.4.0	To Study the Evaluation Procedures of Environmental Education at the Elementary Level.....	56
4.5.0	To Study the Academic Background and Professional Training of Teacher Teaching Environmental Education at the Elementary Level.....	57
4.5.1	Academic Background of Teacher Teaching Environmental Education at the Elementary Level.....	57-58
4.5.2	Professional Training of Teacher Teaching Environmental Education at the Elementary Level.....	59-60
4.6.0	To Examine the Time Slots given to Environmental Education in School Time Table.....	60
4.6.1	Time slots given to Environmental Education for class 1.....	60-61
4.6.2	Time slots given to Environmental Education for class 2.....	62-63

4.6.3	Time slots given to Environmental Education for class 3.....	63-64
4.6.4	Time slots given to Environmental Education for class 4.....	64-65
4.6.5	Time slots given to Environmental Education for class 5.....	66-67
4.6.6	Time slots given to Environmental Education for class 6.....	67-68
4.6.7	Time slots given to Environmental Education for class 7.....	69-70
4.6.8	Time slots given to Environmental Education for class 8.....	71-72
4.7.0	To Study the Environmental Awareness of the Students in Elementary Schools.....	72-74
4.8.0	To find the difference between the level of Environmental Awareness among Boys and Girls.....	74-75
4.9.0	To suggest Measures to Improve the Teaching of Environmental Education in Elementary Schools in Mizoram.....	75-77

**CHAPTER – V : MAJOR FINDINGS, DISCUSSIONS,
CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH**

5.1.0	Major Findings.....	78
5.1.1	Findings relating to the Analysis of the Contents of the Textbooks on environmental education at the Elementary level.....	78-79
5.1.2	Findings Relating to the Mode of Transaction of Environmental Education at the Elementary Level...	79
5.1.3	Findings relating to the Teaching Aids available for the teaching of Environmental education.....	79-80
5.1.4	Findings relating to the Evaluation procedures of Environmental Education at the Elementary level.....	80
5.1.5	Findings relating to the Academic Background of Teacher Teaching Environmental Education at the Elementary Level.....	81
5.1.6	Findings relating to the Professional Training of Teacher Teaching Environmental Education at the Elementary Level.....	82
5.1.7	Findings relating to the time slots given to Environmental Education in School Time Table.....	82
5.1.8	Findings relating to the Environmental Awareness of Students in Elementary Schools.....	83

5.1.9	Findings relating to the difference between the level of Environmental Awareness among Boys and Girls.....	83-84
5.2.0	Discussions.....	84-86
5.3.0	Conclusions.....	86-87
5.4.0	Suggestions for Further Research.....	87

SUMMARY

BIBLIOGRAPHY

APPENDICES

BRIEF BIO-DATA OF THE CANDIDATE

LIST OF TABLES

Table No.	Name of the table	Page No
4.1	Analysis of the Contents of..... Textbook on Environmental Education of class 1	37
4. 2	Analysis of the Contents of..... Textbook on Environmental Education of class 2	39
4. 3	Analysis of the Contents of Textbook on Environmental Education of class 3	41
4. 4	Analysis of the Contents of Textbook on Environmental Education of class 4	43
4. 5	Analysis of the Contents of Textbook on Environmental Education of class 5	45
4. 6	Brief Analysis of the Contents of Textbook..... on Environmental Education of class 6	47

4. 7	Brief Analysis of the Contents of Textbook49 on Environmental Education of class 7
4. 8	Brief Analysis of the Contents of Textbook51 on Environmental Education of class 8
4.9	Mode of Transaction of Environmental..... 53 Education at the Elementary Level
4.10	Teaching Aids available for Teaching54 of Environmental Education at the Elementary Level
4.11	Evaluation Procedures of Environmental.....56 Education at the Elementary Level
4.12	Academic Background of Teacher57 Teaching Environmental Education at the Elementary Level
4.13	Professional Training of Teacher..... 59 Teaching Environmental Education at the Elementary Level
4.14	Time slots given to Environmental..... 60 Education for class 1

4.15	Time slots given to Environmental62	
	Education for class 2	
4.16	Time slots given to Environmental.....63	
	Education for class 3	
4.17	Time slots given to Environmental..... 64	
	Education for class 4	
4.18	Time slots given to Environmental66	
	Education for class 5	
4.19	Time slots given to Environmental67	
	Education for class 6	
4.20	Time slots given to Environmental.....69	
	Education for class 7	
4.21	Time slots given to Environmental.....71	
	Education for class 8	
4.22	Environmental Awareness of class72	
	VIII Students	
4.23	Difference between the level74	
	of Environmental Awareness among	
	Boys and Girls.	

CHAPTER - I

INTRODUCTION

1.1.0 ENVIRONMENT

The environment has always been a matter of great concern for people in general. It is the aggregate of all the conditions that support living things. It is the base of all life and source of all goods. It refers to all social, economic, biological, physical and chemical factors which constitute the surroundings of man. Environment literally means the surrounding in which we are living. It includes all those things on which we are directly or indirectly dependent for our survival, whether it is living component like animals, plants or non living component like soil, air water. It consists of the sum total of the stimulation that the individual receives from conception until death. It is an aggregate of all external conditions and influences affecting the life and developments of organism. Environmental Protection Act (1986) defined environment as 'the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property.' Meaning of the term environment is very wide in the sense that it is taken into account of all those factors which directly or indirectly have a bearing upon the natural surroundings of human beings. The Encyclopaedia Britannica defines environment as "the entire range of external influence acting on an organism, both the

physical and biological i.e. other organisms, forces of nature surrounding an individual."

The National Policy on education 1986(NPE) states that protection of the environment is a value which along with certain other values must form an integral part of curriculum at all stages of education. This is because, in recent years the world scenario has changed considerably, the world community is encountering multitude of problems pertaining to natural eco system and human world as such environmental education is considered in totality. It should be an integral part of the education process and should be centred on practical problems and be of an inter disciplinary character. It is the educational process dealing with man's relationship with his natural and manmade surroundings and includes the relations of population, pollution, resource allocation, depletion, conservation, transportation, technology, energy and urban and rural planning to the total biosphere. It is a way of helping individuals and societies to resolve fundamental issues relating to the current and future use of the world's resources. It promotes the need for personal initiatives and social participation to achieve sustainability. It empowers individuals to maintain and restore the earth's natural systems and fosters support for the well being of future generations by promoting sustainable lifestyle. It helps the individuals to know and recognize the interactions between what is natural and social in their environment and act in that environment.

1.1.1 ENVIRONMENTAL EDUCATION

Environmental Education is an education that is intimately connected with the environment. It is education about the environment, through the environment and for the environment.

Education about the environment-

- Provides understanding of how natural system work
- Provide understanding of the impact of human activities upon these systems
- Fosters environmental awareness and concern

Education through the environment-

- Gives reality, relevance and practical experience to learning through direct contact with the environment
- Develop important skills for data gathering and field investigations
- Develops aesthetic appreciation

Education for the environment

- Develops an informed concerned and sense of responsibility for the environment.
- Develops the motivation and skills to participate in environmental improvement.
- Promotes a willingness and ability to adopt lifestyles compatible with the wise use of environmental resources.

Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions. The basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving social problems, and in the management of the quality of the environment.

The components of environmental education are:

Awareness and sensitivity to the environment and environmental challenges

Knowledge and understanding of the environment and environmental challenges

Attitudes of concern for the environment and motivation to improve or maintain environmental quality

Skills to identify and help resolve environmental challenges

Participation in activities that lead to the resolution of environmental challenges

The basic aim of environmental education is to provide different groups of people in a variety of professional fields with the knowledge needed to develop a sense of responsibility towards the environment and the rational utilization of its riches. It is a process by which people develop awareness, concern and knowledge of the environment and learn to use this understanding to preserve, conserve and utilize the environment in a sustainable manner for the benefit of present and future generations.

Environmental education deals with man's relationship with his natural and manmade surroundings. It is an organised efforts to teach about how natural environments function and particularly how human beings can manage their behaviour and ecosystem in order to live sustainably. It involves natural science (physical and biological science) social sciences and applied (technical) sciences. It is a lifelong learning process that increases people's knowledge and awareness about the environment and associated challenges develops the necessary skills and expertise to address the challenges and fosters attitudes, motivations and commitments to make informed decisions and take responsible actions. It encourages individuals to spread their knowledge and increase awareness of environmental problems and teaches people about the natural world and how their actions may affect it. It is a process directed at creating awareness and understanding about environmental issues that leads to responsible individuals and group actions. It is the process of recognizing values and clarifying concepts in order to develop skills and attitudes

necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. It entails practice in decision making and self formulation of a code of behaviour about issues concerning environmental quality.

1.1.2 ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

Environmental education has an important role to play in the promotion of environmental awareness at the elementary levels of education. Early environmental experiences help shape children's values, perspectives and understanding of the environment and how to interact with it. This is the stage where they are most active and most willing to learn new things. It should be remembered that they are the generations for tomorrow and they are the ones who will be making major decisions concerning the environment. To prepare them for such responsibilities, they need a sound environmental education as a foundation from which to make those decisions. Environmental education makes learning real to children in ways that books and video screens cannot. This is why it has been included in the school curriculum as a way to encourage students to observe, investigate and experiment. It develops in the child a well rounded mode of education, developing emotional intelligence and creative capacity in addition to intellectual ability. It prepares students to make well informed decisions in regard to the environment. However the content in the curriculum and the way it is being transacted in the

classroom plays a vital role in the development of environmental awareness in children.

Environmental education at the elementary levels of education is visualized as an integrated subject area which draws upon insights from sciences (physical, chemical and biological), social studies (history, geography, civics, etc) and environmental education (protection and conservation). The approach in environmental education helps children to use the contents and methods of science and social sciences and environment to solve environmental problems in future. One of the main focuses of environmental education is to expose children to the actual world they live in. The learning situations/experiences of environmental education help children to explore and connect with their natural and human made surroundings. It helps children develop their own insights into the functioning of several things or understanding human processes in their environment. Such interactions with their surrounding environment are immensely important in the healthy development of children. Such interactions also enhance children's learning capabilities by providing concrete learning experiences. Environmental education connects people and nature, prepares students for the future, empowers environmental stewards of all ages, builds community, and changes lives. As a result, students who study environmental education develop and practice leadership skills like working in teams, listening to and accepting diverse opinions, solving real-world problems, promoting actions that serve the larger good and connecting with the community. Environmental education

in the primary stage contributes to development of conceptual understanding, attitudes and values, skills and habits relating to range of subjects areas at the primary level. Such learning experiences also introduce children to some of the hidden benefits such as development of appreciation and respect for nature and natural resources, diversity that exists in the environment, ability to express feelings and thoughts, etc.

According to Ruth Wilson (1994), environmental education in early childhood includes the development of a sense of wonder, appreciation for the beauty and mystery of the natural world opportunities to experience the joy of closeness to nature; and respect for other creatures. It also includes the development of problem-solving skills and the development of interest and appreciation in the world around us. Children are the future generation and will likely have to deal with even more environmental problems than their parents face today. It is important to ensure that they have the right tools and building blocks to work with.

According to Watts (1969) the primary aim of environmental education is to help the child to understand the process which shape his surroundings, so that he doesn't remain a passive and sometime bewildered spectator, but becomes an informal and active mediator of his environment with the confidence which comes from understanding.

Environmental education in schools should aim to provide all students with opportunities to acquire the knowledge,

understanding, and skills, to engage effectively with environmental issues. Encourage students to examine and interpret the environment from a variety of perspectives—physical, biological, sociological, economic, political, technological, historical, aesthetic and ethical. Arouse students' awareness and curiosity about the environment and encourage active participation in resolving environmental problems.

Environmental education is a lifelong educational process that occurs at all levels of education. It is a way of helping individuals and societies to resolve fundamental issues relating to the current and future use of the world's resources. Our nation's future relies on a well-educated public to be wise stewards of the very environment that sustains us, our families and communities, and future generations. It is environmental education which can best help us as individuals make the complex, conceptual connections between economic prosperity, benefits to society, environmental health, and our own well being. It aims to develop an individual's understanding, skills and the feelings of empowerment that are necessary for both positive behaviour towards the biophysical and social environment in everyday living, and for active participation in group efforts to find the optimal solutions for environmental problems. , is an important component of an effective policy framework for protecting and managing the environment. It is a new focus for education. It is a way of helping individuals and societies to resolve fundamental issues relating to the current and future use of the world's resources. However, simply raising awareness of these issues is insufficient to bring about change.

Environmental Education must strongly promote the need for personal initiatives and social participation to achieve sustainability.

1.2.0 RATIONALE OF THE STUDY

There is an urgent need to create environmental awareness among all human beings so as to conserve, protect and nurture our environmental resources. Consequently environmental education is being included in school curriculum right from the very beginning.

At present, human beings are facing grave environmental problems, and adjustment to changes in the environment has become a huge challenge. All members of the society depend on natural resources to survive. The availability of these resources has limits. It is essential, therefore that people understand the need of environment to their quality of life and they have the knowledge, tools and skills to live in ways that minimize the impact of their actions on environment. The future health and welfare of our nation depends on our earth's resources and sustained developmental activities. A positive attitude and informed environmental decisions are conducive to sustainability. These are possible only through a sound understanding of the environment. Thus, awareness about this now fragile environment becomes a necessity if human beings desire to have a longer stay in this planet.

We have now been living in a situation where environmental degradation is occurring at an unprecedented pace. Hence the immediate need of the day is bringing about an awareness of the environment and its problems at all levels. Sincere efforts are needed to re-establish our links with the environment. We must protect the environment from 'ourselves'. It is our own life style, greed, selfishness and lack of awareness that is the starting point of all the problems related to the environment.

Since formal education plays such a vital role in the generation of sound environmental awareness and values it is important to know the content of curriculum, the teaching strategies and the various learning experiences that students are exposed to at this stage. Therefore an analysis of environmental education given in schools is important if one really wants to know whether schools are providing their students with the right kind of experiences.

Today's children will be responsible for making decisions that will shape the health of the environment. To prepare them for such responsibilities, they need a sound environmental education as a foundation from which to make those decisions. So early environmental education experiences help shape children's values, perspectives, and understanding of the environment and how to interact with it.

Besides the above reflection, the researcher would also like to address a number of questions that have disturbed academicians and environmentalists alike. Some of these questions are:

- 1) Have students developed a sense of awareness about the environment and its various problems?
- 2) Do students have a sense of responsibility for the environment?
- 3) Is a basic knowledge about the environment present among the students?
- 4) Have students acquired skills for identifying and solving environmental problems?
- 5) Does our educational syllabus, especially at the elementary stage provide enough information and experience to inculcate a healthy awareness of the environment in students?

1.3.0 STATEMENT OF THE PROBLEM

In light of the various results found in studies on environmental education in India and abroad and the lack of a similar study within the state, the investigator considered such a study a matter of extreme importance. Therefore the present study may be stated as ***“Environmental Education in Elementary Schools in Mizoram: An Analytical Study.”***

1.4.0 OBJECTIVES OF THE STUDY

Based on the research questions identified, the following objectives have been laid down for the present study:

- 1) To prepare a brief analysis of the contents of textbooks on environmental education at the elementary level.
- 2) To examine the mode of transaction of environmental education at the elementary level.
- 3) To examine the teaching aids available for teaching of environmental education at the elementary level.
- 4) To study the evaluation procedures of environmental education at the elementary level.
- 5) To study the academic background and professional training of teacher teaching environmental education at the elementary level.
- 6) To examine the time slots given to environmental education in school time table.
- 7) To study the environmental awareness of the students in elementary schools.
- 8) To find the difference between the level of environmental awareness among boys and girls.
- 9) To suggest measures to improve teaching of environmental education in elementary schools in Mizoram.

1.5.0 OPERATIONAL DEFINITIONS OF THE KEY TERMS USED

- 1. Environmental education:** Environmental education, in the present study means the environmental education given to elementary school students through textbook meant for the teaching of this subject.
- 2. Elementary school:** Elementary school is a period of formal education before high school. It encompasses grades 1-8.

1.6.0 DELIMITATION OF THE STUDY

The present study has been confined to elementary schools within Aizawl city for better realization of objectives within limited time period.

1.7.0 ORGANISATION OF THE REPORT

Chapter-I: The First chapter deals with the introduction, rationale of the study, objectives and delimitations of the study.

Chapter-II: The Second chapter on the review of related literature encompasses the related studies conducted in India and abroad and place the study in the context of the related literature.

Chapter-III: The Third chapter on the strategy of inquiry includes matters related to the method of study, tools of data collection, sources of data and statistical treatment of data.

Chapter-IV: The Fourth chapter is on analysis and interpretation of data related to various issues related to awareness of environmental education at elementary schools in Mizoram.

Chapter-V: The last chapter i.e., Fifth chapter includes the major findings, discussions, suggestions for further research and conclusions of environmental education at the elementary level.

CHAPTER-II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

A number of studies on and about the environment have been done. While some of these studies have focussed on the attitude, some have focussed on the effect and still others on the relationship between certain factors in the environment. However, the common ground among all these studies is that awareness about the environment plays a major role in most studies. The following is some of the studies that were conducted on environmental education in and outside the country.

2.2 STUDIES CONDUCTED IN INDIA

Joshi, BP (1981) in his study entitled “Development of science education for upper primary classes based on environmental approach” found out that environmental education at the primary level was essential and vital to develop insight and skills needed to influence not only the environmental attitudes and the behaviour of the students but also to stimulate their orientation of values regarding importance of environment. He found out that environment

outside the school was potentially significant for educational purposes.

Deopuria's (1984) in his study on 'A comparative study of teaching of science through environment and traditional approach in schools of Madhya Pradesh' found that the environmental approach in teaching will help in developing better attitude in students towards the environment

Kopardekar (1985) in his study on 'Environmental Education' observes that education on nature will have to be a very important item on the agenda of environmental education. This will help to restore the composure of human beings and their relationships with their surroundings. He thinks that if people are educated in this way they are less likely to take part in spoiling nature in their day to day life.

Souza (1987) conducted a study on 'Environmental Education for Conservation and development' states that environmental education need to be given priority from a tender age ie., the level of elementary schools. The present educational system has some bias towards environmental education but this need to be enlarged.

Dayal (1987) conducted a study on 'Environmental education for conservation and development' and identified that at both formal and non formal level there should be involvement of each and every human being on the continent. Children's

literature should be produced bringing out various aspects of environmental problems and environmentally safe technologies.

Chittibabu (1987) in a study on 'Environmental education for conservation and development' describes the interaction between education and environment.

- (a) Education creates the urge for a clean environment.
- (b) It inculcates in the young minds the basic principles of sanitation and hygiene.
- (c) It helps pupils and students to appreciate the need for conservation of our multifaceted heritage.

Dighal (1988) tried to establish the fact that charts, models, excursions, science exhibitions, film allows and orientation programmes brought better results and helped remove drudgery in teaching biological sciences.

Shahnawaj (1990) in a study on 'Environmental awareness and environmental attitude of secondary and higher secondary teachers and students' in Rajasthan, found that female students possessed significantly more awareness than male student.

Saxena (1991) suggests that the nature of environmental education requires a different teaching methodology than the ones used in other disciplines. For example survey or experimentation could be more effective than lecture and at different places.

Patel and Patel (1995) conducted a study on 'An investigation into the Environmental Awareness and its enhancement in the secondary school teachers. The Progress of Education,' and found significant impact of environmental awareness programs on the environmental awareness of the teachers.

Sabhlok (1995) in his study on 'A study of the Awareness and Attitude of Teachers and Students of High Schools Toward Environmental Education in Jabalpur District' found that urban teachers differed significantly from rural and tribal teachers on their awareness of environmental problems. No difference was observed between rural teachers and the tribal teachers.

Sabata (1997) in her study on 'Biodiversity and its importance towards protecting the Planet' reported that it was of paramount importance to create love and concern for nature in young minds so that they grow up with an awareness that would lead to action. Hence proper inventory methods are to be taken for identifying and later monitoring and conserving the biodiversity for protection of the plants.

Jinarajan (1999) in his book on 'A study of Environmental Awareness and Attitude towards Environmental Education of Student Teachers of Bangalore City' did not find any gender difference in environmental, awareness.

Agarwal (1999) conducted a study on 'International law and human rights' reports that the tremendous advancement of industrialization resulted into economic development had also continuously degraded the human environment. Further, urbanization, over-population and poverty also intensified the problem.

Tripathi (2000) conducted a study on 'A comparative study of Environmental Awareness of students studying in central schools and other schools at 10+ levels in Uttar Pradesh' and found out that boys had better awareness than girls.

Pandey S (2000) in his article "Status of environmental Education" has concluded that training of teachers into effective strategies for environmental components, both at the school and university level should be introduced as an integral part of the programmes of teacher education departments. The regional resource centre in environmental education should be made more dynamic and functional by undertaking programmes of teachers' involvement and teacher preparation at the grass root level.

Suni (2000) developed an identification key on the topic 'Inflorescence' using environmental method. The study arrived at the conclusion that environmental method is significantly superior to lecture method and self-learning method, with regard to post-test achievement, and, therefore, environmental method can be adopted as an effective method for teaching 'Inflorescence' at higher secondary level.

Badkobi and Hadipour (2001) in their study on ‘Assessment of primary school teacher’s educational condition in different zones of Tehran Municipality in Environmental subjects and the ways of elevating their Awareness’ reported significant difference among male and female teachers in their awareness about environmental education where male teachers had higher awareness.

Sahoo, R.K. (2003) conducted a study entitled “Population Growth and Sustainable Development of forest resources” and has found out that the level of population and the availability of forest resources are the two major determinants of the sustainable development of forest resources. The population of the state or the country will either be controlled or stabilized and the forest resources will have to be regenerated and the existing resources have to be protected.

Bhosle, Smriti (2006) in her research paper “Environmental education in schools” has examined that the limitless greed, neckless consumption of natural resources and unkind treatment meted out to environment have increasingly damaged the world. This has caused a global concern about the conservation and protection of the earth’s environment.

Molia, Maganlal S. (2006) studied “Global issues on environmental education” and revealed that environmental issues, especially global issues can often appear and disconnected from a learners life. It can mean concepts in

ecology, outdoor education, environmental science or instruction about issues.

Nayak, Arjuna Charan (2006) in his study on “Ethico environmentalism” concluded that man’s relation with nature is economic entailing privilege and not obligations. But the privilege of possessing the earth should be followed by the responsibility towards its preservation not only to the immediate posterity but to the unknown future. But in order to have a proper understanding of the ecology man should have love, respect and admiration towards environment.

Naseema (2006) in her study entitled “Influence on sex and social position on attitude towards environment of secondary school pupils” has examined that the sex of the students does not seem to cause any difference in their attitude towards environment. Influence of both physical and psychological environments which are caused due to the socio economic condition of the family, parents, education, home condition of living parents, love, care along with the cultural forces provide a resultant effect on the pupils acquisition of environmental concepts.

L.H. Sharma (2006) in her study on Environmental Conservation: Key to sustainable development has pointed out that the preservation and conservation of environmental heritage is our sacred duty. All of us living on this planet, whether rich or poor industrialist or workmen, farmers or labourers, as individuals or groups are responsible for the

present dismal state of our environment and each one of us has to contribute towards its rehabilitation, preservation, and conservation.

Vernal, Louis (2006) studied “Pedagogy in environmental education” and found that children from their earlier years should be oriented towards learning from the surroundings using the local environment as a medium for inquiry or discovery as a source of materials for realistic activities. He has further pointed out that in environment education there is more stress on environmental actions and skills.

2.3 STUDIES DONE ABROAD

Blum (1982) in his book entitled ‘Assessment of subjective usefulness of an environmental science curriculum’ evaluated an environmental studies curriculum in terms of student perceptions of course usefulness for achieving various goals. Results were interpreted as evidence that an inquiry-oriented curriculum can have a positive effect on student's perception of the usefulness of school subjects.

Lob (1987) in his study on ‘Project based teaching in environmental education’ reported that the aspects of environmental education are regarded as to be integrated in to curricula already existing and developed in the future so that environmental education should not be perceived as an additional or separate but as an integral aspect of education

Balasubramonyam & Fonseka (1987) conducted a study on 'Environmental education for conservation and development.' They are of the opinion that any education, ecological or environmental being no exception is meaningless unless it reaches grass root level and that being the common man.

Palmer (1991) in his study on 'Journal of Environmental Education' points out that in the National Curriculum of England, environmental education is reflected in the content of some subjects, notably Science and Geography, and he is of the opinion that because it is a cross curricular theme, it should be included both as a starting point and as unifying element. It should emphasise skills such as problem solving, study and communication skills, which are fundamental to environmental education, and are central to all subjects of the national curriculum. Environmental education is, therefore, ideally suited to be taught as a cross curricular theme, rather than as an individual subject.

Orr D (1992) in his study on 'Ecological Literacy: Education and the Transition to a Postmodern World Environmental literacy' encompasses sensitivity toward the earth; it is about developing a relationship with the nature in your daily life and embodying a sense of stewardship, taking action working toward a sustainable future. The ecologically literate person has the knowledge necessary to comprehend interrelatedness, and an attitude of care or stewardship. Such a person would also have the practical competence required to act on the basis of knowledge and feeling.

Ross (1994) developed a framework for problem-solving in environmental skills and environmental studies. 64 junior grade students from grades 4, 5 and 6 participated in the study. The objective was to identify student problem solving skills generated by the two teaching environments. First one is developed for a content oriented environment and the second for a problem-solving oriented environment. Results showed a shift in knowledge patterns from the content environment to the problem solving environment

Sobel's report (1995) on 'Beyond ecophobia' reclaiming the heart in nature education revealed that local environments should be the basis for curricula with six to nine year olds. Only after they are able to think in an analytical manner can they learn in a global way.

Leal Filho (1995) in his study on ' Media and environmental Education Convergence,' declares that to ensure didactic potential of the media for environmental information and for environmental education is fully used, there are a number of items, which need to be considered. Some of these are:

- Diversity of information: newspaper articles, as well as television and radio programs may be used as resource materials for classroom-based lessons provided that due guidance are given and that the issues discussed may be closely related to curricular themes.

- Time relevance: the use of printed or broadcast materials ought to provide a supply of recent information with up-to-date details

Accuracy: Teachers and others using the media for environmental education should be aware of this reality and try to carefully select materials prior to use, so that misunderstanding and misinformation may be prevented.

Lindenmeier (1996) conducted a study on outdoor education components. The research project was undertaken to determine to what degree environmental education and Adventure Education are interdependent components of outdoor education. The study found that environmental education and adventure education are significantly dissimilar in several key respects.

Hart (1996) in a recent study on “Teachers ideas about Environmental Education”, *Environmental Education for the Next Generation* interviewed over 200 elementary teachers across Canada. He found that the reason that most teachers teach environmental education, in the absence of specific curriculum guidelines, is based on values and experiences rather than knowledge. These values are based on childhood experiences, recreational pursuits, concern for health and lifestyles, and involvement in social and environmental issues.

Heeney (1997) argued that in order for environmental education to be effective in an urban environment, it must be experiential, frequent, and easily related to the home environment.

Atwood (1998) found that in her own teaching on ‘an environmental outdoor school program: an investigation of the student and teacher perceptions’, it is important to schedule frequent and cumulative activities that allow students to build knowledge and awareness towards environmental issues.

Trudi Volk and Marie Cheak (2003) studied ‘The Effects of an Environmental Education Program on Students, Parents and Community’ and revealed that students who have participated in an environmental education program have actually shown improved reading, writing, and oral communication skills.

Tony Loughland (2003) in his study on ‘Factors Influencing Young People’s Conception of Environment’ stresses the need for students to receive some sort of environmental education in their early development years so they can view the environment as a “relation” rather than an “object.” The only way to develop this kind of thinking in students is to instil it in them at an early age so it becomes second nature to them.

Vaughan (2003) in a study on ‘The Effect of Environmental Education on School children, Their Parents, and Community Members: A Study of Intergenerational and Intercommunity Learning’ revealed that if environmental education programs for

children are guided in a proper way, parents and other adults could also benefit from them. Knowledge gain passed on from children to parents (and other adults) indicates that awareness can be delivered in a consecutive way from the classroom to the community

J.R Wilson and Martha C. Monroe (2005) in their study on 'Biodiversity Curriculum that Supports Education Reform' emphasize that implementing environmental education into a teacher's every day curriculum has been proven to help students earn higher scores in many, if not all of the subjects addressed on standardized tests.

Sward and Marcinkowski (2005) conducted a study on 'Environmental sensitivity: A review of the research,1980–1998'.The study revealed that 'While environmental sensitivity itself is viewed as an affective variable, its development appears to result from an interplay of outdoor experiences, favourable human interactions, and knowledge about the natural environment.

Mc Claren and Hammond (2005) in their study on 'Integrating education and action in environmental education' discuss the different paradigms that have evolved in researching the ideal approach to environmental education. —Before the environmental education community defines standards of practice it should be sure that it has a full understanding of the range of possibilities and challenges which might nurture a transformation in human-environment relations.

2.4 Conclusion

A multitude of research work has indeed been accomplished with regards to the teaching of environmental education. The present study is a well trodden path all over the globe. This is not surprising as environmental awareness has become a growing concern for people all over the world. In light of the urgent call for a more humane attitude towards the environment and the need to inculcate this from an early age, the investigator considered this topic not only worthwhile but necessary so that this state may successfully take part in the march for environmental safe. Besides this the investigator also considered the data to be collected in this study would make up an important addition to the already existing data on the status of the teaching of environmental education in elementary schools.

CHAPTER-III

METHODOLOGY

3.1.0 METHOD OF STUDY

With the objectives clearly in mind, the present study has adopted the descriptive method of study concerning the status of environmental education in elementary schools in Mizoram. Such a kind of study demanded a comprehensive knowledge about:

- a)* The existing status of different areas of environmental education at elementary level
- b)* The level of environmental awareness of students at elementary level of education and
- c)* How to improve the teaching of environmental education at the elementary school level.

Therefore, efforts were made to collect the required data, analyse them and interpret them as is normally done in descriptive method.

3.2.0 POPULATION

The population comprised of students from all elementary schools within Aizawl city.

3.3.0 SAMPLE

All Class VIII students from 2 schools of each educational block (east, west and south) within Aizawl city comprised the sample of the study.

3.4.0 TOOLS OF DATA COLLECTION

Data was collected from primary and secondary sources. Primary data were obtained from:

- (i) Environmental Awareness Scale by Dr. Haseen Taj, Department of Education, Bangalore University.
- (ii) Observation-cum-interview schedule developed by the investigator.

Secondary Data were obtained from:

- (i) Statistical Cell, Directorate of School Education, Government of Mizoram, in order to collect data for information concerning the number of elementary schools in Aizawl district along with the number of students enrolled.
- (ii) School offices of selected sample schools to collect required information.

3.4.1. Environmental Awareness Scale

Environmental awareness scale was developed by Dr. Haseen Taj. The reliability and validity of the scale are presented as follows-

RELIABILITY OF THE TEST

A test score is said to be reliable when the scores are stable and trustworthy. Stability and trustworthiness depend upon the degree to which the score is an index of the true ability or is free of chance error. Two types of reliabilities have been established.

a) Split Half Method

The split half method is employed when it is not feasible to construct parallel while taking the test the second time.

The split half method is considered to be the best method for establishing reliability forms of the test nor advisable to repeat the test itself. This is because if the test is repeated or given in it alternate form, the attitude of the subject may change. Its main advantage is that the main data for computing reliability is obtained in one occasion, so that variations brought about by differences between the two testing situations are eliminated.

To establish the reliability of the tool, the split half method was employed. The scores obtained from the tryout group, on the test, were divided into two equivalent halves and the correlation was found for these half tests. From the reliability of the half test the self correlation of the whole test was estimated by the Spearman Brown Prophecy formula.

The procedure adopted is that two set of scores were formed by taking the alternate items in the test. The first set of scores represents performance on the odd numbered items-

1,3,5,7,9,etc and the second set of scores represents performance on the even numbered items-2,4,6,8,10,etc.Then,to find out the coefficient of correlation between the odd numbered and even numbered items for each student, Pearson Product Moment correlation was used. The obtained correlation value was found to be $r=0.62$.

From the self- correlation of the half tests, the reliability co-efficient of the whole test was established using the Spearman Brown Prophecy Formula, the correlation value obtained for the whole test was $r=0.78$.

b) Test-Retest Reliability

Co-efficient computed by this method is frequently called co-efficient of stability. The test was given and repeated on a group of 200 primary and higher primary school children and the correlation was computed between the first and second sets of scores by using Pearson Product Moment Correlation for environmental awareness scale was found to be 0.76 with time gap of 3 weeks between the two administrations.

VALIDITY OF THE TEST

The validity of the test depends upon the fidelity with which it measures, what it purports to measure. A test is valid when the performance which it measures corresponds to the same performance as otherwise independently defined. Validity is a relative term, and a test can be valid for a particular purpose or in a particular situation and, not in all situations.

To establish the validity of the tool constructed, different types of validity measures were adopted. They are:

a) Content Validity

Content validity is also called “curricular” validity and is most widely used in achievement testing. To establish content validity, the researcher analyzed the content and also appraised of the various aspects of the contents. Then it was given to a few experts for their judgement. Based on their opinion and suggestions the tool was modified.

b) Predictive Validity

The researcher administered the test to predict the future outcome. Such a test that forecast the future behaviour for which it is designed possesses predictive validity. The test was administered to a randomly selected sample. Results obtained from their performance, helped to establish the future outcome of the test, which was to be administered to the group chosen for the study.

c) Cross Validity

The tool was administered to a group of 200 students other than the sample chosen for tryout of the scale. Hence, this cross checks the validity of the scale.

d) Intrinsic Validity

The index of reliability is sometimes taken as a measure of intrinsic validity. It measures the dependability of test scores by showing how well obtained scores agreed with their

theoretically true values. This intrinsic validity is measured by the square root of the reliability.

The reliability co-efficient calculated for the test was 0.78 and 0.76 for split half and test-retest methods respectively. The square roots of split half and test-retest is 0.88 which indicate high intrinsic validity of the scale.

e) Item Validity

The response obtained from the performance of the students were analysed and item discrimination was computed. Only such items which had significance at 0.05 and 0.01 level of probability were selected for the final scale, eliminating items which had low significance. This shows that the scale had item validity.

Therefore, the correlation established for the test- retest and split half test and for the whole test indicates that the tool constructed is a reliable one. And the various types of validity adopted indicate that the tool is also valid.

3.5.0 STATISTICAL TREATMENT OF DATA

The analysis of data was done by descriptive statistics like percentage, measures of central tendency, and t-test.

CHAPTER-IV

ANALYSIS AND INTERPRETATION

The data collected for the realization of the objectives were analysed and interpreted as follows:-

4.1.0 TO PREPARE A BRIEF ANALYSIS OF THE CONTENTS OF TEXTBOOKS ON ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

4.1.1 ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 1

Table 4.1

Analysis of the contents of textbook on environmental education of class I

UNIT	TITLE	LESSON	CONTENTS
1	Me and my body	1 2 3	-About myself -How the body works -The people
2	Our Needs	4 5 6 7 8	-Our basic needs -Our clothes -Our food -The house -Different types of houses
3	My family	9 10 11 12 13 14 15	-The family -The relations -Role of parents in the family -Role of children in the family -Fun in the family -Celebrations in the family -Our festivals
4	My Neighbourhood	16 17	-People and their occupations -Celebrations in the neighbourhood -Services in the neighbourhood-School -Other services in the neighbourhood
5	Living things	18 19	-Animals in the neighbourhood -Plants in the neighbourhood -Care of animals and plants
6	Health and safety	20 21 22	-Keeping clean -Keeping healthy -Safety rules
7	Transport and communication	23 24	-Transport -Communication
8	Natural Environment	25 26 27	-The earth -The weather -The sun, the moon and the stars

The name of the text book studied by class I is entitled 'Oscar Environmental Studies' which is a series of text cum workbook designed to meet the specific need of young children which were written in accordance with the recent guideline laid down in the New Education Policy by the NCERT. It consists of different units which are divided into different lessons.

The age group of students studying at class 1 is around 6-7 years. Therefore the subjects discussed are well defined and relevant for their age group. Therefore the subjects discussed are well defined and relevant for their age group. Regardless of the teaching they receive elsewhere, the topics under study are quite adequate to inculcate a sense of awareness about their body and its needs, how to maintain a healthy lifestyle and a sound awareness of their environment. The textbooks lay emphasis on raising awareness levels and sensitising children about environmental concerns. The main focus of environmental education should be to expose students to the real-life world, natural and social, in which they live; to enable them to analyze, evaluate, and draw inferences about problems and concerns related to the environment to our understanding of environmental issues; and to promote positive environmental actions in order to facilitate the move towards sustainable development.

4.1.2 ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 2

Table 4.2

Analysis of the contents of textbook on environmental education of class 2

Unit	Title	Lesson	Contents
1	My body	1 2 3 4	-About myself -How the body works -Our growth -Carrying our body
2	The family	5 6 7 8 9	-A happy family -Our food -Our meals -Fun in the family -Keeping pets
3	Our houses	10 11	-Parts of a house -Material used in houses
4	Clothes	12 13	-Our clothes -Cloth
5	Our school	14 15	-My School -In the school
6	Directions and time	16 17	-Directions -Time
7	My neighbourhood	18 19 20 21 22	-Important places in our neighbourhood-I -Important places in our neighbourhood -II -Festivals in the neighbourhood -1 -Festivals in the neighbourhood - 2 -Occupations in the neighbourhood
8	Transport and communication	23 24 25	-Means of transport -Safe travelling -Means of Communication
9	The natural environment	26 27 28 29	-Our earth -Air around us -Water around us -Weather around us

The name of the environmental education text book studied by class II is entitled 'Oscar Environmental Studies' which is a series of text cum workbook designed to meet the specific need of young children which were written in accordance with the recent guideline laid down in the New Education Policy by the NCERT. It consists of different units which are divided into different lessons. The purpose of the text book is to stimulate the development of the child awareness of the world he lives in through his personal observations and understanding.

The age group of students studying at class 2 is around 8-9 years. It exposes children to the actual world they live in and also help children to explore and connect with their natural and human made surroundings. It develops favourable attitudes and habits to protect and preserve their environment and also develop a holistic understanding of their environment. Emphasis has also been laid on the need to organise learning in local specific contexts, which will provide more meaningful experiences to children. It is during this early stage where personality begins to take form. Almost everything that children learn is provided in different ways by the outside world. The natural environment is a significant component in this learning process.

4.1.3 ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 3

Table 4.3

Analysis of the contents of textbook on environmental education of class 3

Unit	Title	Lesson	Contents
1	Relationships	1 2 3 4	-My family -My family and me -Whom do i look like -Old and physically challenged people
2	Plant life	5 6 7	-Plants around us -Leaves in our lives -Usefulness of plants
3	Animals	8 9 10	-Animals: big and small -Insects -Birds
4	Work and play	11 12	-People at work -Playing is fun
5	Food	13 14 15 16	-Eating in the family -Cooking food -Food from plants and animals -Food for animals
6	Shelter	17 18 19 20	-Home, sweet home -A good and clean house -Shelter for pets and domestics animals -Mapping my neighbourhood
7	Water	21 22 23	-Need for water -Saving water -Water to drink
8	Travel	24 25 26	-Going places -Means of communication -Journey of a letter
9	Things we make and do	27 28	-The potter's wheel -Clothes we wear

The name of the text book studied by class III is entitled 'Frank Environmental studies' which is prescribed for use by the Mizoram Board of School Education. It consists of different units which are divided into different chapters.

The text book is an attempt to instil scientific temper in children along with family values, values of equality and justice, gender discrimination and respect for human dignity and labour. The syllabus gradually extends the child's understanding of her world, beginning from the immediate 'self' to include her family, the neighbourhood, the locality and also the country. Young children are active and inquisitive. Everything is worth exploration with all of their senses. Their minds and bodies are growing at a phenomenal pace, so it is essential that they should be provided with the necessary knowledge about the environment.

4.1.4 ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 4

Table 4.4

Analysis of the contents of textbook on environmental education of class 4

Unit	Title	Lesson	Contents
1	Family and friends	1	-Relationships
		2	-Feeling around
2	Work and play	3	-Ways of recreation
		4	-People at work
3	Animals and plants	5	-Animals and their friends
		6	-Plants- our friends
4	Food	7	-Journey of food
		8	-Eating together
		9	-Teeth and tongue
		10	-Beaks and claws
5	Shelter	11	-Houses now and then
		12	-Waste and its disposal
		13	-Where animals live
		14	-Mapping our neighbourhood
6	Water	15	-Water-a necessity for survival
		16	-Water is life
7	Travel	17	-Animals for travel and transport
		18	-Paying for travel
		19	-Travel to another place
8	Things we make and do	20	Building houses and bridges
9	Tobacco and its effect	21	Tobacco-A deadly poison

The name of the text book studied by class IV is entitled 'Frank Environmental studies' which is prescribed for use by the Mizoram Board of School Education. It consists of different units which are divided into different chapters.

The environmental education textbook of class 4 laid emphasis on raising awareness levels and sensitizing children about environmental concerns. Emphasis has also been laid on the need to organize learning in local specific contexts which will provide more meaningful experiences to children. The textbook enables children to locate and comprehend relationships between the natural, social and cultural environment and to make the child curious about social phenomena, starting with the family and moving on to wider spaces to nurture the curiosity and creativity of the child particularly in relation to the natural environment to develop an awareness about environmental issues.

4.1.5 ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 5

Table 4.5

Analysis of the contents of textbook on environmental education of class 5

Unit	Title	Lesson	Contents
1	Family and friends	1	-Relationship
		2	-Our likes and dislikes
2	Work and play	3	-Games and sports
		4	-Traditional games
		5	-Blow hot, blow cold
		6	-Clean work ,dirty work
3	Animals	7	-How animals find their food?
		8	-What we take from animals
		9	-Why is the tiger in danger?
4	Plants	10	-Growing plants
		11	-Forest and forest people
		12	-Plants from different countries
5	Food	13	-When food gets spoilt
		14	-Who produces the food we eat?
		15	-When people do not get food
		16	-Food in the mouth
		17	-Food for plants
6	Shelter	18	-Why different houses?
		19	-Living together
		20	-Social nature in animals
7	Times of emergency	21	-Safety and first aid
		22	-Natural Calamities
8	Water	23	-Sources of water
		24	-Plants and animals in water
		25	-Mosquito and malaria
		26	-What floats, sinks and mixes(water and its properties)
9	Travel	27	-Fuels for vehicles
		28	-Adventure and exploration
		29	-Historical monuments
10	Things we make and do	30	-Growing food

The name of the text book studied by class V is entitled 'Frank Environmental studies' which is prescribed for use by the Mizoram Board of School Education. It consists of different units which are divided into different chapters. The textbook is designed to inculcate an integrated perspective on science and social studies by drawing upon familiar situations within the general sense experience of a child and interpret them in relation to their life environment.

Thus by the time the child reaches class V, she is able to see her 'self' in the larger context as part of a community, the country and also, more tacitly, as located in this world. It is evident that the textbooks represent relevant ideas commensurate with the age and developmental level of children so as to provide them the necessary understanding about their immediate environment. Environmental education in schools invariably aims at providing children with knowledge, attitudes and skills so that they are equipped to contribute meaningfully towards the betterment of the environment and accomplish the goal of sustainable development.

4.1.6 BRIEF ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 6

Table 4.6

Brief analysis of the contents of textbook on environmental
education of class 6

Title	Chapter	Contents
The Earth: Our habitat	1	-The solar system
	2	-Globes and maps
	3	-Latitudes and longitudes
	4	-Motions of the earth
	5	-Realms of the earth and its major relief features Part- 1
	6	-Realms of the earth and its major relief features Part 2
	7	-India in the world
	8	-India: climate
	9	-India: Natural Vegetation and wildlife

The text book studied by class VI is entitled 'Composite Social Sciences for us'. It has been written according to the latest syllabus as per National Curriculum Framework 2005. The text book is divided into three main parts- 1). Our past-History 2) Our environment-Geography 3) Social and Political life-Civics.

As part 2 of the textbook is mainly concerned with environment, from the above table it was found out that the textbook is important to understand the unique place of the earth in the solar system which provides ideal condition for all forms of life, including human beings and to understand interrelationships of the realms of the earth and major landforms of the earth. The last three chapters mention about the physiographic divisions of India. It describes the influence of land, climate vegetation and wildlife on human life and to appreciate the need for conserving natural vegetation and wildlife. It provides us real time useful information about our planet, the environment in which we live and the measures we can use to conserve its resources. It instill in the students a sense of duty and responsibility towards the planet on which we live.

Infusing the local and natural socio-cultural environments into a student's experiences within the lesson plans and teaching activities shows a positive effect on student motivation in the academic arena.

4.1.7 BRIEF ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 7

Table 4.7

Brief analysis of the contents of textbook on environmental education of class 7

Title	Chapter	Contents
Our environment	1	-Environment in its totality
	2	-Inside our earth
	3	-Our changing earth
	4	-Air
	5	-Water
	6	-Natural vegetation and wildlife
	7	-Human environment-Settlement, transport and communication
	8	-Human interactions :The tropical and sub tropical region
	9	-Life in the temperate grasslands
	10	-Life in the deserts

The text book studied by class VII is entitled 'Composite Social Sciences for us'. It has been written according to the latest syllabus as per National Curriculum Framework 2005. The text book is divided into three main parts- 1). Our past-History 2) Our environment-Geography 3) Social and Political life-Civics.

As part 2 of the textbook is mainly concerned with environment, the above table revealed that it is necessary to appreciate and develop sensitivity towards environment. It also describes how to understand about the atmosphere and its elements and to know about the distribution of water on the earth and to find out the nature of diverse flora and fauna. It also describes about human interactions between natural environment and human habitation and also to appreciate the need of transport and communication for development of the community and also to be familiar with the new developments making today's world a global society and to understand the complex interrelationships of human and natural environment and to appreciate the cultural differences existing in the world which is an outcome of interaction between human beings and their environment.

The syllabus being proposed here aim at generating among young learners an awareness of and sensitivity to the total environment in a holistic manner and the problems associated with it. It would also equip the future custodians of the earth with the requisite knowledge of the total environment, natural and social, the problems associated with it and the necessary skills for solving these in a positive and sustainable

manner. The processes and strategies suggested would help develop positive attitudes, social values and strong concern for sustainable development and further improvement of the environment. While learners would appreciate local wisdom through traditions and customs, they would also discover their linkages with both national and global concerns. In effect, the courses would prepare them to initiate and carry on practical initiative at the individual, the group and the community level for solving environmental related problem and moving toward a life of perfect harmony with their social and natural environment.

4.1.8 BRIEF ANALYSIS OF THE CONTENTS OF TEXTBOOK ON ENVIRONMENTAL EDUCATION OF CLASS 8

Table 4.8

Brief analysis of the contents of textbook on environmental education of class 8

Title	Chapter	Contents
Resources and development	12	-Resources: Their types-Natural and human
	13	-Land, soil and water resources
	14	-Mineral and power resources
	15	-Manufacturing industries

The name of the environmental education textbook studied by class VIII Students is entitled Social Science. The text book is divided into three main parts- 1) History 2) Geography: Resources and Development 3) Social and Political life.

As part 2 of the textbook is mainly concerned with environmental education the above table revealed that it is essential for the students to know the meaning of resources, their variety, location and distribution and also to understand the importance of resources in our life. The topic is important to develop awareness towards resources conservation and to take initiative towards conservation process. It caters to making the students learn about the natural resources like land, water, natural vegetation, wildlife and most importantly the human resources. The syllabus invariably aims at providing children with knowledge, attitudes and skills so that they are equipped to contribute meaningfully towards the betterment of the environment and accomplish the goal of sustainable development

In a world of ever increasing knowledge and rising competitions, it is hoped that the textbook will help the students to acquire the basic competence and skills to face the academic challenges with confidence, competence and commitment.

4.2.0 TO EXAMINE THE MODE OF TRANSACTION OF ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

Table 4.9

Mode of transaction of environmental education at the elementary level

Number of schools	School using lecture method		School using demonstration method		School using experimental method		School using fieldtrips method	
	No	%	No	%	No	%	No	%
6	6	100%	NIL	-	NIL	-	2	33.33%

Source: Field Study

The above table 4.9 shows that the teaching methods adopted in each school were not the same. The type of teaching methods adopted were lecture, demonstration, experiments and fieldtrips. Depending on the class teacher the mode of transaction of environmental education was not the same. From the table it was also found out that all the schools visited had used lecture and field trips method of teaching. None of the schools visited conducted demonstration and experimental method of teaching for the study of environmental education.

The table indicated that lecturing in the classroom is still the most commonly used technique for teaching environmental topics. To create a healthy learning environment, there was a

need to conduct activity based learning to motivate students in the learning of environmental education.

4.3.0 TO EXAMINE THE TEACHING AIDS AVAILABLE FOR TEACHING OF ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

Table 4.10

Teaching aids available for teaching environmental education at the elementary level

Number of schools	School using teaching aids		Number of schools not using teaching aids	
	Number	Percentage	Number	Percentage
6	6	100%	0	0%

Source: Field Study

From the above table 4.10 it was found out that 100% of all the schools visited had used different kinds of teaching aids for the teaching of environmental education. While there were no schools that do not used teaching aids. In all the school depending on the concerned class teacher the type of teaching aids used were not the same. The common teaching aids used were materials like globes, maps, charts, pictures, atlas etc. Even though all the six schools had used teaching aides, it is

more commonly used at the lower classes than the upper classes.

The above table revealed that all the schools visited had given much priority to different teaching aids for the study of environmental education as it focus the attention, and motivate learners' interest and also make learning more practical, exciting and lively. These kind of instructional materials are important tools in the study of environmental education as it provides and carries information to students and also create interest of the students regarding the environment. Besides the teacher used various kinds of teaching aids for better understanding of the lesson in practical and real. The teaching materials make teaching learning process very effective, easy understanding and interesting. Every individual has the tendency to forget, but proper used of teaching aides help to retain more concepts permanently. Students can also learn better when they are motivated properly through different teaching aides. The use of teaching aides develop proper image when the students see and hear properly and also create the environment of interest for the students and also provide direct experience to the students.

4.4.0 TO STUDY THE EVALUATION PROCEDURES OF ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

Table 4.11

Evaluation procedures of environmental education at the elementary level

No of schools	No of schools having examination on environmental education		No of schools not having examination on environmental education		No of schools having practical examination on environmental education		No of schools not having practical examination on environmental education	
	No	%	No	%	No	%	No	%
6	6	100%	0	0%	0	0%	6	100%

Source: Field Study

As shown in table 4.11 all the schools visited had examination on environmental education subject and there were no schools that did not have examination on environmental education subject. The above table also revealed that no practical examination on environmental education was conducted by the schools selected for the sample however depending on the concerned class teacher project work was given to the students concerning environmental education.

4.5.0 TO STUDY THE ACADEMIC BACKGROUND AND PROFESSIONAL TRAINING OF TEACHER TEACHING ENVIRONMENTAL EDUCATION AT THE ELEMENTARY LEVEL

4.5.1 Academic background of teacher teaching environmental education at the elementary level

Table 4.12

Academic background of teacher teaching environmental education at the elementary level

SI no.	Category	Environmental education teachers		Teachers from Arts Stream		Teachers from Science Stream		Teachers from Commerce Stream	
		No	%	No	%	No	%	No	%
1	Under Graduate	6	26.09%	4	17.39%	2	8.69%	-	-
2	Graduate	14	60.87%	10	43.48%	3	13.04%	1	4.35%
3	Post Graduate	3	13.04%	2	8.69%	1	4.35%	-	-

Source: Field Study

From the above table 4.12 it was found out that there were a total of 23 environmental education teachers from all the schools visited. The table clearly revealed that out of the 23 environmental education teachers 6 teachers i.e., 26.09% have an academic qualification of under graduate in which 4 teachers i.e., 17.39% of teachers were from arts background and there were 2 teachers i.e., 8.69% who were from science background and there were no teachers from commerce background. There were 14 teachers i.e., 60.87% who have an academic background of graduate in which there were 10 teachers i.e., 43.48% who were from arts background, there were 3 teachers i.e., 13.04% who were from science background, and there were only 1 teacher i.e., 4.35% who were from commerce background. There were only 3 environmental education teachers i.e., 13.04% who were post graduate teachers out of which only 8.69% were from arts background and 4.35% were from science background and no teachers were from commerce background. The table shows that majority of teachers are graduate teachers but post graduate teacher are less than the under graduate teachers. Teachers, thus, become the key to the successful transaction of environmental education in schools. They play a central role in building necessary abilities and competencies in children for exploring, understanding, appreciating and participating in environmental protection and conservation. In order to achieve this, the teacher needs to be empowered to create awareness, attitude and concern in children and facilitate them in understanding and solving environmental problems.

4.5.2 Professional training of teacher teaching environmental education at the elementary level

Table 4.13

Professional training of teacher teaching environmental education at the elementary level

Number of schools	Number of teacher teaching environmental education	Trained teacher		Untrained teacher	
		Number	Percentage	Number	Percentage
6	23	7	30.43%	16	69.57%

Source: Field Study

The above table 4.13 shows that there were a total no of 23 environmental education teachers from the six schools visited in which all the 23 environmental education teachers were given a questionnaire. From the table we can find out that out of the 23 environmental education teachers 7 teachers (30.43%) were trained teachers while the other 16 environmental education teachers (69.57%) were untrained teachers. The table clearly indicates the need of more trained teacher for students from the early grades to encouraged children to implement sustainable

environmental projects that could create environmental awareness and responsibility for a better and healthier environment. It is therefore that the teachers need training to apply the knowledge, understanding and skills to seek solutions to the environmental problems they are likely to face in their own daily lives. Clearly students cannot be expected to learn subjects that their teachers have not mastered themselves. Teachers must not only master their subject, they must also develop strong teaching skills.

4.6.0 TO EXAMINE THE TIME SLOTS GIVEN TO ENVIRONMENTAL EDUCATION IN SCHOOL TIME TABLE.

4.6.1 Time slots given to environmental education for class 1

Table 4.14

Time slots given to environmental education for class 1

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	100%	-	-	5
School 2	4	100%	-	-	4
School 3	3	75%	1	25%	4
School 4	5	100	-	-	5
School 5	3	60%	2	40%	5
School 6	4	80%	1	20%	5

Source: Field Study

The above table 4.14 shows the time table of class 1 students from all the schools visited. From the table it was found out that school 1 has a total of 5 environmental education periods in a week out of which 5 periods i.e., 100% were taken in the morning and there were no environmental education period in the afternoon. School 2 has a total of 4 environmental education periods in a week in which 4 periods ie,100% periods were taken in the morning and no environmental education periods is given in the afternoon. School 3 has 4 environmental education periods in a week out of which 3(75%) periods were taken in the morning and only 1(25%) period is taken in the afternoon. School 4 has 5 environmental education periods and all the 5 periods i.e., 100% were devoted in the morning class. School 5 has 5 environmental education periods in a week. Out of this 5 periods 3 periods i.e., 60% were taken in the morning class and the other 2 periods i.e., 40% were taken in the afternoon. Lastly school 6 has a total of 5 environmental education periods in a week and 4 periods (80%) were devoted in the morning class and 1(20%) periods were devoted in the afternoon.

4.6.2 Time slots given to environmental education for class 2

Table 4.15

Time slots given to environmental education for class 2

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	100%	-	-	5
School 2	5	100%	-	-	5
School 3	3	60%	2	40%	5
School 4	4	80%	1	20%	5
School 5	4	66.67%	2	33.33%	6
School 6	4	100%	-	-	4

Source: Field Study

The above table 4.15 shows the time table of class 2 students from all the schools visited. From the above table it was found out that school 1 and 2 has a total of 5 environmental education periods in a week out of which in both the school 5 periods ie, 100% were taken in the morning. School 3 has a total of 5 environmental education periods in a week in which 3

periods i.e., 60%% periods were taken in the morning and 40% i.e. 2 periods were taken in the afternoon. School 4 has 5 environmental education periods in a week out of which 4(80%) periods were taken in the morning and only 1(20%) period were taken in the afternoon. School 5 has 6 environmental education periods in week out of which 4 i.e., 66.67% periods were devoted in the morning class and 2 periods i.e. 33.33% were taken in the afternoon periods. School 6 has a total of 4 environmental education periods in a week. Out of this 4(100%) periods were taken in the morning class and the other 2 periods i.e., 40% were taken in the morning.

4.6.3 Time slots given to environmental education for class 3

Table 4.16

Time slots given to environmental education for class 3

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	100%	-	-	5
School 2	3	60%	2	40%	5
School 3	5	100%	-	-	5
School 4	3	75%	1	25%	4
School 5	4	100%	-	-	4
School 6	3	60%	2	40%	5

Source: Field Study

The above table 4.16 shows the time table of class 3 students from all the schools visited. The table revealed that school 1 and 3 has a total of 5 environmental education periods in a week out of which all the 5 periods i.e., 100% were taken in the morning. School 2 and 6 has also a total of 5 environmental education periods in a week in which in both the school 3 periods i.e., 60% periods were taken in the morning and 2 periods (40%) periods have been taken in the afternoon. School 4 and 5 has 4 environmental education periods in a week in which school 4 has 3 (75%) environmental education periods in the morning and only 1(25%) period was taken in the afternoon. While school 5 has 4(100%) periods in the morning.

4.6.4 Time slots given to environmental education for class 4

Table 4.17

Time slots given to environmental education for class 4

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	3	60%	2	40%	5
School 2	4	66.67 %	2	33.33%	6
School 3	2	50%	2	50%	4
School 4	5	100%	-	-	5
School 5	5	100%	-	-	5
School 6	3	60%	2	40%	5

Source: Field Study

The above table 4.17 shows the time table of class 4 students from all the schools visited. The table shows that school 1 has a total of 5 environmental education periods in a week in which 60% periods were taken in the morning and 40% periods were taken in the afternoon. School 2 has a total of 6 environmental education periods in a week in which 66.67% periods were taken in the morning and 33.33% periods were taken in the afternoon. School 3 has a total of 4 environmental education periods in a week in which 2(50%) periods were taken in the morning and morning and the other 2(50%) periods was taken in the afternoon. School 6 had also 5 environmental education periods in week and 3(60%) were given in the afternoon periods.

4.6.5 Time slots given to environmental education for class 5

Table 4.18

Time slots given to environmental education for class 5

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	50%	5	50%	10
School 2	3	60%	2	40%	5
School 3	4	66.67%	2	33.33%	6
School 4	3	75%	1	25%	4
School 5	3	60%	2	40%	5
School 6	3	60%	2	40%	5

Source: Field Study

The above table 4.18 shows the time table of class 5 students from all the schools visited. It was found out that school 1 has a total of 10 environmental education periods in a week in which 50% periods were taken in the morning and the other 50% periods were taken in the afternoon. School 2 has a total of 5 environmental education periods in a week in which 60% periods were taken in the morning and 40% periods were

taken in the afternoon. School 3 has a total of 4 environmental education periods in a week in which (66.67%) periods were taken in the morning and morning and the other (33.33%) periods was taken in the afternoon. School 4 has a total of environmental education periods in week and (75%) periods were given in the morning and 25% periods were taken in the afternoon periods. School 5 and 6 had 5 environmental education periods in a week in which in both the school 60% periods were taken in the morning and the other 40% periods were taken in the afternoon.

4.6.6 Time slots given to environmental education for class 6

Table 4.19

Time slots given to environmental education for class 6

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	100%	--	-	5
School 2	3	60%	2	40%	5
School 3	4	80%	1	20%	5
School 4	8	88.89%	1	11.11%	9
School 5	3	60%	2	40%	5
School 6	4	66.67%	2	33.33%	6

Source: Field Study

The above table 4.19 shows the time table of class 6 students from all the schools visited in which school 1 has a total of 5 environmental education periods in a week in which all the periods were taken in the morning period. School 2, 3 and 5 had a total of 5 periods out of which in both school 2 and 5 60% periods were devoted in the morning and the remaining 40% periods were taken in the afternoon periods. School 4 had 9 environmental education periods in a week in which majority of the periods ie, 8(88.89%) were taken in the morning while only 1(11.11%) were taken in the afternoon. School 6 had a total of 6 environmental education periods in a week in which 66.67% periods were taken in the morning and 33.33% periods were taken in the afternoon.

4.6.7 Time slots given to environmental education for class 7

Table 4.20

Time slots given to environmental education for class 7

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	1	25%	3	75%	4
School 2	4	80%	1	20%	5
School 3	5	100%	-	-	5
School 4	5	83.33%	1	16.67%	6
School 5	4	66.66%	2	33.33%	6
School 6	3	60%	2	40%	5

Source: Field Study

The above table 4.20 shows the time table of class 6 from all the schools visited in which school 1 has a total of 4 environmental education periods in a week. Out of these 4 periods only 1(25%) period was taken in the morning and 3(75%) periods were devoted in the afternoon periods. School 2

has 5 environmental education periods in a week in which 4(80% periods were devoted in the morning time and only 1(20%) period was taken in the afternoon. School 3 has a total of 5 environmental education periods in a week in which all the 5 periods i.e., 100% were taken in the morning period. School 4 had 6 periods in which majority of the periods i.e., 5(83.33%) were given in the morning period while only 1(16.67%) period was taken in the afternoon. School 5 had also 6 environmental education periods in a week in which 4(66.66%) periods were given in the morning period and only 2 i.e., 33.33% periods were given in the afternoon periods. The last school 6 had 5 environmental education periods in a week and out of this 5 periods 2 i.e., periods 40% periods were taken in the afternoon time while the other 3 schools ie.60% periods were taken in the morning time.

4.6.8 Time slots given to environmental education for class 8

Table 4.21

Time slots given to environmental education for class 8

Category	Morning classes for environmental education		Afternoon classes for environmental education		Total number of environmental education period in a week
	No	%	No	%	
School 1	5	100%	-	-	5
School 2	3	60%	2	40%	5
School 3	3	60%	2	40%	5
School 4	4	66.67%	2	33.33%	6
School 5	3	50%	3	50%	6
School 6	3	60%	2	40%	5

Source: Field Study

The above table 4.21 shows the time table of class 8 from all the schools visited in which school 1 has a total of 5 environmental education periods in a week ie,100% which were taken in the morning. School 2, 3 and 6 had a total of 5 environmental education periods in a week in which in all this

three school three periods were taken in the morning i.e., 50% and another 40% periods were devoted in the afternoon time .School 4 & 5 had both 6 environmental education periods in a week in which in school 4(66.67%) of periods were devoted in the morning and the other 33.33% periods were taken in the afternoon. While school 5 had 3(50%) each period both in the morning and evening.

4.7.0 TO STUDY THE ENVIRONMENTAL AWARENESS OF THE STUDENTS IN ELEMENTARY SCHOOLS

Table 4.22

Environmental awareness of class of VIII students

Score Category	Number of students	Percentage of students
Below 71	23	18.4%
72-97	85	68%
Above 98	17	13.6%
Total	125	100%

Source: Field Study

Environmental awareness scale is given to class VIII students from all the schools visited in which there were a total of 125 students.

The investigator divided the scores into three groups those scoring low, average and high. In order to achieve this standard deviation and mean from the score is calculated. The calculated standard deviation and mean were added and subtracted as follows. Students who scored between 45-71 were put in the group of low scorer, students who scored below 71 marks were put in the group of low scorer and students who scored between 72-97 marks were put in the group of average scorer and students who scored above 98 marks were put in the group of high scorer.

The above table 4.22 revealed that there were 18.4 % of students who scored below the marks of 71 and were placed in the group of low scorer, there were 68 % of students from the average scorer group who scored between the marks of 72 -97 while the other 13.6 % of students from the high scorer group scored above 98 marks. This shows that students from the schools visited had at least a minimal knowledge about the environment. This is not surprising that since environmental education had been introduced as an integral part of the school curriculum from class 1. School is one institutional framework through which environmental education can be introduced. Learning environmental education from the beginning of school helps the students in getting knowledge about the environment. Earlier studies of the subject prove helpful for the students in presenting their knowledge about the environment. It develops

in the student's basic understanding of the environment and its interrelationship with men and develops in them the skills to solve environmental problems. It was introduced from class -1 as a subject so that right from their childhood, the right attitudes towards environment will be nurtured in the young minds.

4.8.0 TO FIND THE DIFFERENCE BETWEEN THE LEVEL OF ENVIRONMENTAL AWARENESS AMONG BOYS AND GIRLS

Table 4.23

Difference between the level of environmental awareness among boys and girls

Category	N	Mean	Standard deviation	Mean difference	Standard error of mean difference	T value
Male	50	81.8	12.63	4.6	2.36	1.98
Female	75	86.4	13.30			

Source: Field Study

The above table 4.23 shows a comparative statistic on the significance of the level of difference on environmental awareness among boys and girls students. From the total no of boys students we can find out that the mean of boys students is 81.8 in which their standard deviation is 12.62 whereas on

the other hand there are 75 female students in which there mean is 86.4 and there standard deviation is 13.30 and this result that the mean difference of boys and girls is 4.6. The t-value for the significance of difference between the mean and the standard deviation with $df = 123$ is 1.98. As the required t-value to determine the significance of difference at 0.01 level is 2.63 and 0.05 level is 1.98, the findings of the t-value shows that there is a significance difference level between the environmental awareness between boys and girls students. The above table shows that girls students have more environmental awareness than boys students.

4.9.0 TO SUGGEST MEASURES TO IMPROVE THE TEACHING OF ENVIRONMENTAL EDUCATION IN ELEMENTARY SCHOOLS IN MIZORAM

Importance should be given to environmental education so that the basic objectives of developing awareness, skill and attitude are attained and new patterns of behaviour of individuals, group and society as a whole towards the environment is created. Furthermore, the following measures may be taken up in order to improve the teaching of environmental education in elementary schools

1. Effective environmental education should be imparted from primary level to inculcate right attitude from the beginning keeping in view the principals of development.

2. Environmental education should be activity based learning in order to enhance, encouraged and motivate the students to learn and bring new life and meaning into their school experience rather than simply teaching through lecturing.
3. The government should provide the schools with necessary resources like teaching materials in order to enhance the learning of environmental education.
4. Schools should offer different special activity related to environmental education.
5. Parents should be given suggestions for things to do with their children at home regarding environmental protection.
6. The schools need more encouragement, resources, and time to devote attention to environmental education.
7. Adequate resource supports to teachers in shape of books, manuals, teaching materials should be provided.
8. The government should provide necessary funding and other support to train teachers to incorporate environmental education into their everyday lesson plans and to develop the confidence and skills to take their students outdoors to learn.
9. Teachers should be trained to involve themselves in the process of designing instructional materials as well as teaching aids.

10. Adequate researches should be conducted in the area of environmental education to strengthen it in the country.
12. Parents should not hold that teach and train their children is the only responsibility of the school. As such they must be willing and should put all their efforts to develop environment friendly behaviour with their children.
13. Students should be encouraged to be inquisitive about the things and events around them.
14. Students should be encouraged to collect pictorial information about environmental issues from different journals, magazines etc and also develop their own and display these materials in their classroom.
15. Environmental education should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
16. Project works related to the contents of environmental education should be assigned to the students for developing interest and investigative attitude.
17. As far as possible school should take part in local environmental campaign. The institution as well as the teacher must be responsible in motivating and engaging the students to get involved in community action and to take part in various local environmental campaigns.

CHAPTER – V

**MAJOR FINDINGS, DISCUSSIONS,
CONCLUSIONS AND SUGGESTIONS FOR FURTHER
RESEARCH**

5.1.0 MAJOR FINDINGS

**5.1.1 Findings relating to the analysis of the contents of
the textbooks on environmental education at the
elementary level**

From the analysis of data collected the investigator found out that the contents of the textbook on environmental studies at the elementary level were well defined and relevant for their age group. The topics under study were quite adequate to inculcate a sense of awareness of their environment. It exposes children to the actual world they live in and also help children to explore and connect with their natural and human made surroundings. The textbooks of class 1-8 lay emphasis on raising awareness levels and sensitising children about environmental concerns. The textbook represent relevant ideas commensurate with the age and developmental level of children so as to provide them the necessary understanding about their immediate environment and enable children to locate and comprehend relationships between the natural, social and cultural environment. The syllabus invariably aims at providing

children with knowledge, attitudes and skills so that they are equipped to contribute meaningfully towards the betterment of the environment and accomplish the goal of sustainable development.

5.1.2 Findings relating to the mode of transaction of environmental education at the elementary level

Through the analysis of data collected the investigator found out that 100% of all the schools visited had adopted lecture method of teaching for the study of environmental education while only two schools i.e. 33.33% had conducted fieldtrips. None of the schools visited conducted demonstration and experimental method of teaching for the study of environmental education. From the present study it was found out that the most common teaching methods adopted in all the schools were lecture method of teaching. This indicates that there was a need to conduct more activity based learning for the study of environmental education at the elementary level in order to motivate and encouraged the students regarding environmental awareness.

5.1.3 Findings relating to the teaching aids available for the teaching of environmental education

100 % of all the schools visited had used different kinds of teaching aids for the teaching of environmental education. In all the schools visited depending on the concerned class teacher

the type of teaching aids used were not the same. The common teaching aids used were materials like globes, maps, charts, pictures, atlas etc. Even though all the six schools had used teaching aids, it was more commonly used at the lower classes than the upper classes. All the schools visited had given much priority to different teaching aids for the study of environmental education as it focus the attention, and motivate learners' interest and also make learning more practical, exciting and lively. These kind of instructional materials are important tools in the study of environmental education as it provides and carries information to students and also create interest of the students regarding the environment. The teaching materials make teaching learning process very effective, easy understanding and interesting.

5.1.4 Findings relating to the evaluation procedures of environmental education at the elementary level

Through the analysis of data collected it was found out that all the schools visited had examination on environmental education subject and there were no schools that did not have examination on environmental education subject. Besides, no practical examination on environmental education was conducted by the schools selected for the sample however project works related to environment education was also given to the students by the concerned environmental education teachers in each school.

5.1.5 Findings relating to the academic background of teacher teaching environmental education at the elementary level

From the analysis of data collected through questionnaire the investigator found out that there were a total of 23 environmental education teachers from all the schools visited. Out of the 23 environmental education teachers 6 teachers i.e., 26.09% were under graduate teachers. There were 14 teachers i.e., 60.87% who have an academic qualification of graduate and there were only 3 environmental education teachers i.e., 13.04% who were post graduate teachers. Out of the 23 environmental education teachers 69.56% of teachers were from arts background, 26.08% of teachers were from science background and the other 4.35 % were from commerce background. Majority of the teachers from all the schools visited were graduate teachers while post graduate teachers are less than the under graduate teachers. If teachers do not possess the necessary knowledge, understanding, skills or commitment to environmentalize and transact the curriculum it is very unlikely that they will be able to produce environmentally literate students. Teachers, thus, become the key to the successful transaction of environmental education in schools.

5.1.6 Findings relating to the professional training of teacher teaching environmental education at the elementary level

There were a total number of 23 environmental education teachers from all the schools visited. Through the analysis of data the investigator found out that out of the 23 environmental education teachers 30.43% of teachers were trained teachers while 69.57% of teachers were untrained teachers. This indicates the need of more trained teacher for students from the early grades to encouraged children to implement sustainable environmental projects that could create environmental awareness and responsibility for a better and healthier environment. The teachers therefore need proper training to apply the knowledge, understanding and skills to seek solutions to the environmental problems that students are likely to face in their own daily lives.

5.1.7 Findings relating to the time slots given to environmental education in school time table

In all the schools visited majority of the environmental education classes had been taken in the morning than in the afternoon. The finding indicates that all the schools visited had given much priority to morning classes for the study of environmental education.

5.1.8 Findings relating to the environmental awareness of students in elementary schools

From the analysis of data collected it was found out that there were 18.4 % of students who scored below 71 marks and were placed in the group of low scorer, there were 68 % of students who were placed in the average scorer group and scored between the marks of 72-97 while there were 13.6 % of students who scored more than 98 marks and they were placed in the high scorer group. This shows that students from the all the schools visited had at least a minimal knowledge concerning the environment. It was not surprising that since environmental education had been introduced as an integral part of the school curriculum from class 1, earlier studies of the subject prove helpful for the students in presenting their knowledge about the environment. It develops in the student's basic understanding of the environment and its interrelationship with men and develops in them the skills to solve environmental problems. The inculcation of the subject from the early stage of class develop in the students an informed concern and sense of responsibility for the environment.

5.1.9 Findings relating to the difference between the level of environmental awareness among boys and girls

The calculated t-value for the significance of difference between the mean and the standard deviation of environmental awareness among boys and girls with $df=123$ is 1.98. As the

required t-value to determine to determine the significance at 0.05 is 1.98, the findings of the t- value shows that there is a significant difference between environmental awareness among boys and girls.

5.2.0 DISCUSSIONS

Students from all the schools visited had at least a minimal knowledge about the environment. This is because since environmental education had been introduced as an integral part of the school curriculum from class 1 it developed in the students informed concern and sense of responsibility for the environment.

Teaching aids like globe, map, charts pictures were used for the teaching of environmental education at the elementary level. Every individual has the tendency to forget. Proper use of teaching aids helps to retain more concepts permanently. Students can learn better when they are motivated properly through different teaching aids. Besides it provides direct experience to the students and creates the environment of interest for the students and provide complete example for conceptual thinking.

Lecture method is the most common teaching methods adopted for the teaching of environmental education in the schools visited. The reasons why lecture method is most commonly used may be that it is the easiest and simplest way of teaching methods adopted for all the teaching leaning process

for both the teachers and students while only a few schools have conducted field trips in order to motivate and encourage the students regarding environmental education. This will bring an impact to the students in increasing their environmental knowledge beyond the text book.

The result presented in this paper shows that there was no practical examination in environmental education. But the need of the hour is to inculcate activity based learning to encourage the students to actively participate and involved in the teaching leaning process of environmental education.

It was revealed from the findings that majority of the teachers were untrained teachers. Teacher is the backbone for the students. A well trained teacher is needed in all the schools regarding environmental concern. The findings also revealed that majority of environmental education teachers were graduate teachers but all of the teachers had not attended any training programmes offered concerning environmental education. It is necessary that the teacher should have an adequate knowledge about the environment without which the students will not be able to get the right kind of information. Lack of knowledge of the teacher about the environment can have a bad impact to the students resulting in lack of understanding about the environmental education they are about to receive.

The result presented in this paper shows that none of the schools selected as sample do not take part in any local environmental campaigns, this may be due to the fact that the school do not give importance to the environmental education beyond the textbook. This may have an impact on the students in getting knowledge and information of what is being happened outside the school concerning environmental problems. So it is necessary that the institution as well as the teacher must be responsible in motivating and engaging the students to get involved in community action and to take part in various local environmental campaigns.

5.3.0 CONCLUSION

From the present study on environmental education in elementary schools in Mizoram, the investigator concluded that most of the students at the elementary schools have an awareness concerning environmental education and its related problems as environmental education have been introduced from the early stage of class 1. This awareness will surely enable the students to tackle the problems by themselves when they become adults. Besides environmental education should be activity based learning in order to motivate and encouraged the students in order to make learning more effective and real. Teachers, thus, become the key to the successful transaction of environmental education in schools. They play a central role in building necessary abilities and competencies in children for exploring, understanding, appreciating and participating in environmental protection and conservation. In order to achieve

this, the teacher needs to be empowered to create awareness, attitude and concern in children and facilitate them in understanding and solving environmental problems. This calls for a systematic training in the content and pedagogy of environmental education for the students.

5.4.0 SUGGESTIONS FOR FURTHER RESEARCH

1. Status of environmental education in higher secondary levels in Mizoram.
2. Comparison of private and government schools within Aizawl district on the teaching of environmental education.
3. A comparative study on environmental education between urban and rural school.
4. Effect of environmental education on students achievement.
5. The status of environmental education teachers in Aizawl district.

SUMMARY

INTRODUCTION

The environment has always been a matter of great concern for the people in general. It refers to all social, economic, biological, physical and chemical factors which constitute the surroundings of man and includes all those things on which we are directly or indirectly dependent for our survival. Environmental Protection Act (1986) defined “Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property”.

Environmental education is education that is intimately connected with the environment. It is education about the environment, through the environment and for the environment. It is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions. It is a process by which people develop awareness, concern and knowledge of the environment and learn to use this understanding to preserve, conserve and utilize the environment in a sustainable manner for the benefit of present and future generations.

Environmental education has an important role to play in the promotion of environmental awareness at the

elementary levels of education. Early environmental experiences help shape children's values, perspectives and understanding of the environment and how to interact with it. This is the stage where they are most active and most willing to learn new things. It should be remembered that they are the generations for tomorrow and they are the ones who will be making major decisions concerning the environment. To prepare them for such responsibilities, they need a sound environmental education as a foundation from which to make those decisions. This is why it has been included in the school curriculum as a way to encourage students to observe, investigate and experiment. It prepares students to make well informed decisions in regard to the environment. However the content in the curriculum and the way it is being transacted in the classroom plays a vital role in the development of environmental awareness in children. It helps children develop their own insights into the functioning of several things or understanding human processes in their environment. Such interactions with their surrounding environments are immensely important in the healthy development of children.

According to Ruth Wilson (1994), 'environmental education in early childhood includes the development of a sense of wonder; appreciation for the beauty and mystery of the natural world opportunities to experience the joy of closeness to nature and respect for other creatures. It also includes the development of problem-solving skills and the

development of interest and appreciation in the world around us’.

RATIONALE OF THE STUDY

At present, human beings are facing grave environmental problems and adjustment to changes in the environment has become a huge challenge. All members of the society depend on natural resources to survive. The availability of these resources has limits. It is essential, therefore that people understand the need of environment to their quality of life and they have the knowledge, tools and skills to live in ways that minimize the impact of their actions on environment. The future health and welfare of our nation depends on our earth’s resources and sustained developmental activities. A positive attitude and informed environmental decisions are conducive to sustainability. These are possible only through a sound understanding of the environment. Thus, awareness about this now fragile environment becomes a necessity if human beings desire to have a longer stay in this planet.

Since formal education plays such a vital role in the generation of sound environmental awareness and values it is important to know the content of curriculum, the teaching strategies and the various learning experiences that students are exposed to at this stage. Therefore an analysis of environmental education given in schools is

important if one really wants to know whether schools are providing their students with the right kind of experiences.

Today's children will be responsible for making decisions that will shape the health of the environment. To prepare them for such responsibilities, they need a sound environmental education as a foundation from which to make those decisions. Early environmental education experiences help shape children's values, perspectives, and understanding of the environment and how to interact with it.

STATEMENT OF THE PROBLEM

In light of the various results found in studies on environmental education in India and abroad and the lack of a similar study within the state, the investigator considered such a study a matter of extreme importance. Therefore the present study may be stated as ***“Environmental Education in Elementary Schools in Mizoram: An Analytical Study”***

OBJECTIVES OF THE STUDY

- 1) To prepare a brief analysis of the contents of textbooks on environmental education at the elementary level.
- 2) To examine the mode of transaction of environmental education at the elementary level.

- 3) To examine the teaching aids available for teaching of environmental education at the elementary level.
- 4) To study the evaluation procedures of environmental education at the elementary level.
- 5) To study the academic background and professional training of teacher teaching environmental education at the elementary level
- 6) To examine the time slots given to environmental education in school time table.
- 7) To study the environmental awareness of the students in elementary schools.
- 8) To find the difference between the level of environmental awareness among boys and girls.
- 9) To suggest measures to improve teaching of environmental education in elementary schools in Mizoram.

OPERATIONAL DEFINITIONS OF THE KEY TERMS USED

Environmental education: Environmental education, in the present study means the environmental education given to elementary school students through textbook meant for the teaching of this subject.

Elementary school: Elementary school is a period of formal education before high school. It encompasses grades 1-8

DELIMITATION OF THE STUDY

The present study has been confined to elementary schools within Aizawl city for better realization of objectives within limited time period.

REVIEW OF RELATED LITERATURE

A number of studies on and about the environment have been done. The following is some of the studies that were conducted on environmental education in and outside the country.

Pandey S (2000) in his article “Status of environmental Education” concluded that training of teachers into effective strategies for environmental components, both at the school and university level should be introduced as an integral part of the programmes of teacher education departments. The regional resource centre in environmental education should be made more dynamic and functional by undertaking programmes of teachers involvement and teacher preparation at the grass roots level.

Tony Loughland (2003) in his study on ‘Factors Influencing Young People’s Conception of Environment’ stressed the need for students to receive some sort of environmental education in their early development years

so they can view the environment as a “relation” rather than an “object”. The only way to develop this kind of thinking in students is to instill it in them at an early age so it becomes second nature to them.

Vernal, Louis (2006) studied “Pedagogy in environmental education” and found that children from their earlier years should be oriented towards learning from the surroundings using the local environment as a medium for inquiry or discovery as a source of materials for realistic activities. He has further pointed out that in environmental education there is more stress on environmental actions and skills.

Bhosle, Smriti (2006) in her research paper entitled “Environmental education in schools” examined that the limitless greed, neckless consumption of natural resources and unkind treatment meted out to environment have increasingly damaged the world. This has caused a global concern about the conservation and protection of the earth’s environment.

ORGANISATION OF THE REPORT

Chapter-I: The First chapter deals with the introduction, rationale of the study, objectives and delimitations of the study.

Chapter-II: The Second chapter on the review of related literature encompasses the related studies conducted in India and abroad and place the study in the context of the related literature.

Chapter-III: The Third chapter on the strategy of inquiry includes matters related to the method of study, tools of data collection, sources of data and statistical treatment of data.

Chapter-IV: The Fourth chapter is on analysis and interpretation of data related to various issues related to awareness of environmental education at elementary schools in Mizoram.

Chapter-V: The last chapter i.e., Fifth chapter includes the major findings, discussions, suggestions for further research and conclusions of environmental education at the elementary level.

METHODOLOGY

1. Method of Study:

With the objectives clearly in mind, the present study has adopted the descriptive method of study concerning the status of environmental education in

elementary schools in Mizoram. Such a kind of study demanded a comprehensive knowledge about:

- d)* The existing status of different areas of environmental education at elementary level
- e)* The level of environmental awareness of students at elementary level of education and
- f)* How to improve the teaching of environmental education at the elementary school level.

Therefore, efforts were made to collect the required data, analyse them and interpret them as is normally done in descriptive method.

2. Population:

The population comprised of students from all elementary schools within Aizawl city.

3. Sample:

All Class VIII students from 2 schools of each educational block (east, west and south) within Aizawl city comprised the sample of the study.

4. Tools of data collection:

Data was collected from primary and secondary sources. Primary data were obtained from:

- (iii) Environmental Awareness Scale by Dr. Haseen Taj, Department of Education, Bangalore University.
- (iv) Observation-cum-interview schedule developed by the investigator.

Secondary Data were obtained from:

- (iii) Statistical Cell, Directorate of School Education, Government of Mizoram, in order to collect data for information concerning the number of elementary schools in Aizawl district along with the number of students enrolled.
- (iv) School offices of selected sample schools to collect required information.

5. Statistical treatment of data:

The analysis of data was done by descriptive statistics like percentage, measures of central tendency, and t-test.

MAJOR FINDINGS

1. Findings relating to the overview of the contents of the textbook on environmental studies at the elementary level

From the analysis of data collected the investigator found out that the contents of the textbook on environmental studies at the elementary level were well defined and relevant for their age group. The topics under study were quite adequate to inculcate a sense of awareness of their environment. It exposes children to the

actual world they live in and also help children to explore and connect with their natural and human made surroundings. The textbooks of class 1-8 lay emphasis on raising awareness levels and sensitising children about environmental concerns. The textbooks represent relevant ideas commensurate with the age and developmental level of children so as to provide them the necessary understanding about their immediate environment and enable children to locate and comprehend relationships between the natural, social and cultural environment. The syllabus invariably aims at providing children with knowledge, attitudes and skills so that they are equipped to contribute meaningfully towards the betterment of the environment and accomplish the goal of sustainable development.

2. Findings relating to the mode of transaction of environmental education

Through the analysis of data collected the investigator found out that 100% of all the schools visited had adopted lecture method of teaching for the study of environmental education while only two schools i.e. 33.33% had conducted fieldtrips. None of the schools visited conducted demonstration and experimental method of teaching for the study of environmental education. From the present study it was found out that the most common teaching methods adopted in all the schools were lecture method of teaching. This indicates that there was a need

to conduct more activity based learning for the study of environmental education at the elementary level in order to motivate and encouraged the students regarding environmental awareness.

3. Findings relating to the teaching aides available for the teaching of environmental education

100 % of all the schools visited had used different kinds of teaching aides for the teaching of environmental education. In all the schools visited depending on the concerned class teacher the type of teaching aides used were not the same. The common teaching aides used were materials like globes, maps, charts, pictures, atlas etc. Even though all the six schools had used teaching aides, it was more commonly used at the lower classes than the upper classes. All the schools visited had given much priority to different teaching aides for the study of environmental education as it focus the attention, and motivate learners' interest and also make learning more practical, exciting and lively.

4. Findings relating to the evaluation procedures of environmental education in elementary schools

Through the analysis of data collected it was found out that all the schools visited had examination on environmental education subject and there were no schools that did not have examination on environmental education subject. Besides, no practical examination on

environmental education was conducted by the schools selected for the sample however project works related to environment education was also given to the students by the concerned environmental education teachers in each school.

5. Findings relating to the academic background of teacher teaching environmental studies in elementary schools

From the analysis of data collected through questionnaire the investigator found out that there were a total of 23 environmental education teachers from all the schools visited. Out of the 23 environmental education teachers 6 teachers i.e., 26.09% were under graduate teachers. There were 14 teachers i.e., 60.87% who have an academic qualification of graduate and there were only 3 environmental education teachers ie, 13.04% who were post graduate teachers. Majority of the teachers from all the schools visited were graduate teachers while post graduate teachers are less than the under graduate teachers. If teachers do not possess the necessary knowledge, understanding, skills or commitment to environmentalize and transact the curriculum it is very unlikely that they will be able to produce environmentally literate students. Teachers, thus, become the key to the successful transaction of environmental education in schools.

6. Findings relating to the professional training of teacher teaching environmental studies in elementary schools

There were a total number of 23 environmental education teachers from all the schools visited. Through the analysis of data the investigator found out that out of the 23 environmental education teachers 30.43% of teachers were trained teachers while 69.57% of teachers were untrained teachers. The teachers therefore need proper training to apply the knowledge, understanding and skills to seek solutions to the environmental problems that students are likely to face in their own daily lives.

7. Findings relating to the time slots given to environmental studies in school time table

In all the schools visited majority of the environmental education classes had been taken in the morning than in the afternoon. The finding indicates that all the schools visited had given much priority to morning classes for the study of environmental education.

8. Findings relating to the environmental awareness of students in elementary schools

From the analysis of data collected it was found out that there were 18.4 % of students who scored below 71 marks and were placed in the group of low scorer, there

were 68 % of students who were placed in the average scorer group and scored between the marks of 72-97 while there were 13.6 % of students who scored more than 98 marks and they were placed in the high scorer group. This shows that students from the all the schools visited had at least a minimal knowledge concerning the environment. It was not surprising that since environmental education had been introduced as an integral part of the school curriculum from class 1. The inculcation of the subject from the early stage of class develop in the students an informed concern and sense of responsibility for the environment.

9. Findings relating to the difference between the level of environmental awareness among boys and girls

The calculated t-value for the significance of difference between the mean and the standard deviation of environmental awareness among boys and girls with $df=123$ is 1.98. As the required t-value to determine to determine the significance at 0.05 is 1.98, the findings of the t- value shows that there is a significant difference between environmental awareness among boys and girls.

SUGGESTIONS FOR FURTHER RESEARCH:

1. Status of environmental education in higher secondary levels in Mizoram.
2. Comparison of private and government schools within Aizawl district on the teaching of environmental education.
3. A comparative study on environmental education between urban and rural school.
4. Effect of environmental education on students achievement.
5. The status of environmental education teachers in Aizawl district

CONCLUSION:

From the present study on environmental education in elementary schools in Mizoram, the investigator concluded that most of the students at the elementary schools have an awareness concerning the environment and its related problems as environmental education

have been introduced from the early stage of class 1. This awareness will surely enable the students to tackle the problems by themselves when they become adults. Besides environmental education should be activity based learning in order to motivate and encouraged the students in order to make learning more effective and real. Teachers, thus, become the key to the successful transaction of environmental education in schools. They play a central role in building necessary abilities and competencies in children for exploring, understanding, appreciating and participating in environmental protection and conservation. In order to achieve this, the teacher needs to be empowered to create awareness, attitude and concern in children and facilitate them in understanding and solving environmental problems. This calls for a systematic and robust training in the content and pedagogy of environmental education for the students.

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TITLE OF DISSERTATION : Environmental
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**MEASURES TO IMPROVE THE TEACHING OF
ENVIRONMENTAL EDUCATION IN ELEMENTARY
SCHOOLS**

From the findings in the present study, the investigator suggests the following measures to be taken up in order to improve the teaching of environmental education in elementary schools.

1. Effective environmental education should be imparted from primary level to inculcate right attitude from the beginning keeping in view the principals of development
2. Environmental education should be activity based learning in order to enhance, encouraged and motivate the students to learn and bring new life and meaning into their school experience rather than simply teaching through lecturing.
3. The government should provide the schools with necessary resources like teaching materials in order to enhance the learning of environmental education.
4. Schools should offer different special activity related to environmental education.
5. Parents should be given suggestions for things to do with their children at home regarding environmental protection.
6. The schools need more encouragement, resources, and time to devote attention to environmental education.

7. Adequate resource supports to teachers in shape of books, manuals, teaching materials should be provided.
8. The government should provide necessary funding and other support to train teachers to incorporate environmental education into their everyday lesson plans and to develop the confidence and skills to take their students outdoors to learn.
9. Teachers should be trained to involve themselves in the process of designing instructional materials as well as teaching aids.
10. Adequate researches should be conducted in the area of environmental education to strengthen it in the country.
12. Parents should not hold that teach and train their children is the only responsibility of the school. As such they must be willing and should put all their efforts to develop environment friendly behaviour with their children.
13. Students should be encouraged to be inquisitive about the things and events around them.
14. Students should be encouraged to collect pictorial information about environmental issues from different journals, magazines etc and also develop their own and display these materials in their classroom.

15. Environmental education should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
16. Project works related to the contents of environmental education should be assigned to the students for developing interest and investigative attitude.
17. As far as possible school should take part in local environmental campaign. The institution as well as the teacher must be responsible in motivating and engaging the students to get involved in community action and to take part in various local environmental campaigns.

SUGGESTIONS FOR FURTHER RESEARCH

1. Status of environmental education in higher secondary levels in Mizoram.
2. Comparison of private and government schools within Aizawl district on the teaching of environmental education.
3. A comparative study on environmental education between urban and rural school.
4. Effect of environmental education on students achievement.

5. The status of environmental education teachers in Aizawl district

CONCLUSION

From the present study on environmental education in elementary schools in Mizoram, the investigator concluded that most of the students at the elementary schools have an awareness concerning the environment and its related problems as environmental education have been introduced from the early stage of class 1. This awareness will surely enable the students to tackle the problems by themselves when they become adults. Besides environmental education should be activity based learning in order to motivate and encouraged the students in order to make learning more effective and real. Teachers, thus, become the key to the successful transaction of environmental education in schools. They play a central role in building necessary abilities and competencies in children for exploring, understanding, appreciating and participating in environmental protection and conservation. In order to achieve this, the teacher needs to be empowered to create awareness, attitude and concern in children and facilitate them in understanding and solving environmental problems. This calls for a systematic training in the content and pedagogy of environmental education for the students.

