

**ENVIRONMENTAL ETHICS AMONG SECONDARY SCHOOL
STUDENTS IN AIZAWL CITY, MIZORAM**

**Dissertation Submitted in Partial Fulfillment for Degree of Master of
Philosophy in Education**

Submitted by

Christina V.L Hmangaihzuali
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Under the supervision of
Dr. H. MALSAWMI

Associate Professor
(Department of Education)



**DEPARTMENT OF EDUCATION
SCHOOL OF EDUCATION AND HUMANITIES
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DECLARATION

I, Christina V.L Hmangaihzuali, hereby declare that the subject matter of the dissertation entitled “Environmental Ethics Among Secondary School Students in Aizawl City, Mizoram”, is a record of work done by me, that the content of this dissertation did not form basis of the award of any previous degree to me, or to the best of my knowledge, to nobody else; and that the dissertation has not been submitted by me for any research degree in any other University/Institute.

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

(CHRISTINA V.L HMANGAIHZUALI)

Candidate

(Prof. R.P VADHERA)

(Dr. H. MALSAWMI)

Head

Supervisor

Department of Education

SUPERVISOR'S CERTIFICATE

This is to certify that Ms. Christina V.L Hmangaihzuali has completed her Thesis entitled "***Environmental Ethics Among Secondary School Students in Aizawl City, Mizoram***", under my guidance and is fit to be submitted for evaluation for the award of Master of Philosophy in Education.

Dated : Aizawl

Date : 20th July, 2015

(Dr. H. MALSAWMI)

Associate Professor

Department of Education

Mizoram University

Tanhril

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(CHRISTINA V.L HMANGAIHZUALI)

Department of Education

Mizoram University

Tanhril

Dated Aizawl

The 20th July 2014

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CHAPTER – I
CONCEPTUAL FRAMEWORK

CHAPTER I

CONCEPTUAL FRAMEWORK

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. Environment Protection Act 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”.

1.1.0 ENVIRONMENT:

Environment refers to the entirety of circumstances surrounding an organism or group of organisms, particularly the combination of external physical conditions that influence growth, progress, and survival of organisms. It is synonymous to territory and locale. Environment, according to the Oxford dictionary is the surrounding objects, circumstances of a life of a

person or a society, it encompasses all that is living or non-living, and parts of elements that affects the life of an organism.

Environment is defined as surrounding or conditions influencing development or growth. It can be understood as a system which includes all living and non-living things, i.e. air, water, soil, vegetation, flora and fauna.

In simple words, environment means conditions of life. It is a physical and biotic habitat which surrounds us, that we can see, touch, smell, hear and feel. In the words of Anne Anastassi (1937)¹, “The environment is everything that affects the life of an individual except his genes”.

The term “Environment” denotes totality of all extrinsic, physical and biotic factors affecting the life and behaviour of all living things. Therefore, it is important that the environment of which land, water, air, human beings plants and animals are the components should be preserved and protected from degradation to enable maintenance of the ecological balance. Considering that these natural resources sustain life on the planet being the basis of all our activities, whether agricultural, industry is of vital importance. The term environment owes its genesis to a French word “environ” means “encircle” and encompasses within it the land, water, flora,

fauna, living creatures, forests and everything on the earth. Environment etymologically relates to “surroundings” but obviously the concept that is relative to the object which is surrounded in the sense environment include anything. Environment in its generic sense comprises of air, water, land, the things imbibed and also embedded in the land. The more specific meaning is taken as covering the common physical surroundings such as air, space, waters, land, plants and wildlife. Even this meaning is still a vague and general one.

The complex term environment infers to conditions that influence living and nonliving organisms including plant life, air, water, sunlight etc., life and sources of life. Environment in its wide connotation also includes temperature, wind, electricity etc. All the necessities of life are derived from environment which is the life supporting system. Environment is the representative of physical components of earth wherein human beings are the important factor influencing the environment in the world.

The following are some of the meanings for the word “Environment”

Encyclopedia Britannica² “The entire range of external influence acting on an organism, both the physical and

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

C.C. Park (1980)³ “The term environment refers to the sum total of conditions which surround man at a given point in space and time.”

Dr. T.N.Khoshoo (1978)⁴ “The sum total of all conditions and influences that affect the development of life of all organisms.”

1.1.1 FACTORS OR COMPONENTS OF ENVIRONMENT:

Environmental factors are numerous, diverse and often intricately mixed and connected with one another. The various environmental factors function in unison. Rather most of the factors are inter-related and a change in our environment influences the other. The environment factors consist of the following spheres:

1. Non-living component or Abiotic component.
2. Living component or Biotic component.
3. Energy component.

1. Non-living component or Abiotic component: Under this category are non-living things like soil, air and water though in different forms. However, non-living component it is divided into three categories namely:

(a) Lithosphere (rocks, soil and solid air)

(b) Hydrosphere (water component)

(c) Atmosphere (gaseous envelope) which in turn is divided into four zones, namely:

(i) Troposphere

(ii) Stratosphere

(iii) Ionosphere and

(iv) Exosphere.

2. Living component or Biotic component: This component is consisting of flora and fauna including man.

3. Energy component: This component includes solar energy, geo-chemical energy, thermo-electrical energy, hydro-electrical energy, nuclear atomic energy, energy due to radiation etc., that helps maintaining the real life of organisms.

1.1.2 ENVIRONMENTAL ISSUES AND PROBLEMS:

When we talked about the Environment, there are several environmental Issues and problems plaguing the earth

which have gotten to be a major concern today. Most of these come about as a result of various man-made activities.

Environmental Issues and Problems in Present Times:

1. *Global warming:* It is one of the major issues that we are being faced with today. The term signifies an increase in the atmospheric temperature near the earth's surface, which is caused due to various reasons. Scientists are of the opinion that a rise in the carbon dioxide levels will further aggravate the situation.

The greenhouse effect causes the earth's heat to be trapped in the atmosphere, which results in the increase in temperatures. Global warming has thus caused a change in the climate of the earth, causing temperatures to rise. This, in turn, has an effect on various species dependent on the basic laws of nature. A change in the same makes survival a difficult issue. A warmer earth also causes changes in the rainfall patterns and thus affects humans, plants and animals as well.

2. *Deforestation:* Forests are an important part of the ecological cycle. They are a good source of oxygen, rainfall, moisture, etc. But deforestation has brought about a drastic change in the ecological balance of the earth. It takes years for a tree to grow and every year approximately 16 million hectares of forests are cut down for various purposes. This has resulted in a

climate shift, less rainfall, soil erosion, danger to wild animals etc.

3. *Energy Crisis:* Today, there are many options of energy sources such as petroleum, biofuel, coal etc. But all these sources are non-renewable sources and will get depleted in the coming years if their consumption is not checked. Apart from the energy crisis, resources such as coal and petroleum are contributing to the emission of greenhouse gases. Due to the excess usage of these energy sources, not only are the sources getting depleted, but they are also adding to the greenhouse gases which in turn are adding to the global warming conditions. So many countries are searching for alternative energy sources such as wind energy, solar energy, nuclear energy, etc., which may help in the future. But to get totally dependent on these resources and ensure their proper functioning may take some time.

4. *Ozone Layer Depletion:* Ozone is a protective layer which saves the earth from harmful ultra violet rays of the sun. But due to the emission of the CFC (Chlorofluorocarbon) gases the ozone layer is getting depleted. If the emission of these gases and other harmful gases are not checked, the ozone layer will disappear very soon. This may expose the living beings to harmful radiations which can cause life-threatening diseases like

skin cancer. Due to ozone depletion, humans are faced with various other problems such as dealing with the harmful effects of UV rays. These affect not only humans, but also affect plants and various species of animals as well.

5. *Pollution:* Pollution is something that we face on an everyday basis. It is probably a problem that we may have become immune to, given our fast-paced lives and the fact that is being treated as a hackneyed issue, where a lot is spoken about but nothing concrete is ever done.

There are many types of environmental pollution: Water pollution, Air pollution, Soil Pollution, Noise pollution etc. All these pollutions are very harmful and can cause a serious impact on living beings. Air pollution is related to the emission of harmful gases in the earth's atmosphere which is resulting in global warming. Water pollution on the other hand, is related to the dumping of waste materials in the water which causes harm to the aquatic as well as terrestrial life. Soil pollution is also related to the dumping of waste material in the soil which causes degradation of the soil. Now comes Noise pollution, which is related to the high frequency sound waves which are harmful for the ears.

6. *Improper Waste Management:* The world has progressed a lot but with this progress, the amount of harmful and toxic

wastes has increased. This problem has topped the list of environmental issues in America. Many industries which have waste materials like mercury, lead, motor oil, etc. do not process them properly and dump it in land or water which further results in the toxification of soil and water. This waste may also include radioactive waste which is very difficult to neutralize. This is a very serious current environmental issue.

Oil Spill have become another major concern which cause for the extinction of many marine species. This is mainly due to carelessness, accidents, wars, natural disasters etc. Many oil industries have contributed to this environmental issue.

7. Depletion of Resources: Resources can be classified into renewable and non-renewable resources. Though renewable resources can be regenerated, over usage may lead to an imbalance in the supply of it. Resource depletion has also been included in the list of major environmental issues as it plays a very important role in our daily life. Overpopulation, erosion, pollution, mining, overfishing, industrial development, deforestation, over-consumption or unnecessary usages of the resources are some of the reasons behind the depletion of resources. This problem may cause irreparable damage to the environment.

8. Over population: Experts consider overpopulation to be the worst among the other environmental issues. According to the estimation of the United Nations World Population Prospects report, the current population is growing by 74 million people per year approximately. This is a very serious problem as with the increase in population their needs will also increase. Insufficient land, resources, food and other basic necessity may give birth to many other problems and may also contribute to the existing ones. Hence, it is very important to keep an eye on the growing population not just for the sake of the environment but for the existence of our planet.

9. Nuclear issues: Many countries say proudly that they have nuclear weapons. But the fact is, nuclear weapons have become one of the most dangerous environmental issues today. The amount of nuclear weapon we have can destroy the entire earth in a few seconds. There are many disadvantages of nuclear power. Water is used to cool the reactors which then mixes up with the other water bodies and by this, it adds to the problem of global warming. The waste which is produced is so dangerous that even a small amount of nuclear waste can harm a big area and affect the living beings. The misuse of nuclear power has become a threat to the survival of life on earth.

10. Loss of biodiversity: Biodiversity refers to the combination of a diverse range of species on earth. The varied plants, animals and microorganisms, the different ecosystems (coral reefs, deserts, rain forests, etc.) all have a unique role to play in the cycle of earth. These diverse species lead to the boost of varied ecosystems, which thus enables them to prevent, as well as recover from several disasters. However, due to varied human activities like deforestation, and hunting, the natural habitats as well as the survival of several species are being threatened. Several plant and animal species are on the verge of extinction, while others have already become extinct. The extinction of animals and plants can lead to varied effects, some of which are – increase in sea levels (leading to floods), droughts, wildfires, forest destruction and more.

These are some of the current environmental issues we are facing today which need to be discussed and proper steps should be taken in order to save the planet. The list of environmental problems given above may look small but the problems discussed in this are enough to slowly, but surely destroy the entire earth. So, everyone should concentrate on the tips to save the environment and join hands to protect it. With an effort from each individual, we can only hope to save our planet from being destroyed.

1.2.0 ETHICS:

Ethics is the branch of philosophy in which man attempts to evaluate and decide upon at particular courses of moral action of general theories of conduct. It is considered a normative science, because it is concerned with norms of human conduct. The word 'Ethics' is derived from the Greek adjective 'ethica' which comes from the substantive 'ethos'. 'Ethos' means custom, usages or habits. The term 'moral' closely associated with ethics, comes from the Latin word 'mores' which primarily stands for 'custom' or 'habit' and secondarily means 'character'. Customs are not merely habitual ways of acting. They are also ways approved by the group. Thus, 'Ethics' literally means the science of custom or habits of men. In India also, the word 'dharma' has been explained in two ways. On one hand, it stands for preservation of traditional values as reflected in social customs; on the other it means moral qualities of universal nature like non-violence and truth. In the history of ethics there are three principal standards of conduct, each of which has been proposed by various groups or individuals as the highest good: happiness or pleasure; duty, virtue, or obligation; and perfection, the fullest harmonious development of human potential.

Ethics are defined as moral principles of an individual, or rules of conduct recognized in respect to a particular class of human actions of a certain group. They can also be said to be the branch of philosophy dealing with values relating to human conduct, motives, and ends of their actions. Ethics is a science which deals with the norm of humans and that is why William Lillie (1989)⁵ gives definition of ethics as "*Ethics is the science of the conduct of human beings living in society -- a science which judges this conduct to be right or wrong, to be good or bad, or in some similar way*".

Enviro ethics or environmental ethics (EE) is a part of environmental philosophy that extends the traditional boundaries of ethics from only including humans to including the non-human world. It has come to exert significant influence over a number of human science disciplines including Theology, Law, Economics, Sociology, Ecology, and Geography in relation to sustainability and human well-being. EE studies the moral relationship of human beings to the environment and its contents.

Traditional western ethical views are human-centered or anthropocentric. Anthropocentrism simply places humans at the centre of the universe; therefore, everything else in existence

should be evaluated in terms of its utility for us. All environmental studies should include an assessment of the intrinsic value of non-human beings.

Therefore, EE as a branch of environmental philosophy considers the actual and possible ethical relationships between humanity and non-human nature. Considering questions such as our obligation to future generations, to other species and even non-living aspects of the natural world are among questions investigated by the field.

Humankind's failure to relate to nature with respect is most clearly reflected in the ongoing environment crisis, which since the industrial revolution has been characterized by massive industrial scale exploitation and the concurrent destruction of natural entities, such as individual's species and ecosystem. Until recently, people were not aware of, or did not take seriously the harmful effects of economic development on the environment. In recent years, however, due to the warnings rounded by science about an impending ecological imbalance, philosophy became intensively aware of the environment we live in, and much attention has been paid on issues related to it. This emergence of awareness led to development of a new ethical philosophical discipline called 'Environment Ethics'.

1.3.0 ENVIRONMENTAL ETHICS:

Man is a part of the environment and cannot afford to abuse the environment too much. Protection of the ecosystem is as much in the interest of man as for the environment. Man should realize that the environment is a natural heritage which is not for him to exploit. To live in harmony with nature, one has to respect it first, and environmental education should teach just that.

Everything around us operates in nature. The term 'nature' has two meanings i.e. it stands for (i) a wide conception which includes entire cosmos and (ii) everything that surrounds us and has direct impact on us in the earthly environment only. Here we are concerned with the second meaning of nature. Environmental ethics consists of two key words namely 'environment' and 'ethics'. These words can be defined in the following ways: Environment is an integrated system composed of both biotic and abiotic components and their interactions whereas. Ethics is the philosophical study of the meaning and nature of moral good and evil.

According to Kneller (1963)⁶, "Ethics is the philosophic study of the moral values and conduct". The set of

moral values and principles on the basis of which we study and evaluate human conduct are concern of ethics. When these ethical principles are applied to a particular area of concern, it comes under 'applied ethics'. When ethical principles are applied to environmental policy and concern we call it "Environmental Ethics".

According to Taylor (1989)⁷, "Environmental Ethics is concerned with the moral relations that holds between the humans and the natural environment". It is the discipline that studies the value, the moral status, and the moral relationship of human beings to the natural environment and its non-human content. The early task of environmental ethics is to define an environment worthy of human sympathy, then develop and justify a theory of moral relationship between humans and the natural environment.

Environmental ethics studies the ethical relationship between human beings and the environment. It considers extending the traditional boundaries of ethics from solely including humans to including the non-human world. Plants and animals are an integral part of the environment and hence have a right to be considered a part of the human life; they should also be associated with our guiding principles as well as

our moral and ethical values. Unfortunately they are often ignored during talk about the philosophical principle that guides our life. Most of the human activities lead to environmental pollution disturbing the balance in the nature depriving all the life forms of their right to live. Environmental ethics says that we should base our behaviour on a set of ethical values that guide our approach towards the other living beings in nature. The conservation of natural resources is not only the need of the day but also our prime duty. Environmental ethics has given a new dimension to the conservation of natural resources.

Environmental ethics is the part of environmental philosophy which considers extending the traditional boundaries of ethics from solely including humans to including the non-human world. It exerts influence on a large range of disciplines and includes environmental law, environmental sociology, environmental eco theology, ecological economics, ecology and environmental geography.

The field of environmental ethics concerns human beings' ethical relationship with the natural environment. Pollution and the depletion of natural resources have not been the only environmental concerns since that time: dwindling plant and animal biodiversity, the loss of wilderness, the degradation

of ecosystems, and climate change are all part of a raft of “green” issues that have implanted themselves into both public consciousness and public policy over subsequent years. The job of environmental ethics is to outline our moral obligations in the face of such concerns. In a nutshell, the two fundamental questions that environmental ethics must address are: what duties do humans have with respect to the environment, and why? The latter question usually needs to be considered prior to the former. In order to tackle just what our obligations are, it is usually thought necessary to consider first *why* we have them. For example, do we have environmental obligations for the sake of human beings living in the world today, for humans living in the future, or for the sake of entities within the environment itself, irrespective of any human benefits? Different philosophers have given quite different answers to this fundamental question which, has led to the emergence of quite different environmental ethics.

Given the increasing concern for the environment and the impact that our actions have upon it, it is clear that the field of environmental ethics is here to stay. However, it is less clear in what way the discipline will move forward. Having said that, there is evidence for at least three future developments.

First of all, environmental ethics needs to be and will be informed by changes in the political efforts to ameliorate environmental problems. Environmental ethics concerns formulating our moral obligations regarding the environment. While this enterprise can be, and often is, quite abstract, it is also meant to engage with the real world. After all, ethicists are making claims about how they think the world ought to be. Ethicists need to respond not just by castigating those they blame for the failure. Rather they must propose alternative and better means of resolving the problems we faced.

After all, the environment is not something one can remove oneself from. In light of this, once it is recognized that we have environmental obligations; all areas of ethics are affected, including just war theory, domestic distributive justice, global distributive justice, human rights theory and many others. Take global distributive justice as an example: if one considers how climate change will affect people throughout the world so differently affecting individuals' homes, sanitation, resistance from disease, ability to earn a living and so on – it is clear that consideration of the environment is essential to such questions of justice. Part of the job of the environmental ethicist will thus be to give such disciplines the benefit of his or her expertise.

The academic field of environmental ethics grew up in response to the work of scientists such as Rachel Carson and events such as the first Earth Day in 1970, when environmentalists started urging philosophers to consider the philosophical aspects of environmental problems. Two papers published in *Science* had a crucial impact: Lynn White's "The Historical Roots of our Ecologic Crisis" (March 1967)⁸ and Garrett Hardin's "The Tragedy of the Commons" (December 1968)⁹. Also influential was Garrett Hardin's later essay called "Exploring New Ethics for Survival", as well as an essay by Aldo Leopold in his *A Sand County Almanac*, called "The Land Ethic," in which Leopold explicitly claimed that the roots of the ecological crisis were philosophical (1949)¹⁰.

The first international academic journals in this field emerged from North America in the late 1970s and early 1980s – the US-based journal *Environmental Ethics* in 1979 and the Canadian based journal *The Trumpeter: Journal of Ecosophy* in 1983. The first British based journal of this kind, *Environmental Values*, was launched in 1992.

While numerous philosophers have written on this topic throughout history, environmental ethics only developed into a specific philosophical discipline in the 1970s. This

emergence was no doubt due to the increasing awareness in the 1960s of the effects that technology, industry, economic expansion and population growth were having on the environment. The development of such awareness was aided by the publication of two important books at this time. Rachel Carson's *Silent Spring*, first published in (1963)¹¹, alerted readers to how the widespread use of chemical pesticides was posing a serious threat to public health and leading to the destruction of wildlife. Of similar significance was Paul Ehrlich's 1968 book, *The Population Bomb*, which warned of the devastating effects the spiraling human population has on the planet's resources. The job of environmental ethics is to outline our moral obligations in the face of such concerns. Different philosophers have given quite different answers to this fundamental question which, as we shall see, has led to the emergence of quite different environmental ethics.

Environmental ethics is relatively a new field of philosophical ethics, concerned with describing the values carried by the non-human natural world and prescribing an appropriate ethical response to ensure preservation or restoration of those values. Environmental ethics is the discipline in philosophy that studies the moral relationship of

human beings to, and also the value and moral status of the environment and its non-human contents. In other words, “Environment ethics is theory and practice about appropriate concern for, values in and duties regarding the natural world.” Environmental ethics starts with human concerns for a quality environment and, some think this shapes the ethics from start to finish. Others hold that beyond inter-human concerns, values are at stake when humans relate to animals, plants, species and ecosystem. According to their vision, humans ought to find nature sometimes morally considerable in itself, and this turns the ethics in new directions.

It is often said to be morally wrong for human beings to pollute and destroy part of natural environment and to consume a huge proportion of the planet’s natural resources. If that is wrong, is it simply because the sustainable environment is essential to human well-being? Or is such behaviour also wrong because the natural environment and its various contents have certain value in their own right so that these values ought to be respected and protected in any case? These are among the questions investigated by environmental ethics.

In the literature of environmental ethics, the distinction between instrumental and intrinsic value has been of

considerable importance. The former is the value of things as means to further some ends, whereas the latter is the value of things as ends in themselves regardless of whether they are also useful as means to other ends.

In the field of environmental ethics, broadly there lie two perspectives. First perspective is called human-centered (anthropocentric) worldview. They assign intrinsic value to human beings alone or they assign a significantly greater amount of intrinsic value to human beings than to any non-human things such that the promotion of human interests or well being at the expense of non-human things turns out to be nearly always justified. For example, Aristotle maintains that “Nature has made all things specifically for the sake of man and that the value of non- human things in nature is merely instrumental.” According to this view, as the planet’s most important and dominant species we can and should manage the planet mostly for our benefit. Other species have only instrumental value; that is; their value depends on whether they are useful to us or not. Following are the basic beliefs of this worldview:

- We are the planet’s most important species and we are apart from and in charge of the rest of nature.

- There is always more and it's all for us. Earth has an unlimited supply of resource to which we gain access through use of science and technology.
- All economic growth is good, more economic growth is better, and the potential for economic growth is unlimited.
- A healthy environment depends on a healthy economy.
- Our success depends how well we can understand, control, and manage the planet for our benefits.

1.3.1 HISTORY OF ENVIRONMENTAL ETHICS:

The notion of eco-centric ethics or environmental ethics has gained prominence recently among many environmentalists, but its ongoing go back centuries. Environmental ethics as a discipline evolved in west, but environmental values, and concern for protection and urge to live in harmony can be traced from eastern world also. One of the oldest religion of east, Hinduism provides a worldview with regard to the ecological situation based on the premise that mankind is an integral part of nature itself linked to the rest of creation by a indissoluble bounds. Prayer for peace in Yajurvedis the embodiment of environment ethics “Supreme Lord, let there be peace in the sky and in the atmosphere, peace in the plant

world and in the forests; let the cosmic powers be peaceful, let Brahman be peaceful; let there be undiluted and fulfilling peace everywhere. Eastern religions Hinduism, Jainism, Buddhism, Taoism, Confucianism, Shintoism, etc are enshrined with environmental values, and promote harmony with nature world. St. Francis of Assisi (1181-1126) espoused a philosophy akin to the eco-centric ethic. He specially considered all animals as integrated components of divine creation. According to him, 'wildlife has right to exist independent of any human purpose. During St. Francis's century, however, such concepts were largely ignored or chastised.

Henry David Thoreau (1817-1862), the father of Limnology, the transcendentalist, also professed a variety of eco-centric ethics. He built a cabin on Walden Pond in Massachusetts and lived a simple life for two years. There he viewed nature as a single living organic entity with all living organism related to each other. In his work 'Walden' he urged his readers to recognize and learn to live within environmental guidelines.

1.3.2 DEVELOPMENT OF ENVIRONMENTAL ETHICS:

The field of environmental ethics concerns to outline our moral obligation. The most fundamental question that must be asked when regarding a particular environment ethic is simply 'what obligation do we have concerning the natural environment. If the answer is simply that we, as human beings, will perish if we do not constrain our action towards nature, then the ethics is considered to be anthropocentric. And in one senses all ethics must be considered anthropocentric. After all, as far as we know, only human beings can reason about and reflect upon ethical matters, thus, giving all moral debate a definite 'human centeredness.' While the history of western philosophy is dominated by this anthropocentric ethical framework that grants moral standing solely to human beings, it has come under considerable attack from many environmental ethicists. Such thinkers have claimed that ethics must be extended beyond humanity, and moral standing should be accorded to the non-human natural world. Some have claimed that this extension should run to sentient animals, other to individual living organisms and still others to holistic entities such as river, species and ecosystems. Under these ethics, we have obligations in respect of the environment because we actually owe things to

the creatures or entities within the environment themselves. Different philosophers have given quite different answer to these fundamental questions, which has led to the emergence of quite different environmental ethics.

1.4.0 THE STATE OF MIZORAM:

Mizoram is one of the seven sister states of the North-Eastern India. It covers an area of approximately 21,087 square kilometer. About 91% of the state is forested and sharing borders with the neighboring countries of Bangladesh in the west and Myanmar in the east and south. The Indian states of Manipur, Assam and Tripura are located on the north east and west.

The capital, Aizawl is the largest city in the state. It is also the centre of administration containing all the important government offices, state assembly house and civil secretariat. The population of Aizawl strongly reflects the different communities of the ethnic Mizo people. Mizo is the official language and the most widely used language for verbal interaction.

In Mizoram, the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution)

Act, 1981 and Water (Prevention & Control of Pollution) Amendment Act, 1988 came into force on March 31, 1989. In the same year on September 9, 1989 the Mizoram Environment and Pollution Control Board was constituted under Section 4 (i) of the Water (Prevention & Control of Pollution) Act, 1974, and Section 5 (i) of the Air (Prevention & Control of Pollution) Act, 1981.

State of Environment Report, Mizoram 2005 was published for the first time in collaboration with Administrative Staff College of India (ASCI), Hyderabad and various stakeholder departments of Govt of Mizoram. The report was financed by the Ministry of Environment & Forests, Govt. of India on September 29, 2006. The Mizoram Board is a small Board with only one office in the State Capital looking after the whole state.

The subject of Pollution Control and Environmental Protection are still new to the people of Mizoram. The awareness level in general is low among the general masses and even among those who are handling developmental works. The Board has strongly felt that awareness for all sections of the society is first and foremost to control pollution and environment respectively.

1.4.1 RATIONALE OF THE STUDY:

Environmental ethics deals with issues related to the rights of individuals that are fundamental to life and well-being. This concern is not only the needs of each person today, but also those who will come after us. It also deals with the rights of other living creatures that inhabit the earth. Environmental consciousness should inform teaching in all schools and colleges. These aspects can be integrated in the entire educational process.

Today, environmental education is an important segment within the educational system. Environmental learning is learning about the factors, causes and solutions to environmental crisis. School children must play a vital role in making other children and adults environmentally conscious. If school programmes were adapted towards ensuring greater appreciation, better protection and a more responsible utilization of the environment, they could learn to treat the environment with lifelong respect. If we want to survive on earth we will have to live, work and exist in greater harmony with the environment.

The environment is the most important resource of our life. Man is the most important and responsible for major

changes happening in the environment and the most affected by it. If we are having awareness in the schools and colleges about the environment, than one must have known that he/she have serious duties about it. We must not only create awareness on environmental issues, but also to bring about the pro-environmental action. Among the variety of tools that can bring home the ethical issues of the environment, no solution is as powerful as real-life experiences. Besides this, environmental education should be extended to all the workers and providing factual information to the students which will lead to the understanding of inter-relationship between biotic and abiotic environment, and developing concern and respect for the environment by informing them how one can play an effective role in protecting the environment.

Finally, environmental ethics will of course be informed by our scientific understanding of the environment. Whether it be changes in our understanding of how ecosystems work, or changes in the evidence concerning the environmental crisis, it is clear that such change will inform and influence those thinkers writing on our environmental obligations.

Few studies in the field of environmental ethics have been conducted in other parts of the states in our country as

well as the world over. However, no studies have ever been conducted in the area of Environmental ethics in the state of Mizoram. Therefore, a study to find out the environmental ethics by secondary school students would provide us with an understanding of how far secondary school students perceive and are aware of the environmental ethics in their life. Moreover, studying the environmental ethics among secondary school students would enable us to make suggestions on how to build up the environmental ethics not only among the secondary school students but to the general public since this has become an important public issue in today's world. The investigator, through this study expects to reveal the level of awareness of environmental ethics amongst our youth and to enhance this moral code for the betterment of our society in the state. With these in mind, the investigator came up with a few research questions as follows:

1. What is the level of environmental ethics among secondary school students in Aizawl?
2. Are there any differences in the environmental ethics of male and female among secondary school students in Aizawl?

3. Are there any differences in the environmental ethics of Government and non Government secondary school students in Aizawl?
4. What is the opinion of secondary school students in Aizawl with respect to environmental issues?

1.5.0 STATEMENT OF THE PROBLEM:

Every human being has the right to decent life, but today there are elements in our environment that tend to militate against the attainment and enjoyment of such a life. The exacerbation of the pollution of environment can cause untold misery. Unhappiness and suffering to human beings crop up, simply because of our lack of concern for the common good and the absence of sense of responsibility and ethics for sustaining a balanced eco-system. If we are to aspire to a better quality of life - one which will ensure freedom from want, from disease and from fear itself, then we must all join hands to stem the increasing toxification of this earth. What we need in order to diffuse this environment time bomb is immediate concerned action of all the people to detoxify the environment, but such needed action will come only if we reorient the citizenry's values, i.e., imbibe them with proper attitudes and values (ethics),

specifically those that will lead to a greater concern for preserving balance in the eco-system, besides teaching them how to save the environment from further degradation, and to help, make it more healthful and progressive place to live in, springs from a strong sense of social responsibility. Hence, it becomes obligatory on the part of each individual citizen to develop environmental ethics that, while we aspire for the good life, we should not sacrifice the future of the generations to come. Therefore, the present study may be stated as ***“Environmental Ethics among Secondary School Students in Aizawl City”***.

1.6.0 OPERATIONAL DEFINITION OF THE TERMS:

Environmental Ethics: Environmental Ethics refers to the responsibility to understand the environmental consequences of our consumption, and need to recover our individual and social responsibility to conserve natural resources and protect the earth for future generations”. In the present study environmental ethics refer to the score obtained on the Environmental Ethics Scale developed by Dr. Haseen Taj (2001)¹²

Secondary School Students: High school is a grade of education from Standards IX to X. Standards IX and X is also called Secondary School. Usually, students from ages 14 to 17 study in this section. These schools may be affiliated to national boards (like CBSE, ISC, and NIOS) or various state boards. For the present study secondary school students will refer to students of class IX and X studying in Govt. and Non-Govt. schools of Aizawl District affiliated to Mizoram Board of School Education (M.B.S.E).

1.7.0 OBJECTIVES OF THE STUDY:

1. To study the level of environmental ethics of secondary school students in Aizawl.
2. To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their gender.
3. To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their school management.
4. To study the opinion of secondary school students in Aizawl with respect to different environmental issues.

5. To make suggestions for improving the environmental ethics among secondary school students in Aizawl.

1.8.0 HYPOTHESES:

1. There is no significant difference in the environmental ethics of *Male and Female* secondary school students in Aizawl.
2. There is no significant difference in the environmental ethics of *male and female* students coming from only *Government secondary schools*.
3. There is no significant difference in the environmental ethics of *male and female* students coming from only *non government secondary schools*
4. There is no significant difference in the environmental ethics of *Government and Non-Government* secondary school students in Aizawl.
5. There is no significant difference in the environmental ethics of only *male* students of *Government and Non-Government schools*.
6. There is no significant difference in the environmental ethics of only *female* students of *Government and Non-Government schools*

1.9.0 ORGANIZATION OF THE REPORT:

The report of the present study has been divided into five chapters to facilitate a systematic presentation.

CHAPTER I: INTRODUCTION

The first chapter is an introduction that deals with the concept, meaning and importance of environmental ethics. Besides these, the chapter includes the rationale of the study, statement of the problem, objectives and hypotheses of the study. Operational definitions of the terms used and delimitation of the study has also been incorporated in this chapter.

CHAPTER II: REVIEW OF RELATED LITERATURE

The second chapter deals with the review of related literature .

CHAPTER III: METHODOLOGY AND PROCEDURES

This chapter describes the methodology and procedure adopted for the present study. Method of the study, population and sample, tools for data collection, administration of tools and data collection, sources of data and statistical technique has been discussed in this chapter.

CHAPTER IV: ANALYSIS AND INTERPRETATION

The fourth chapter analyzes and interprets the collection of data on the basis of the objectives stated in chapter I.

CHAPTER V: MAJOR FINDINGS, DISCUSSIONS, CONCLUSIONS AND SUGGESTIONS

The last chapter i.e., fifth chapter includes the major findings, discussions, conclusions and suggestions for further studies.

SUMMARY:

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CHAPTER – II
REVIEW OF RELATED LITERATURE

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter deals with the review of related literature. The purpose of the study of research works done in the same field is to understand what type of study has been done and what exactly has been explored before the present research work started. The study of related literature and research work not only provides conceptual frame of reference for the contemplated research but also suggests method, procedures, sources of data and statistical techniques appropriate to the solutions of the problem selected for the present study. The researcher is able to formulate the hypothesis on the basis of review of related literature which presents the rationale for the study. In the present study the researcher has used various books, dissertations, handbooks, journals, articles, thesis etc. as reference material.

The review of literature has been divided into two categories:

1. Studies in India.
2. Studies Abroad.

2.1.0 STUDIES IN INDIA:

Sharma (1981)¹ did a study about the Impact of Development of Science and Technology on Environment and points out that the main causes of environmental pollution are the rapid industrialization and urbanization, use of fossil fuels, the construction of barrages and dams, the indiscriminate use of fertilizers and pesticides, and finally increasing population, all have led to depletion of forests, over congestion and waste accumulation, in totality, leading to drastic pollution of environment.

Narayan (1981)² studied about the Environmental Education – Impact of Development of Science and Technology on Environment. The study observes that the knowledge of how to protect and improve the environment, through suitable environmental educational programme, is vital to the infusing of environmental education programme.

Joshi, B.P (1981)³ in his study entitled “Development of science education for upper primary classes based on environmental approach”, found 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 that environment outside the school was potentially significant for educational purposes.

Aggarwal and Narain (1985)⁴ have pointed out that atmospheric pollution has for long been regarded as probably the least important of all the environmental problems, connected mainly with the major cities and industrial towns. But they found that air pollution within homes is an acute problem, an underlying cause of millions of deaths every year. The burning of cooking fuel envelops the indoor environment with heavy smoke and women who have to do all the cooking are daily exposed to more pollutants than industrial workers in extremely polluted environment.

Kayastha (1987)⁵ in his report on “Environment pollution in Varanasi: A study of perceptions, problems and management” stated that it is not only the successive accumulation of pollution over the years that is responsible for

the pollution of river Ganga at Varanasi. It is also due to the pollution of river Ganga by the people of upstream settlements. The vast amounts of industrial urban effluents and sewage of Kanpur, reduce the Ganga water to a high state of pollution.

Kopardekar (1987)⁶ 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)⁷ conducted a study on 'Key issues of human settlements in Indian perspective' and found that environmental education need to be given priority from a tender age i.e., the level of elementary schools. The present educational system has some bias towards environmental education but this need to be enlarged.

Chittibabu (1987)⁸ in a study on 'Environmental Education for Conservation and development' found the interaction between education and environment as.

- (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.

Shahnawaj (1990)⁹ did a study on "Environmental awareness and environmental attitude of secondary and higher secondary school teachers and students", in Rajasthan and found that (i)A positive environmental attitude was observed in 95% teachers and 94% students. (ii)The environmental trained teachers and untrained teachers did not differ in their attitude. (iii)Teachers had more awareness of the environment than students. (iv)Trained and untrained teachers did not differ on environmental awareness. (v)Girls possessed significantly more awareness of the environment than boys.

Saxena (1991)¹⁰ conducted a study on 'Environment as a separate discipline demonstration methods' and found 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 method at different places.

Upadhyay, Chitragad (1991)¹¹ did a critical study into the possibility of implementation of environmental education as an effective remedial measure for the problem of pollution with special reference to Madhya Pradesh. The study is an endeavor to explore the possibilities inherent in the process of education which can mitigate the menace of pollution and can suggest remedial measures. The researcher found that the process of education at various levels, formal, informal and non-formal can help in the abatement of pollution and thereby in the protection of the environment.

Sabhlok (1995)¹² in his study on 'The Awareness and Attitude of Teachers and Students of High Schools towards 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.

Jinarajan (1999)¹³ in his study on Environmental Awareness and Attitude towards Environmental Education of Student Teachers of Bangalore City' did not find any gender difference in environmental awareness.

Aggarwal (1999)¹⁴ conducted a study on 'International law and human rights'. He found that the tremendous advancement of industrialization resulted into economic development but had also continuously degraded the human environment. Further, urbanization, over-population and poverty also intensified the problem.

Pandey, S (2000)¹⁵ in his study on "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 teacher's involvement and teacher preparation at the grass root level.

Suni (2000)¹⁶ in her research 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 the higher secondary level.

Tripathi (2000)¹⁷ in his comparative study on Environmental awareness of students studying in central schools and other schools at 10+ levels in Uttar Pradesh' found that boys had better awareness about environment than girls.

Badkobi and Hadipour (2001)¹⁸ 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 that there is significant difference among male and female teachers in their awareness about environmental education and that male teachers had higher awareness.

Abraham, Mercy and Arjun, N.K. (2005)¹⁹ carried out a study on the Environmental Interest of Secondary School Students in relation to their Environmental Attitude. The finding of the study reveals that secondary school students in Kerala did not have a high level environmental interest. A differential effect of gender and locale were observed in their environmental interest. The boys and urban subjects were found to have more interest in environmental matters compared to their rural counterparts. A high level positive and significant correlation was found to exist between environmental attitudes in all the sample groups studied.

Sengupta, Madhumala (2005)²⁰ studied on the Environmental Awareness of the Environmentally Active and Passive Students in relation to Motivation and Academic Performance and found that(1) Environmental awareness may not always lead to environmental action. (2) The Science group students appear to be more active and so are the suburban students; (3) No difference was found in environmental awareness and action due to gender and academic performances. (4) The environmentally active and passive students differed in all levels of motivation.

Prasad, Sheetla (2005)²¹ studied the Life Styles Intervention for Promotion of pro-environmental Behaviour among Adolescents. The findings reveal that (1) Our lifestyle is one of the major cause of water and energy crises. Therefore, with self-management by effective intervention techniques, the crises will be minimized. (2) Use of plastic bags or plastic cups is an indicator of the comfortable lifestyle unmindful of environmental pollution. People prefer it because it is cheaper and weightless in comparison of other products for the same purpose. They are not aware about the harm of its uses, that disposed plastic does not easily decompose with interaction of water or land. Effective intervention in lifestyles is a hope for reducing this problem. (3) Helping in better way of garbage collection and their disposal has not been found to be a habit with the majority of the people. They do not always dispose it in the proper place provided by the municipal corporation. They dispose their garbage everywhere, where they find space according to their own convenience. This lifestyle is harmful because it creates pollution in residential areas and people are feeling discomfort when it is not properly disposed by the corporation. This tendency of the people is needed to be checked and this study is an effort to change the psyche of the individual for disposal management at the proper place. (4) The result of

this study shows that only 15% of the adolescents had environmental commitment. They are willing to do something in this regard but they do not know how to act. They are in a dilemma for right thinking and effective action. The action program to guide their actions in this direction should be used. The experimental use of such programme found that environmental commitment changed in 44% of the participants, which was earlier only 15%.

Sundraselvan (2005)²² studied Environmental Ethics among the Secondary pupils of Gudaloor District and found that Environmental ethics level is higher in the students from rural than urban region. He also concluded that the girl students possess high level of environmental ethics.

Sarkar (2006)²³ developed a comprehensive framework for understanding the approaches adopted by firms to address their environmental responsibilities when confronted with a variety of pressures. This framework is used to analyse the economic rationale behind a firm's environmental strategy from the point of view of the environmental manager. Thus, the focus of the study is on the private costs incurred and benefits

obtained by firms. The public nature of environmentally conscious activities of firms is also looked at, but only in the managerial context. In addition to exogenous pressures such as regulations and changing consumer preferences, various endogenous motivating and de-motivating factors for environmentally responsible behaviour have been identified using a case study approach. Factors inhibiting pollution prevention initiatives are identified and highlighted. Four in-depth case studies of steel and paper producing firms, covering both the public and private sector have been conducted. Within-case and cross-case analysis has yielded several useful insights, like people should be responsible towards the environment, which have been translated into appropriate policy recommendations.

Mahapatra, Aminesh. K (2006)²⁴ in his study of Students Understanding of a Major Environmental Issues: Global Warming. The study revealed that (1) Students responses about the causes of global warming showed that only 45.2% know that the ground level Ozone contributes to global warming while most of students, i.e., 82% affirmed that carbon dioxide is a greenhouse gas. Less than half, that is, 40.4% thought that gas from rotting waste, Methane, contributed to global warming.

More than half of the students, i.e. 59.9% believed that heat rays coming to the Earth, which can escape through the atmosphere cause global warming, while 70% students affirmed the cause of sun rays for the same. (2) About one third, 34.3% students associated acid rain with global warming, while only one fifth 19.7% linked the escape of cool air into the space through holes in Ozone layer with global warming. Majority of students, about 63%, 76%, 62.3% and 66.5% in different categories, made an erroneous connection between radioactive wastes, UV rays, excess sun rays and Ozone holes respectively with global warming. (3) More than half of the students i.e. 56.5% and 64.7% rejected the idea that global warming (green house effect) is due to dumping of much litter in streets and dumping of rubbish in rivers and streams respectively. (4) More than four-fifth of the students understood that the global warming can be reduced by planting trees (85%) while two-third of the students appreciated the roles that renewable sources of energy can play (63.8%) and reduction of vehicles could play (63.9%) in this context. Half of the students, that is 53.2%, affirmed that use of recycled paper would check global warming.

Bhosle, Smriti (2006)²⁵ in her research “Environmental Education in schools” has found that the limitless greed, reckless 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)²⁶ studied “Global issues on environmental education” and revealed that environmental issues can often appear disconnected from a learners life. It can mean concepts in ecology, outdoor education, environmental science or instruction about issues.

Nayak, ArjunaCharan (2006)²⁷ in his study on “Ethico Environmentalism” concluded that man’s relation with nature is economic entailing privilege and not obligations. But the privilege of processing 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)²⁸ in her study entitled “Influence of 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)²⁹ in her study on ‘Environmental Conservation: Key to sustainable development’ found 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 of us has to contribute towards its rehabilitation, preservation and conservation.

Vernal, Louis (2006)³⁰ 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 further pointed out that in environment education there is more stress on environmental actions and skills.

Little flower (2006)³¹ conducted a study of Environmental awareness and ethics of Higher Secondary Students in Pondicherry. The results showed that students from rural area possess more environmental awareness and environmental ethics than urban students.

Nagara. V (2007)³² did a study on Environmental Awareness among school Teachers and found that (1) The secondary school teachers showed significant variation in environmental education awareness than elementary school teachers. (2) The urban and rural school teachers showed significant variation in environmental education awareness highlighting that residential background affects the environmental education awareness of the school teachers. (3) There was insignificant interaction between residential background and environmental education awareness,

independently both varied in their results. The study cites five references.

Raju, G (2007)³³ studied the Environmental Ethics of Higher Secondary Students studying in the schools of Cuddalore district of Tamil Nadu and found that (1) Environmental ethics of the higher secondary students of Cuddalore district is high. (2) Girls students have more environmental ethics than the boy's students. (3) The communities do not have any influence on the students environmental ethics. (4) The types of schools where they happened to study do not have any influence on their environmental ethics. (5) Rural higher secondary students have more environmental ethics than the urban higher secondary students.

Kumar, K. Shiva. And Patil, S. Mangala. (2007)³⁴ studied the Influence of Environmental Education on Environmental attitude of the Post-graduate Students attitude towards environmental pollution, and the findings were (1) Standard environmental education course influences the attitude level of the students towards environmental pollution and related issues. (2) There is no significant difference between male and

female students in their attitude towards environmental pollution and related issues.

Paramanand Singh Yadav and Anita (2007)³⁵ conducted a study on the environmental awareness among higher secondary students of Varanasi district of Uttar Pradesh. The findings of the study indicated that environmental awareness has positive relationship with scientific attitude among students and science students were found more aware about their environment as compared to arts students.

Harjai (2008)³⁶ studied the effectiveness of experiential learning strategies for enhancing environmental awareness and sensitivity among primary school students with internal and external locus of control. $2 \times 2 \times 2$ factorial design was employed with the help of ANOVA for analysing the mean gain scores on environmental awareness and sensitivity of the students. Variable of instructional treatment was studied at two levels, viz. experimental group (T1) which was taught by experiential learning strategy and the control group (T2) which was taught by traditional learning method. Variable of locus of control was studied with respect to internal and external locus of

control. The results show that students having internal locus of control taught by experiential learning strategies exhibited better performance on total environmental awareness and sensitivity on all of its domains than students having external locus of control and taught by traditional learning method.

Mrs. M. Asha Rosaline (2008)³⁷ did a study on “Awareness of Teacher Educators about Environment for protecting Human Health and Quality of life”, and found out that (1)The study revealed that majority of the teacher educators had limited awareness on the importance of EE, quality of life and how to protect human health. (2)Keeping in view the findings of the present study, it is proposed that the entire education system in general and teacher education in particular needs an immediate reorientation in the curriculum towards EE.

M. Vellaisamy (2010)³⁸ examined functions and performances of students in strengthening environmental education and environmental awareness. Normative survey method was used for this study. A sample of 100 students was drawn from IXth standard of four different schools of

Vedaranyam Block. Questionnaire was used to collect the data from students and an environment awareness ability test was used to measure the extent and degree of awareness among students. Percentage calculation was used to find out the performance of students. Coefficient of correlation "r" was used to find out the relationship between achievement in environmental education and environmental awareness ability. The study indicates that the students are not performing to solve the problem of population explosion, exhaustion of natural resources, and pollution of the environment. As a result, students are not having enough awareness and skills for identifying and solving environmental problems. No significant positive relationship was found between achievement in environmental education and environmental awareness ability. The outdoor project, the orientation programme is to be given to students to enrich and strengthen the environmental education. Project and out of class activities should also be given to students to increase performance of students.

Sulaiman (2010)³⁹ conducted survey on secondary School students 'Environmental Awareness'. The findings revealed that the level of environmental awareness in female

students were higher than the male students, science stream students were higher than the arts stream students, and the urban school students were higher than suburban school students.

Nisanci (2010)⁴⁰ conducted research on the effects of instruction methods in the new Biology curriculum on ninth grade students' environmental awareness. The findings showed that the instruction methods used in the new Biology curriculum were more effective in enhancing the ninth grade students' environmental awareness than the traditional methods did.

Prashant Kumar Astalin (2011)⁴¹ did "A Study Of Environmental Awareness Among Higher Secondary Students And Some Educational Factors Affecting It", and found that Male students had more environmental awareness in comparison to female students because male students of higher secondary students are normally much attached with the society.

Selvam, V. and Abdul Nazar, N. (2011)⁴² studied “An Analysis of Environmental Awareness and Responsibilities among University Students”, and revealed that majority of the students and not all the students are having environmental awareness and responsibilities.

Sukhwant Bajwa and Shalu Goyal (2011)⁴³ studied Responsible Environmental Behavior of Secondary School Students in relation to their Locus of Control and Achievement Motivation. The findings reveal that there exists significant relationship between Responsible Environmental Behavior and Locus of Control. Further it was found that Internal Locus of Control group students have better responsible environmental behavior and developed more civic action, educational action, financial action, legal action, physical action, and persuasive action as compared to External Locus of Control group students. It was also found that there exists significant relationship between Responsible Environmental Behavior and Achievement Motivation. Further it was found that High Achievement Motivation group students have better Responsible Environmental Behavior and developed more Civic action, Educational action, Financial action, Legal action, Physical

action, Persuasive action as compared to Low Achievement Motivation group students.

Kuntala Patra and Arundhati Mech (2011)⁴⁴ conducted a comparative study between the groups of students divided on the basis of different school environment variables in order to study the variation of achievement in mathematics. Data came from the test scores of 580 secondary school children in Bongaigaon district. An analysis of data indicates that the school environment does have an impact on mathematics achievement. This indicates the important responsibility of schools towards providing equitable education to all sections of children especially in developing countries.

Archana Singhal and Urmila Verma (2012)⁴⁵ studied the “Environmental Awareness among Higher Secondary Students of Jabalpur”, and found that the students affiliated to Central Board of Secondary Education recorded significantly higher environmental awareness than those affiliated to the M.P. Board across all the disciplines and both the genders.

Bilques Shair and Rukhsana Akhtar (2012)⁴⁶ aimed at examining levels of environmental awareness and implementation of environmental knowledge amongst cross section of students in Jammu and Kashmir. The study is designed to compare the extent of awareness amongst adolescent and higher education students. It was found that overall awareness and implementation of environmental knowledge in adolescents is far below the expectations. Students with higher education were found to have largely satisfactory knowledge and skills for solving environment problems.

Vandana Mehra and Manpreet Kaur (2012)⁴⁷ studied the effect of outdoor environmental education programme for enhancing responsible environmental behavior among fifth grade students of high, average and low intelligence with one hundred twenty fifth grade students belonging to two schools of Gurdaspur. The data were analyzed with the help of 2-way Analysis of Variance. The major findings of the study were (a) Students taught environmental education by the outdoor environmental education programme exhibited better mean gains on responsible environmental behavior and its dimensions as compared to students of control group who were

taught environmental education by traditional method of instruction. (b) Students with high, average and low intelligence exhibited comparable mean gains on responsible environmental behavior and its dimensions, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act. (c) Students of high intelligence exhibited better mean gains on knowledge of ecological concepts and knowledge of environmental issues and problems than students with low and average intelligence. (d) Students of average intelligence group exhibited better mean gains on knowledge of environmental issues and problems as compared to students of lower intelligence. (e) There was significant interaction between treatment and levels of intelligence in relation to mean gains on knowledge of ecological concepts.

Sharad Sinha and Seema Taneja (2012)⁴⁸ the purpose of this investigation was to study the environmental sensitivity of primary school students in relation to their gender and locus of control. The sample comprised 400 primary school students of Rohtak. 200 students were with external locus of control (123

boys and 77 girls) and 200 students with internal locus of control (119 boys and 81 girls).The tools employed were environmental sensitivity scale(developed by authors) and locus of control by Dr. Roma Pal (1982).Mean, S.D., and ANOVA were used to analyse the data. He found that Environmental sensitivity is a significant objective of environment education to create an emotional empathy and bonding with environment so as to enhance environmental responsible behavior.

M.A. Sudhir (2013)⁴⁹ in his study found that environmental education is the means to create knowledge, understanding, values, attitudes, skills, abilities and awareness among individuals and social group towards the environment and environment protection. The school system provides the largest organized base for environmental education and action. With children in their plastic age, school imparts knowledge for imbining in them the environmental ethics and consciousness. Teacher is one of the important factors for promoting environmental education. Teachers can become a vital link in the delivery of environmental knowledge, its associated problems and their solutions.

Bharti Dogra (2013)⁵⁰ in his study on challenges and issues faced by the EVS teachers found that Environmental Studies (EVS) is an integrated course on sciences and social studies for classes III to V. NCF (2005) has recommended use of thematic approach for EVS teaching. Another highlight of present EVS syllabus is Social Constructivist Perspective of learning. The emphasis is to impart not only conceptual knowledge but also develop process skill in students. Why should we expect so much from EVS teachers when they themselves were never taught during their school days through investigatory approach or never prepared later to teach this new EVS syllabus? EVS teachers in such a case are unable to transact the curriculum in the right spirit. These important aspects of the EVS teaching-learning become big challenges for them. The findings helps in formulating simple strategies to convert these challenges into opportunities

Mathivanan, K and Dr.G. Pazhanivelu (2013)⁵¹ made a study on Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students and found that (i) The higher secondary students have high environmental ethics. (ii) The male and female higher secondary

students do not differ significantly with respect to their environmental ethics. (iii) The urban and rural higher secondary school students do not differ significantly in their environmental ethics. (iv) There is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics.

Ms. Prerna Mandhyan (2013)⁵² made a study of Environmental Ethics among Higher Secondary Level Students and found that (i) There is no significant difference between environmental ethics of girls and boys. (ii) The environmental ethics of commerce students are high in comparison to the art students. (iii) The environmental ethics of science students are high in comparison to art students. (iv) There is no significant difference between environmental ethics of science and commerce students.

2.2.0 STUDIES ABROAD:

Whyte (1977)⁵³ in his study about the Guidelines for Field Studies in Environmental Perception, found that individuals and groups of people relate to environment through their perception. Their decisions and actions are influenced by perception of internal link within a problem rather than externally defined objects.

Morchandreas (1981)⁵⁴ did a study on the Comparison of Indoor and Outdoor air quality: Electric Power Research Institute and administered their experiments on the families using wood fuel. They found that the indoor environment of such families contained more Benzo (a) Pyrene in comparison to the outdoor environment. So the researchers have come to the conclusion that the wood fuel smoke is the chief source of pollution in the indoor environment.

Lob (1987)⁵⁵ in his study on “Project based teaching in environmental education” reported that the aspects of environmental education are to be integrated in to the already

existing curricula so that environmental education should not be perceived as an additional or separate but as an integral aspect of education.

Newhouse (1990)⁵⁶ researched on the college students and found that individuals with a stronger Internal Locus of Control are more likely to participate in activities related to environmentally responsible behavior because they believe their actions can help in behavior change.

Sheng (1990)⁵⁷ in his study on Development of 'Locus of Control' Related to Responsibility in Middle-School Students found that comprehension of human behavior can be attributed to one of these categories: (1) external causes (such as environment, situation, the effect of other people's behavior); (2) dispositions and internal states (such as cognition, affection, emotion, will, moral values, character and ability); (3) a combination of both internal and external causes.

Feijoo and Mmo (1991)⁵⁸ studied the socio-economic levels and environmental perception in a small town of Argentina about the grasping ability of common people irrespective of

instructions imparted to them. The study revealed that environmental perception correlates positively with socio-economic level of surveyed people as regardless the level of instructions, (which has been included as a variable in SEI calculation). It can be concluded that the higher the level of education the greater will be the ability to perceive negative environmental factors.

Palmer (1991)⁵⁹ in his study on 'Implementing CGT: Policy into practice' and found 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 emphasize 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.

Ross (1994)⁶⁰ developed 'A framework for teaching problem-solving skills in environmental studies at the junior level' where 64 junior grade students from grade 4, 5 and 6 participated in the study. The objective was to identify student's 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.

Smith-Sebasto (1995)⁶¹ focused upon the possibility of modifying or altering either as individual's Locus of Control for Reinforcement (LOCR) or perception of knowledge of responsible environmental behavior. From pre- and post-semester survey administered to an environmental studies class (experimental) and a history class (control) findings indicated the students in the study who completed an environmental studies course had a more internal LOC for higher perception of their knowledge and skill in using categories of responsible environmental behavior and more frequent performance of selected responsible environmental behavior than at the beginning of the course. The control students, who had no environmental studies

courses, showed no change in these areas, they did show a statistically lower perception of their knowledge and skill in responsible environmental behavior, which may be indicative of their lack of knowledge concerning performance.

Lindenmeier (1996)⁶² 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)⁶³ 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, 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.

Atwood & Susan (1998)⁶⁴ in her study on 'An environmental outdoor school program: An investigation of the student and teacher perceptions', found that it is important to schedule frequent and cumulative activities that allow students to build knowledge and awareness towards environmental issues.

Simmons (2001)⁶⁵ investigated the changes in 6th grade students' and their parents' environmental knowledge, attitudes, motivation, and behavior following an Environmental Education programme (EEP) over a school year. Results indicated that at the end of the school year, children who were of High Achievement Motivation group show more environmental knowledge, positive environmental attitudes, and more responsible behavior towards the environment as compared to children of Low Achievement Motivation group. Parents of children in the EEP group were significantly more dissatisfied with local environmental conditions as compared to parents of children in the control group. No other significant differences between groups were observed for other measured child and parental variables. Recommendations are presented to guide future studies evaluating an EEP.

Trudi Volk and Marie Cheak (2003)⁶⁶ studied 'The effects of an environmental education program on students, parents and community' and found that students who have participated in an environmental education programme have actually shown improved reading, writing and oral communication skills.

Vaughan (2003)⁶⁷ 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.

David L. Hough (2003)⁶⁸ studied the "Environmental Ethics in Middle School Students: Analysis of the Moral Orientation of Student Responses to Environment Dilemmas" and found that (i) care orientation had a stronger influence than gender and race in case of environmental dilemmas on moral

reasoning. (ii) values and ethics should be included in the environmental education as they play a central role in the consideration of environmental problems. (iii) gender and race have influence on the reasoning power about moral prospective on environmental issues. (iv) the study is of great influence to the middle school educators as they can design and implement environmental curricula in such a way that it help students to understand and evaluate environmental issues in a better way.

Athman and Monroe (2004)⁶⁹ found that greater achievement motivation is associated with greater cognitive engagement in schoolwork, which improves academic performance. In eleven Florida high schools, four hundred 9th and 11th grade students took part in a comparison of achievement motivation in classrooms with EIC programmes and traditional classrooms. Students filled out a 20- item Achievement Motivation Inventory and selected teachers and students in the participating programmes were also interviewed. Controlling for grade point average, gender and ethnicity, environment-based education significantly raised 9th and 11th graders' achievement motivation in comparison to the

control groups. Students and teachers attributed increased motivation to the use of the local environment, teachers' ability to tailor learning experiences to students' interests and strengths, and the application of learning to real-life issues and problems, which often enabled students to present their work to community audiences beyond their teacher.

Chapman and Sharma (2006)⁷⁰ investigated on the environmental attitudes and knowledge of Indian and Filipino primary and secondary school students, and their readiness to engage in pro-environmental behavior that could involve some changes in their personal lifestyle. For the most part, Environmental Education efforts are embedded mainly into various science subjects. The relationship between Environmental education and Environmental awareness is analyzed to examine whether schools' Environmental Education could contribute to the shaping of environmental attitudes. A strategy and accompanying methodology for establishing Environmental Education are supplied. They found that intra-disciplinary approach to environmental education does not help much in increasing environmental awareness and developing positive environmental attitudes.

Ling (2006)⁷¹ studied the Environmental Education Curriculum in a Bilingual Education in China and found that experimental – narrative method is more effective than story telling method in environmental education and ethics learning.

Gul Hanim Erol and Kutret Gezer (2006)⁷² studies the “Prospective of Elementary school teachers’ attitudes towards environment and environmental problems”, and found that (1)There is no high attitude towards environment and environmental issues among the students. (2)The environmental attitude was found to be greater for girls than the boys. (3) Occupation of the mother affects the environmental attitude of the students. (4)The attitude towards environmental issues, differ based on age, and number of siblings, but it is found that the fathers occupation their house, parents education level, families economic status does not effect their attitude towards environmental issues.

Abraham (2008)⁷³ studied the Green Marketing which is the marketing of products that are presumed to be environmentally safe. Green marketing covers more than a firm’s marketing claims. While firms must bear much of the

responsibility for environmental degradation, ultimately it is consumers who demand goods, and thus create various environmental problems. One of the examples is *McDonald's*, which is often blamed for polluting the environment because much of its packaging finishes up as roadside waste. It must be remembered that it is the uncaring consumer who chooses to dispose off his/her waste in an inappropriate fashion. Ultimately green marketing requires those consumers who want a cleaner environment and are willing to 'pay' for it, possibly through higher priced goods, modified individual lifestyles, or even governmental intervention. He found that until this occurs it will be difficult for firms alone to lead the green marketing revolution.

Lake, Flanagan and Osgood (2010)⁷⁴ made a descriptive analysis of trends in the environmental attitudes, beliefs and behavior of high school seniors from 1976 to 2005. Across a range of indicators, environmental concerns of adolescents show increases during the early 1990s and declines across the remainder of the three decades. Declining trends in reports of personal responsibility for the environment, conservation behaviors, and the belief that resources are scarce

are particularly noteworthy. Across all years, findings reveal that youth tended to assign responsibility for the environment to the government and consumers rather than accepting personal responsibility. Recent declines in environmental concerns for this nationally representative sample of youth signal the need for a renewed focus on young people's views and call for better environmental education and governmental leadership.

Gaye Teksoz, Elvan Satin, Hamide Ertepinar (2010)⁷⁵ study "A new vision for chemistry education students: Environmental Education." The finding showed that (i) 90% of students felt that environment is the 2nd or 3rd important problem, 70 percent felt that they have a fair knowledge about environment, 15 percent felt that they know a lot about environment and another 15 percent felt that they know only a little about environmental issues and problems. (ii) Pre-service chemistry teachers felt that University students must have environmental knowledge to grow the environmental awareness in the society. (iii) They strongly felt that there is an urgent need for every individual to have a total knowledge about environment so as to protect the natural resources and this can be achieved through teaching on environmental issues. (iv)

Teacher education program should compulsorily have environmental education in their education curriculum so that teachers can integrate environmental issues into their lesson. (v) Those pre-service chemistry teachers enrolled in environment related courses were strongly encouraged to include in their teaching practice environmental related issues.

2.3.0 CONCLUSIONS:

Review of the studies done in India and abroad reveals that many studies have been done on the students and minority groups in environmental management, environmental knowledge, environmental awareness, school curriculum and environmental education, school teachers attitude towards environment and environmental problems, investigation of undergraduate students environmental attitude, environmental attitude and perception among pre-service and in-service secondary school teachers, etc. There are no studies done in Mizoram to understand the level of environmental awareness and environmental ethics among secondary school students. Since students are the enlightened group of energetic youngsters, who can play a major role in bringing about

awareness in the society, the researcher has emphasized on environmental ethics, which is an integral part of human ethics. Therefore the present study is different in terms of technique, methodology and other components.

Based on the information gathered from a review of related studies on the topic, it is clear that although a number of research works may have been accomplished in different parts of the country and outside, no similar work has been performed in the states.

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CHAPTER – III
METHODOLOGY

CHAPTER III

METHODOLOGY:

Research methods may be understood as all those methods that are used for conduction of research. Thus, it refers to the method the researcher use in performing research operations. This chapter deals with the methodology adopted in the present investigation. The design of the present investigation is systematically presented as follows:

1. Method of the Study
2. Population
3. Sample
4. Tools for Data collection
5. Administration of tools and data collection
6. Tabulation of data
7. Statistical technique for analysis

3.1.0 Method of the Study:

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group. Studies concerned with specific predictions, with narration of facts and characteristics

concerning individual, group or situations are all instances of descriptive research studies. The present study would belong to the category of "descriptive research" with composite characteristics of inter-group comparison, since, the main objective is to study the level of environmental ethics of secondary school students in Aizawl in relation to their gender and school management and to study the opinion of the students on different environmental issues. Blends of both qualitative and quantitative analysis have been employed in the present investigation.

3.2.0 Population:

The population of the study comprise of all secondary school students of Aizawl City. According to the annual publication by Department of school Education, Government of Mizoram 2014-2015, there are 130 High Schools in Aizawl City. Of these 130 high schools, there are 13286 students out of which there are 6427 males and 6859 females.

3.3.0 Sample:

For the present study, 400 students are selected as a representative sample. The final sample size comprised of 200

girls and 200 boys of Government and Non-Government secondary school students studying in Aizawl City. The samples were selected following Stratified Random Sampling. The sample distribution of the students is presented in the following Table no. 3.1

Table 3.1
Sample Distribution of the Students

Government Schools		Non Government Schools	
Males	Females	Males	Females
100	100	100	100

3.4.0 Tools for data collection:

The following tools were used for the present study

i) Environmental Ethics Scale developed by Dr. Haseen Taj; Nandini Enterprises; Agra. (2001).

ii) Opinionnaire on issues related to environmental ethics: Developed by the investigator.

3.4.1 Environmental Ethics Scale (EES):

Environmental Ethics Scales developed by Dr. Haseen Taj (2001). After a thorough perusal of literature 68 attitude statements, reflecting the social/moral values were collected from diverse sources. After careful discussions with the experts in the field, the poor items were either modified or dropped. The selected 59 items were once again given to a group of 25 experts, for their expert judgement. On the basis of their judgement (70 to 100% unanimity) only 51 statements were retained for inclusion in the preliminary form of the environmental ethics scale (EES) for the try-out.

After the try-out, the answer sheets were scored and arranged in descending order. The upper 27% and lower 27% of the protocols were taken to find out the 't' value of each statement.

On the basis of 't' value only those 45 statements which had a 't' value of 0.05 level or higher were selected to constitute the final form of EES, eliminating 6 statements which were not significant even at 0.05 level of significance. Out of 45 items 8 are meant to assess ethics in favorable direction and 37 in unfavorable direction. More number of items in negative form were resorted to in order to avoid the social desirability,

which happens in case of positive items. The following table shows the total number of positive and negative items with the serial numbers in the final scale.

Table 3.2

Serial Number of Positive and Negative Items in Final EES

Type	Serial number of items in final EES	Total No. of Items
Positive	9,16,19,21,22,23,24,42	8
Negative	1,2,3,4,5,6,7,8,10,11,12,13,14,15,17,18,19,20,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,43,44,45	37
	Total	45

Reliability:

Reliability was computed by split-half (odd-even and 1sthalf-2nd half) method and found to be 0.63 and 0.60 respectively, for the half test and it rose to 0.71 and 0.75 after applying Spearman Brown Prophecy formula for correction for a sample of 200 individuals. The test-retest co-efficient after an interval of 1 month was found to be 0.48 (N=115). The detailed information on reliability co-efficient and index of reliability are presented in table no. 3.3

Table 3.3

Reliability Co-efficient and Index of Reliability of EES

Sl.No	Method	Reliability Obtained (r)	Co-efficient Corrected (r)	Index of Reliability (r)
1.	Split-half (odd-even)	0.63	0.79	0.88
2.	Split-half (1st half - 2ndhalf)	0.60	0.75	0.87
3.	Test-retest (after 1 month)	-	0.48	0.69

Validity:

The EES possesses content validity, the method of selecting items supports this supposition. The scale appears to possess the internal consistency, the high discriminatory power of the items and split-half (odd-even and 1st half - 2nd half) reliability are the testimony of its internal consistency. A sample of the Environmental ethics scale is attached in APPENDIX – 1.

3.4.2 Opinion of students with respect to environmental issues:

Opinionnaire to study the opinion of the students on different aspects of environmental issues was constructed by the investigator. The Opinionnaire comprise of 9 questions consisting mainly of ticking preferences, and rating scales. Content validity was established by giving the opinionnaire to five

(5) experts in the field. A sample of the opinionnaire is attached in APPENDIX – 2.

3.5.0 Administration of tools and data collection:

Both the opinionnaire comprising of 9 questions and the Environmental Ethics scale consisting of 45 statements was personally administered to all 400 students, by visiting the schools in Aizawl city. The purposes of the study as well as instructions for ticking the responses of their choice were clearly explained to them. The respondents were also told that there is no right or wrong response. They were given adequate time to ponder over all the statements to ensure a truthful response from them. They were assured that their responses shall be kept strictly confidential, and shall be used only for research purpose. While collecting back the filled in responses from the respondents, it was ensured that all questions and statements were responded and that the required personal information was provided by them.

3.6.0 Tabulation of data:

The data collected from the 400 students, were scrutinized, classified and scored according to standard procedure. After scoring the responses of both the opinionnaire

and attitude scale, they were tabulated. Each respondent was assigned a serial number in order of the variable being studied. The scores were then entered in the tabulation sheet in Excel and were subject to statistical treatment by employing the following statistical techniques for the analysis.

3.7.0 Statistical technique for analysis:

Keeping in view the nature of the data and objectives of the study, the investigator employed the following statistical techniques for analyzing the data:

1) Descriptive Statistics Measures:

Measures of Central tendency, Percentages and standard deviation were employed to find out the nature of score distribution as well as for the purpose of categorizing the respondents into different groups.

2) Test of significance for mean difference:

The difference between the mean scores of the groups based upon the variable such as gender and management of schools with respect to environment ethics were tested for significance by applying the t-test.

CHAPTER – IV
ANALYSIS AND INTERPRETATION
OF DATA

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The present chapter deals with the analysis and interpretation of data. The objective of the present study includes finding out the level of environmental ethics of secondary school students in Aizawl, and to compare the differences with respect to gender and school management. The objectives also comprise of finding out the opinion of students with respect to environmental issues and thereby to make suggestions for improving the environmental ethics among secondary school students in Aizawl.

The data relating to the level of environmental ethics were collected by administering the Environmental Ethics Scale (EES) and the data relating to environmental issues were collected by administering the Opinionnaire on environmental issues constructed by the investigator. The responses obtained from the subjects were scored following the standard scoring procedures. The scores were classified, tabulated and analyzed. The analysis of the data was carried out with the help of standard statistical techniques, keeping in view the objectives of the study and the findings were meaningfully interpreted. The

findings of the study are presented in the present chapter in accordance with the objectives stated in chapter 1.

4.1.0 Objective No.1: To study the level of environmental ethics of secondary school students in Aizawl.

The level of the environmental ethics of secondary school students in Aizawl were established and categorized in the following way:

4.1.1 *Level of environmental ethics among secondary school students in Aizawl.*

With the intention of finding out the level of environmental ethics among secondary school students, 'Environmental Ethics Scale (EES)' was administered to all the 400 respondents. After scoring, their scores were tabulated. In order to establish the norms, the raw scores of all 400 respondents were transformed into the Stanine scale by organizing them in frequency distribution and then giving the percentage of each stanine score points according to the normal distribution curve. The first stanine includes 4 percent, second stanine includes next 7 percent, third stanine includes 12 percent and fourth stanine includes next 17 percent, the middle

or fifth stanine includes middle 20 percent, sixth stanine covers 17 percent, seventh stanine covers 12 percent, eighth stanine includes 7 percent and the top or ninth stanine includes 4 percent of the total cases. This way, norms for interpreting the raw scores are prepared with the help of stanine grade. Accordingly, stanine 1, 2, 3 and 4 indicates low environmental ethics, stanine 5 indicates average environmental ethics, and stanine 6,7, 8 and 9 indicates high environmental ethics.

Table 4.1
Score Range, Stanine Grade and Interpretation of
Environmental Ethics

No	Score Range	Grade	Interpretations
1	131-133	9	High Ethics
2	125-130	8	
	118-124	7	
3	112-117	6	Average ethics
	105-111	5	
	4	99-104	4
92-98		3	
85-91		2	
5	67-84	1	

The score range, stanine grade and interpretation of the score are given in the above Table 4.1

This way all respondents were categorized into three groups in accordance with the norms. The following table no. 4.2 shows the number and percentage of all respondent's level of environmental ethics.

Table 4.2
Level of Environmental Ethics Among Secondary
School Students

No of Respondents	High Ethics	Average Ethics	Low Ethics
All Samples (N=400)	174 (43.5%)	80 (20%)	146 (36.5%)

The above table 4.2 reveals that out of all 400 respondents, majority 174 (43.5%) of the student respondents have high environmental ethics, while 80 (20%) of the students have average ethics and 146 (36.5%) of the student respondents

have low ethics. Therefore, we can conclude that majority of secondary school students in Aizawl have a high level of environmental ethics.

4.2.0 Objective No.2: To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their gender.

The students' levels of environmental ethics were compared on the basis of their gender. For this, the Mean and Standard Deviation of the scores were calculated. The mean differences were tested by applying 't' test and the details are presented in the following tables.

4.2.1 *Difference in environmental ethics with reference to gender.*

Hypothesis no.1 states that there is no significant difference in the environmental ethics of Male and Female secondary school students in Aizawl.

Table no. 4.3 shows the comparison of Male and Female respondents with respect to their Environmental Ethics.

Table 4.3

**Comparison of Male and Female Secondary School Students
with respect to their Environmental Ethics**

Groups	Number	Mean	SD	MD	SE_{MD}	t-Value	Sig level
Male	200	106.39	13.859	2.965	1.304	2.274	*
Female	200	109.36	12.125				

*Significant at .05 level

A result of the above table 4.3 reveals that the 't' value for the significance of difference between male and female secondary school students is 2.274. Since the calculated 't' value is greater than the criterion 't' value at .05 level, it can be concluded that there is a significant difference between male and female secondary school students with respect to environmental ethics. Therefore, the null hypothesis (No. 1) that assumes there is no significant difference in the environmental ethics of male and female secondary school students in Aizawl is rejected, since the two groups differed significantly at .05 level of confidence. A comparison of their mean scores shows that female students have higher mean score than the male students, therefore it can be concluded that female students have higher level of environmental ethics than the males. This

indicates that high school females possess better environmental ethics than their counterparts, the high school males.

4.2.2 Difference in Government managed secondary school students' environmental ethics with reference to gender.

Hypothesis no.2 states that there is no significant difference in the environmental ethics of male and female students coming from only Government secondary schools.

Table no. 4.4 shows the comparison of Government male and Government female respondents with respect to their Environmental Ethics.

Table 4.4

Comparison of Government Male and Female Secondary School Students with respect to their Environmental Ethics

Groups	Number	Mean	SD	MD	SE_{MD}	t-Value	Sig level
Govt. Male	100	109.77	10.717	2.450	1.545	1.586	NS
Govt. Female	100	107.32	11.130				

NS-Not significant

A glance at the table vide Table No 4.4 reveals that the 't' value for the significance of difference between government male and government female students is 1.586, whereas the required 't' value with $df = 198$ to declare the difference as significant is 1.97 at 0.05 level. Since the calculated 't' value is lower than the criterion 't' value, it can be concluded that there is no significant difference between the government male and government female students. Therefore, the null hypothesis (No.2) that assumes that there is no significant difference in the environmental ethics of male and female students coming from only government secondary schools, cannot be rejected, consequently, it is accepted. A simple comparison of their mean score indicates that government male students have a higher mean score than the government female students, but this could be a chance factor.

4.2.3 *Difference in non government secondary school students' environmental ethics with reference to gender.*

Hypothesis no. 3 states that there is no significant difference in the environmental ethics of male and female students coming from only non government secondary schools.

Table no. 4.5 shows the comparison of non government male and non government female secondary school students with respect to their Environmental Ethics.

Table 4.5

Comparison of Non Government Male and Female Secondary School Students with respect to their Environmental Ethics

Groups	Number	Mean	SD	MD	SE_{MD}	t-Value	Sig level
Non govt. Male	100	103.01	15.816	8.380	2.033	4.121	**
Non govt. Female	100	111.39	12.778				

** Significant at .01 level

An analysis of the above table no 4.5 reveals that the 't' value for the significance of difference between non government male and non government female secondary school students is 4.121. Since the calculated 't' value is greater than the criterion 't' value, therefore, it can be concluded that there is a significant difference between non government male and non government female secondary school students with respect to environmental ethics. Therefore, the null hypothesis (No. 3) that assumes there is no significant difference in the environmental

ethics of male and female students coming from only non government secondary schools, is rejected, since the two groups differed significantly at .01 level of confidence. A comparison of their mean score shows that this difference is in favor of the male non government secondary school students, as their mean score is higher than the female non government secondary school students. The result indicates that the male non government secondary school students have a higher environmental ethics than the female non government secondary school students. It means Male students have superior environmental ethics than the female students in non government secondary schools.

4.3.0 Objective No.3: To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their school management.

The students' levels of environmental ethics were also compared with reference to their school management. For this, the Mean and Standard Deviation of the scores were calculated. The mean differences were tested by applying 't' test and the details are presented in the following tables.

4.3.1 Difference in secondary school students' environmental ethics with reference to school management

Hypothesis no. 4 states that there is no significant difference in the environmental ethics of Government and Non-Government secondary school students in Aizawl.

Table no. 4.6 shows the comparison of Government and Non-government secondary school students with respect to their environment ethics.

Table 4.6

Comparison of Government and Non Government Secondary School Students with respect to their Environment Ethics

Groups	Number	Mean	SD	MD	SE_{MD}	t-Value	Sig level
Govt	100	108.54	10.967	1.345	1.311	1.026	NS
Non govt.	100	107.20	14.944				

NS =Not significant

As observed in the above table no 4.6, it has been found that the 't' value for the significance of difference between the students of government and non government secondary school with respect to their environmental ethics is 1.026, whereas the required 't' value with $df = 198$ to declare the

difference as significant is 1.97 at 0.05 level and 2.60 at 0.01 level. Since the calculated 't' value is lower than both the criterion 't' value, it can be concluded that there is no significant difference in the students' environmental ethics between government and non government secondary schools. Therefore, the null hypothesis that assumes there are no significant difference in the environmental ethics of government and non government secondary school students in Aizawl is accepted. However, a comparison of their mean score shows that government secondary school students have a higher mean score than the non government secondary school students which indicates that although not significant, government secondary school students have a slightly higher environmental ethics than the non government secondary school students, but this could be a chance factor.

4.3.2 Difference in male secondary school students' environmental ethics with reference to school management.

Hypothesis no. 5 states that there is no significant difference in the environmental ethics of only male students of government and Non- Government schools.

Table no. 4.7 shows the comparison of male government and non government secondary school students with respect to their environmental ethics.

Table 4.7

Comparison of Male Government and Non Government Secondary School Students with respect to their Environmental Ethics

Groups	Number	Mean	SD	MD	SE_{MD}	t-Value	Sig level
Male Govt	100	109.77	10.717	6.760	1.910	3.538	**
Male Non govt.	100	103.01	15.816				

** Significant at .01 level

A result of the table reveals that the 't' value for the significance of difference between government male and non government male students is 3.538. Since the calculated 't' value is greater than the criterion 't' value, it can be concluded that there is a significant difference between government male and non government male students with respect to their environmental ethics. Therefore, the null hypothesis (No. 5) that assumes there is no significant difference in the environmental ethics of only male students of Government and Non-Government schools, is rejected, since the two groups differed significantly at .01 level of confidence. A comparison of their

mean scores shows that this difference is in favor of the government male respondents, therefore it can be concluded that government male secondary school students possess a higher environmental ethics than the non government male secondary school students. This indicates the government managed male secondary school students outshine the non government male secondary school students in their environmental ethics.

4.3.3 Difference in female secondary school students' environmental ethics with respect to school management.

Hypothesis no. 6 states that there is no significant difference in the environmental ethics of only female students of Government and Non- Government schools.

Table no. 4.8 shows the comparison of female government and non government secondary school students with respect to their environmental ethics.

Table 4.8

**Comparison of Female Government and Non Government
Secondary School Students with respect to their
Environmental Ethics**

Groups	Number	Mean	SD	MD	SE_{MD}	t- Value	Sig level
Female Govt	100	107.32	11.130	4.070	1.695	2.402	*
Female Non govt.	100	111.39	12.778				

*Significant at .05 level

An analysis of the table no 4.8 reveals that the 't' value for the significance of difference between government female and non government female students is 2.402. Since the calculated 't' value is greater than the criterion 't' value at '05 level, it can be concluded that there is a significant difference between government and non government female students with respect to their environmental ethics. Therefore, the null hypothesis (No. 6) that assumes there is no significant difference in the environmental ethics of only female students of government and non-government schools, is rejected, since the two groups differed significantly at .05 level of confidence. A comparison of their mean scores shows that non government female school students have higher mean score than the

government managed secondary school female respondents. Therefore it can be concluded that non government female secondary school students possess a higher environmental ethics than the government managed secondary school female students. This signifies that female non government secondary school students excel the government managed secondary school female students in environmental ethics.

4.4.0 Objective No.4: To study the opinion of students with respect to environmental issues.

The opinion of students with respect to different environmental issues is also being investigated. For this, the investigator develops an opinionnaire on environmental issues. Altogether, there are nine (9) questions to elicit the opinion of students regarding different environmental issues. This opinionnaire is administered to 400 students and their responses were analysed and interpreted and they are presented respectively in the following.

4.4.1 *Opinion of all respondents on whether the existing environmental problems will hinders our future development.*

The following Table No.4.9 highlights the opinion of all respondents on whether the existing environmental problems will hinder our future development.

Table 4.9

Opinion on whether the existing environmental problem will hinder our future development

Respondents	Agree	Undecided	Disagree
Sample N=400	245 (61.25%)	90 (22.5%)	65 (16.25%)
All Male N=200	113 (56.5%)	46 (23%)	41 (20.5%)
All Female N=200	132 (66%)	44 (22%)	24 (12%)

The above table 4.9 shows that out of 400 respondents, 245 (61.25%) of secondary school students agreed that the existing environmental problems will hinder our future developments, 90 (22.5%) are undecided and the rest 65 (16.25%) do not agree with it. This implies that majority of the secondary school students opined that the existing environmental problems will hinder our future development, therefore, we can conclude that the students' judgment about

the current environmental problems is rather unenthusiastic especially for our future development.

The table also reveals that out of 200 male respondents, 113 (56.5%) students agreed that the existing environmental problems will hinder our future development, 46 (23%) are undecided and 41 (20.5%) disagreed about it. Among the female respondents, 132 (66%) students have agreed, 44 (22%) students are undecided and 24 (12%) female students disagreed that the existing environmental problems will hinder our future development. This shows that when male and female secondary school students are compared, it is found that more number of female students rather than the male students opined that the existing environmental problems will hinder our future development.

4.4.2 Perception of all respondents on whether Awareness about Environmental problems have been organized in their schools.

The following Table No.4.10 highlights the perception of all respondents on whether awareness about Environmental problems has been organized in their schools.

Table 4.10

Perception of all respondents on whether awareness about environmental problems have been organized in their schools.

Respondents	Yes	Don't Know	No
Sample N=400	238 (59.5%)	101 (25.25%)	61 (15.25%)
All Male N=200	117 (58.5%)	58 (29%)	25 (12.5%)
All Female N=200	121 (60.5%)	42 (21%)	37 (18.5%)

As shown in Table No.4.10 the study reveals that out of all the samples collected i.e.400 respondents, 59.5% students said that awareness about environmental problems have been organized in their school, 25.25% students are not aware of it and the rest 15.25% students responded negatively. Among the male respondents, 58.5% students agreed that awareness about environmental problems have been organized in the schools, while 29% did not know about it, while, 12.5% students answered that awareness about environmental problems have not been organized in the schools. Meanwhile, among the female respondents, 60.5% students responded that awareness have been organized in the schools, 21% students are ignorant about it, while only 18.5% students said it was not organized in the schools.

An analysis of the above table 4.10 brings to light that majority of the respondents said that awareness about environmental problems have been organized in their school. There are more female's students than the male student who says that awareness about environmental problems have been organized in their schools.

4.4.3 Opinion of all Respondents on when awareness about environmental problems should be initiated.

The following Table No.4.11 highlights the opinion of all respondents on when awareness about environmental problems should be initiated.

Table 4.11

Opinion of all respondents on when awareness about environmental problems should be initiated

Respondents	Pre-primary level	Primary school level	Middle School Level	High School Level	Higher Sec. Level	College level	University Level
All Sample N=400	73 (18.25%)	79 (19.75%)	125 (31.25%))	86 (21.5%)	22 (5.5%)	8 (2%)	7 (1.75%)
All Male N=200	32 (16%)	46 (23%)	61 (30.5%)	47 (23.5%)	8 (4%)	2 (1%)	4 (2%)
All Female N=200	41 (20.5%)	33 (16.5%)	64 (32%)	39 (19.5%)	14 (7%)	7 (3.5%)	2 (1%)

With regard to the opinion on when awareness about environmental problems should be initiated in schools, out of all 400 respondents 73 (18.25%) considered pre-primary level as the most appropriate level for initiating awareness about environmental problems, 79 (19.75%) wanted to introduce it from primary school level, 125 (31.25%) indicated middle school level as the most appropriate, 86 (21.5%) believed the most suitable level to initiate is the high school level, 22 (5.5%) assumed higher secondary as the best level, 8 (2%) decided college level as the most fitting level, while a mere 7 (1.75%) wish to introduce it from university level.

Among the 200 male respondents, 16% wanted to implement awareness about environmental problems from pre-primary school level, 23% would like to implement it from primary level, 30.5% opted for the middle school level, 23.5% choose high school level, 4% decided on higher secondary level and 1% and 2% selected college and university level respectively. At the same time, out of 200 female respondents 20.5% choose pre-primary level as the most appropriate stage for implementing awareness about environmental problems, 16.5% picked primary school, 32% go for middle school level, 19.5% decide on high school level. 7% opt for higher secondary and 3.5% and 1% settle on for college and university level respectively.

In conclusion, the above table shows that the most desired stage of initiating awareness about environmental problems by majority of the respondents is the middle school level followed by the high school level of education which is again followed by the primary school level of education. The most undesirable stage of implementing awareness about environmental problems by all respondents is the university level; the reason perhaps could be that university level is considered too late to start initiating awareness about environmental problems.

4.4.4 Opinion of all Respondents on the most appropriate approach for carrying out awareness of environmental problems in the schools.

The following Table No.4.12 brings to light the opinion of all respondents on how awareness of environmental problems should be carried out in the schools.

Table 4.12

Opinion of all respondents on the most appropriate approach for carrying out awareness of environmental problems in the schools.

Respondents	School Syllabus	Co-curricular activities	School Seminar	School Assembly
All Sample N=400	135 (33.75%)	145 (36.25%)	49 (12.25%)	71 (17.75%)
All Male N=200	69 (34.5%)	84 (42%)	15 (7.5%)	32 (16%)
All Female N=200	66 (33%)	61 (30.5%)	34 (17%)	39 (19.5%)

Table No.4.12 reveals that 33.75% of all respondents (400) believed the best way to carry out awareness about environmental problems is through the school syllabus, 36.25% of them assumed co-curricular activities as the most appropriate, 12.25% thought imparting through school seminar is the ideal, and the rest 17.75% considered school assembly as the perfect means to teach awareness about environmental problems in the schools.

Among 200 male respondents, 34.5% accepted school syllabus as the most appropriate way to pass on awareness about environmental problems in the schools, 42% prefer to impart through co-curricular activities, 7.5% choose school seminar and the rest 16% wanted to convey through school

assembly. At the same time, out of 200 female respondents, 33% would like to impart awareness about environmental problems through school syllabus, 30.5% prefer communicating through school co-curricular activities, 17% favor instructing through school seminar and 19.5% desire to inform through school assembly.

To conclude, the result shows that majority of respondents consider the co-curricular activities as the best method of carrying out awareness about environmental problems in the schools. While majority of the male students believe co-curricular activities as the best method, majority of the female students regard school syllabus as the most excellent means of imparting awareness about environmental problems in the school.

4.4.5 Opinion of all respondents on the most ideal place for creating awareness about the environmental problem:

The following Table No.4.13 shows the opinion of all respondents on the most ideal setting for creating awareness about the environmental problem.

Table 4.13

Opinion of all respondents on the most ideal place for creating awareness about the environmental problem.

Respondents	Community halls	Sunday Schools	Classrooms	Home & Family	Media
All Sample N=400	38 (9.5%)	22 (5.5%)	53 (13.25%)	120 (30%)	167 (41.75%)
All Male N=200	14 (7%)	17 (8.5%)	29 (14.5%)	68 (34%)	72 (36%)
All Female N=200	24 (12%)	5 (2.5%)	24 (12%)	52 (26%)	95 (47.5%)

The above Table No.4.13 reveals that 9.5% of all secondary school students (400) believed the best situation for creating awareness about environmental problems is through the Community halls, 5.5% of the students thought creating awareness through Sunday schools as the most appropriate, 13.25% of students assumed Classrooms as the most suitable, 30% students considered Home/Family as the ideal settings and 41.75% students thought Media as the perfect means to create awareness about environmental problems.

Among 200 male respondents, 7% of them accepted Community halls as the most appropriate surroundings to create awareness about environmental problems, 8.5% male students prefer to create awareness through Sunday schools, 14.5% male students choose Classrooms, 34% of them preferred

Home/Family and the rest 36% of male students wanted to create awareness through the Media. At the same time, out of 200 female respondents, 12% of them would like to create awareness through Community halls, 2.5% female students prefer creating it through Sunday schools, 12% of female students favour creating awareness through Classrooms, 26% female students prefer Home/Family and 47.5% female students desire to create awareness through the Media.

To conclude, the result shows that majority of respondents considered Media as the ideal settings for creating awareness about environmental problems followed by the Home/Family.

4.4.6 Opinion of all respondents on the most responsible agency in inculcating environmental ethics among the students in the school.

Table 4.14 shows the opinion of all respondents with respect to who should be accountable in inculcating environmental ethics among the students in the school. The students are asked to tick their most preferred and least preferred agency.

Table 4.14

**Opinion of all respondents on the most responsible agency
in inculcating environmental ethics among the students in
the school.**

Respondents	Family	School	Teacher	Head Master/ Principal	Govt.	N.G.O's
All Sample N=400	<i>1st Preference</i>					
	167 (41.75%)	57 (14.25%)	44 (11%)	27 (6.75%)	79 (19.75%)	26 (6.5%)
	<i>Least Preference</i>					
	49 (12.25%)	26 (6.5%)	20 (5%)	100 (25%)	62 (15.5%)	143 (35.75%)
All Male N=200	<i>1st Preference</i>					
	91 (45.5%)	32 (16%)	20 (10%)	15 (7.5%)	28 (14%)	14 (7%)
	<i>Least Preference</i>					
	22 (11%)	11 (5.5%)	10 (5%)	47 (23.5%)	31 (15.5%)	78 (39%)
All Female N=200	<i>1st Preference</i>					
	76 (38%)	25 (12.5%)	24 (12%)	12 (6%)	51 (25.5%)	12 (6%)
	<i>Least Preference</i>					
	27 (13.5%)	15 (7.5%)	10 (5%)	53 (26.5%)	31 (15.5%)	65 (32.5%)

A look at Table No. 4.14 brings to light that out of the 400 respondents, majority of students i.e. 167 respondents (41.75%) chose Family as their most preferred agency to take accountability in inculcating environmental ethics among the students while N.G.O's are the least preferred.

Family is chosen by majority of male students i.e. 91(45.5%) to take accountability in inculcating environmental

ethics among the students whereas NGO's are the least preferred. Similarly, the bulk of female respondents give their first preference to Family to take responsibility in inculcating environmental ethics among the students, whilst N.G.O's are the least preferred.

From the above table it can be concluded that family is the most preferred agency to take accountability in imparting environmental ethics among students while N.G.O's are least preferred.

4.4.7 Opinion of all respondents on their priority in conservation of natural resources.

The following table 4.15 shows the natural resources that the respondents most wanted to conserve. The students are asked to tick their most preferred and least preferred natural resources.

Table 4.15**Opinion of all respondents on their uppermost preference in conservation of natural resources**

Respondents	ITEMS				
	Forest Resources	Mineral Resources	Water Resources	Food Resources	Energy Resources
All Sample N=400	1st Preferences				
	218 (54.5%)	49 (12.25%)	98 (24.5%)	21 (5.25%)	14 (3.5%)
	6th Preferences				
	24 (6%)	97 (24.25%)	17 (4.25%)	83 (20.75%)	179 (44.75%)
All Male N=200	1st Preferences				
	100 (50%)	29 (14.5%)	49 (24.5%)	13 (6.5%)	9 (4.5%)
	6th Preferences				
	16 (8%)	50 (25%)	3 (1.5%)	46 (23%)	84 (42%)
All Female N=200	1st Preferences				
	118 (59%)	20 (10%)	49 (24.5%)	8 (4%)	5 (2.5%)
	6th Preferences				
	8 (4%)	47 (23.5%)	14 (7%)	37 (18.5%)	95 (47.5%)

A look at Table No. 4.15 reveals that out of the 400 respondents, 54.5 % respondents chose Forest Resources as their uppermost priority in conservation of natural resources, while 44.75% respondents give their least preferences to Energy Resources.

Among 200 male respondents, 50% respondents give their first preference to Forest Resources, whereas 42% respondents give their least preference to Energy Resources.

Among 200 female respondents, 59% respondents give their first preference to Forest Resources while 47.5% respondents give their least preference to Energy Resources.

To conclude, amongst the different natural resources, majority of secondary school students most wanted to conserve forest resources. Preservation of energy resources is their least preferred natural resources for conservation.

4.4.8 Opinion of all respondents on their priority in solving environmental problem.

Table 4.16 shows the environmental problem that the respondents most preferred to solve. The students are asked to tick their most preferred and least preferred environmental problem.

Table 4.16

Opinion of all respondents on their priority in solving environmental problem

Global waring and climate change	Deforestation	Energy Crises	Ozone layer depletion	Pollution	Improper waste management	Depletion of resources	Over population	Nuclear issues	Loss of diversity
<i>1st preferences of all samples (N=400)</i>									
94 (23.5%)	75 (18.75%)	12 (3%)	51 (12.75%)	117 (29.25%)	11 (2.75%)	6 (1.5%)	16 (4%)	16 (4%)	2 (0.5%)
<i>Least preferences of all samples (N=400)</i>									
11 (2.75%)	12 (3%)	55 (13.75%)	18 (4.5%)	12 (3%)	34 (8.5%)	26 (6.5%)	83 (20.75%)	97 (24.25%)	52 (13%)
<i>1st preferences of all Male students</i>									
51 (25.5%)	42 (21%)	5 (2.5%)	18 (9%)	65 (32.5%)	3 (1.5%)	5 (2.5%)	4 (2%)	9 (4.5%)	1 (0.5%)
<i>Least preferences of all Male students</i>									
6 (3%)	5 (2.5%)	31 (15.5%)	5 (2.5%)	4 (2%)	19 (9.5%)	8 (4%)	43 (21.5%)	47 (23.5%)	26 (13%)
<i>1st preferences of all females students</i>									
43 (21.5%)	33 (16.5%)	7 (3.5%)	33 (16.5%)	52 (26%)	8 (4%)	1 (0.5%)	12 (6%)	7 (3.5%)	1 (0.5%)
<i>Least preferences of all female students</i>									
5 (2.5%)	7 (3.5%)	24 (12%)	13 (6.5%)	8 (4%)	15 (7.5%)	18 (9%)	40 (20%)	50 (25%)	26 (13%)

Table No. 4.16 reveals that among the different environmental problems, pollution problem is considered by majority of secondary school students (29.25%) as the most burning problem which needs to be solved while Nuclear issues is the most trivial. There are more male students (32.5%) than the female students (26%) who believed that pollution problem is the most essential issue to be resolved than any other environmental issues.

From the above table it can be concluded that secondary school students preferred to first of all solve pollution problem than any other environmental problems.

4.4.9 Opinion of all respondents on their uppermost priority in solving environmental pollution.

The following Table No.4.17 reveals the environment pollution that the respondents most wanted to solve. The students are asked to tick their most preferred and least preferred environmental pollution.

Table 4.17

Opinion of all respondents on their uppermost priority in solving environmental pollution.

Respondents	ITEMS					
	Air Pollution	Water Pollution	Soil Pollution	Noise Pollution	Radiation Pollution	Thermal Pollution
All Sample N=400	1st Preferences					
	209 (52.25%)	111 (27.75%)	29 (7.25%)	31 (7.75%)	5 (1.25%)	15 (3.75%)
	Least Preferences					
	17 (4.25%)	4 (1%)	27 (6.75%)	130 (32.5%)	114 (28.5%)	108 (27%)
All Male N=200	1st Preferences					
	115 (57.5%)	54 (27%)	12 (6%)	7 (3.5%)	3 (1.5%)	10 (5%)
	Least Preferences					
	9 (4.5%)	4 (2%)	10 (5%)	65 (32.5%)	58 (29%)	53 (26.5%)
All Female N=200	1st Preferences					
	94 (47%)	57 (28.5%)	17 (8.5%)	24 (12%)	2 (1%)	5 (2.5%)
	Least Preferences					
	8 (4%)	0 (0%)	17 (8.5%)	65 (32.5%)	56 (28%)	55 (27.5%)

A look at Table No. 4.17 reveals that out of the 400 respondents, 209 (52.25%) respondents most wanted to solve the problem of Air pollution amongst the different environmental pollution whereas majority are least concerned with noise pollution.

Among 200 male students, 57.5% of them gave their first preference to Air pollution, and 32.5% students give their least preference to Noise Pollution.

Among 200 female students 47% respondents give their first preference to Air Pollution, while 32.5% respondents give their least preference to Noise Pollution.

From the above table it can be concluded that in solving environmental pollution, the secondary school students most preferred to resolve the problem of Air Pollution while the problem of Noise Pollution is mostly overlooked.

4.5.0 Objective No.5: To make suggestions for improving the environmental ethics among secondary school students in Aizawl.

Importance should be given to environmental ethics so that the basic objectives of developing awareness, skills 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 environmental ethics among secondary school students in Aizawl.

1. Effective awareness programmes about environmental problems should be implemented from the upper primary level to inculcate right attitude from the beginning.

2. Environmental education should be activity based learning in order to enhance, encourage and motivate the students to learn and bring new life and meaning into their school experience rather than simple teaching through lecturing.
3. The government should provide the schools with necessary resources like teaching materials in order to enhance the learning of environmental issues.
4. Schools should offer different special activity related to environmental education.
5. Parents/ Family should be given suggestions for things to do with their children at home regarding environmental protection.
6. Different media should focus more on the need and importance of developing environmental ethics so that students will become more aware of the value of environmental ethics.
7. Adequate resource supports to teachers in the 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 in the area of environmental education.
10. Parents should not hold that teaching and training their children to develop environment friendly behaviour 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.
11. Students should be encouraged to be inquisitive about the things and events around them.
12. Students should be encouraged to collect pictorial information about the environmental issues from different journals, magazines etc and also develop their own and display these materials in their classrooms.
13. Environmental education/issues should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
14. Project works related to the contents of environmental issues should be assigned to the students for developing interest and investigative attitude.

CHAPTER – V
MAJOR FINDINGS, DISCUSSIONS,
RECOMMENDATIONS AND SUGGESTIONS
FOR FURTHER RESEARCH

CHAPTER V

MAJOR FINDINGS, DISCUSSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The present chapter deals with the major findings, discussions, recommendations and suggestions for further research.

5.1.0 MAJOR FINDINGS

The following are the major findings of the present study:

5.1.1 Level of environmental ethics among secondary school students in Aizawl.

1. Majority of the Secondary school student (43.5%) have high level of environmental ethics, 20% of the students have average level and 36.5% of the students have low level of environmental ethics.

5.1.2 Difference in the environmental ethics of secondary school students in Aizawl city with reference to their gender.

1. *Female* secondary school students have significantly higher environmental ethics than the *male* secondary school students
2. No significant difference is found between *government secondary school male and female* students with respect to their environmental ethics.
3. *Non-government secondary school female* students have significantly higher environmental ethics than the *non-government secondary school male* students.

5.1.3 Difference in the environmental ethics of secondary school students in Aizawl city with reference to their school management.

1. No significant difference is found between *government and non government* secondary school students with respect to their environmental ethics.

2. *Male students from government secondary schools* have significantly higher environmental ethics than the *male students from non government secondary schools* with respect to their environmental ethics.
3. *Female students from non government secondary schools* have significantly higher environmental ethics than the *female students from government secondary schools* with respect to their environmental ethics.

5.1.4 Opinion of secondary school students with respect to environmental issues.

1. Majority of secondary school students agreed that the existing environmental problems will hinder our future developments.
2. Majority of secondary school students said that awareness about environmental problems have been organized in their school.
3. Majority of secondary school students opined that middle school stage is the most desirable stage for initiating awareness about environmental problems.

4. Majority of secondary school students considered the most appropriate approach for carrying out awareness about environmental problems in the schools is through co-curricular activities.
5. Majority of secondary school students considered Media as the most desirable way for creating awareness about environmental problems.
6. Majority of secondary school students selected family as their most preferred organization for taking accountability in imparting environmental ethics among students.
7. Amongst the different natural resources, majority of secondary school students most wanted to conserve forest resources.
8. Amongst the different environmental problems, majority of secondary school students preferred to first of all solve pollution problem than any other environmental problems.
9. Amongst the different environmental pollution, majority of secondary school students most wanted to solve the problem of Air pollution.

5.1.5 Suggestions for improving the environmental ethics among secondary school students in Aizawl.

1. Effective awareness programmes about environmental problems should be implemented from the upper primary level to inculcate right attitude from the beginning.
2. Environmental education should be activity based learning in order to enhance, encourage and motivate the students to learn and bring new life and meaning into their school experience rather than simple teaching through lecturing.
3. The government should provide the schools with necessary resources like teaching materials in order to enhance the learning of environmental issues.
4. Schools should offer different special activity related to environmental education.
5. Parents/ Family should be given suggestions for things to do with their children at home regarding environmental protection.

6. Different media should focus more on the need and importance of developing environmental ethics so that students will become more aware of the value of environmental ethics.
7. Adequate resource supports to teachers in the 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 in the area of environmental education.
10. Parents should not hold that teaching and training their children to develop environment friendly behaviour 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.

11. Students should be encouraged to be inquisitive about the things and events around them.
12. Students should be encouraged to collect pictorial information about the environmental issues from different journals, magazines etc and also develop their own and display these materials in their classrooms.
13. Environmental education/issues should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
14. Project works related to the contents of environmental issues should be assigned to the students for developing interest and investigative attitude.

5.2.0 DISCUSSION ON THE FINDINGS OF THE PRESENT STUDY.

The main findings of the present study are discussed with respect to its probable causes

1. *Findings reveal that majority of the Secondary school student (43.5%) have high level of environmental ethics.*

Discussion: Raju, G (2007)¹; Mathivanan, K and Dr. G. Pazhanivelu (2013)² in their study also found that higher secondary school students have high environmental ethics. The topics on Environmental education is incorporated in the school syllabi at the secondary stage of education in Mizoram specifically in the social science subject of class IX and science subject of class X. Therefore, the probable reason why secondary school students in Aizawl city possessed high environmental ethics could be because the students were influenced by what they learnt in the schools.

2. *Finding also shows that Female secondary school students have significantly higher environmental ethics than the male secondary school students.*

Discussion: Similar studies have been established by Raju, G (2007)³ and Sundra Selvan (2005)⁴; who found that Girls students have more environmental ethics than the boy's students. Sulaiman (2010)⁵; Shanawaj (1999)⁶; Gul Hanim Erol and Kutret Gezer (2006)⁷ also found that girls possessed significantly more awareness of the environment than boys. Contrary to our findings, Mathivanan, K and G. Pazhanivelu (2013)⁸; Prerna Mandhyan (2013)⁹ found that there is no significant difference in the environmental ethics of male and

female school students. Tripathi (2000)¹⁰; Prashant Kumar Astalin (2011)¹¹ also found that boys have higher environmental awareness than the girls. Carol Gilligan (1982)¹² said 'Men are likely to consider ethical issues in terms of justice, rules and individual rights. Women on the other hand, tend to consider such issues in terms of relationship, caring and compassion'. In the state of Mizoram, there are no rigid set of laws that will place a person behind bars if one does not observe or conform to environmental ethics. Hence, this could be the plausible reasons why secondary school *male* students have lower environmental ethics than the female students. Perhaps male secondary school students believed that there is no reason why they should fully adhere to the environmental ethics especially if it is not being imposed to them by law. Meanwhile if female secondary school students consider environmental ethics in terms of care and compassion, there is every reason why female students should have higher environmental ethics than the male secondary school students. Conceivably, female secondary school students will instinctively care for the environment because of their innate characteristics and tendencies which is an inborn trait. Therefore, it is not without a reason that the present study found that female secondary school students possessed higher

environmental ethics compared to the male secondary school students.

3. *It was also found that among the Non-government secondary schools, female students have significantly higher environmental ethics than male students.*

Discussion: Stern, P, Dietz, T, & Kalof, L. (1993)¹³ states that gender differences in environmentalism is connected to socialization and values. Females, compared to males, are socialized to value the needs of others, and they exhibit more helping behaviour and altruism. Helping behaviour is most likely to occur when individuals are aware of harmful consequences. Women are more aware about the harmful consequences of poor environmental conditions for others, and this leads to more pro-environmental behaviour. Therefore, the probable reason for *Non-government secondary school female* students' superiority over the *non-government secondary school male* students could be attributed to the fact that women have consistently stronger pro-environmental values, beliefs, and attitudes than do men. Therefore, the findings *Non-government secondary school female* students have significantly higher environmental ethics than the *non-government secondary school male* students is not without a reason.

4. *When all government school students and all non government school students are compared, it was found that there are no significant differences in the environmental ethics of students in these two types of school managements.*

Discussion: Mathivanan, K and G. Pazhanivelu (2013)¹⁴ also found that there is no significant difference in the environmental ethics between government and non government schools. But contrary to the present finding Mathivanan, K and Dr. G. Pazhanivelu (2013)¹⁵ found that there is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics. Tuncer, et al (2009)¹⁶ also found that students from the private school scored higher than their government counterparts. With respect to the present findings, the reason why there is no significant difference in the environmental ethics of secondary school students could be because both the two type of schools, whether government or non-government follow the same environmental curriculum prescribed by the board. Therefore, this could be the possible reason for the present findings.

5. *When only male students from Government schools and non-government schools were compared, the present study found that male students from government schools had a significantly higher environmental ethics than the male students from the non-government schools.*

Discussion: The probable reason for the present findings could be that in government schools of Mizoram, more qualified teachers are recruited with better salary. It is essential for teachers to spread awareness about environment and sustainable development. Teachers are an effective tool in this regard. If the teacher is aware only then he can make the students aware about the environmental issues, their effects and solutions and can imbibe in them environmental ethics. Perhaps, male students from government schools are more inspired by their better qualified teachers to develop environmental ethics than the female students.

6. *When only female students from government and non-government schools are compared, the present research found that female students from non-government schools possessed higher environmental ethics than the female students from government schools.*

Discussion: The apparent reason for this finding could be that the non-government schools which are mostly managed by private board usually recruit teachers who are not as qualified because they can engage them with lesser pay. These teachers though they work harder than the government employed teachers are not really satisfied with their job and are constantly searching for new job opportunities in government managed institutions. Perhaps these teachers had a negative influence upon the male students when it comes to environmental education, thus resulting in female students acquiring higher environmental ethics than the male students.

7. *It was found that majority of secondary school students believed that the existing environmental problems will hinder our future developments.*

Discussion: The reason could be because these secondary school students are aware that many of our problems are caused by the increase in our population. The more the people and the more affluent their lifestyle, the more resources they will use and the more numerous and severe our problems will become. This could be the likely reason why students agreed that the existing environmental problems will hinder our future developments.

8. *It was found that majority of secondary school students chose middle school stage as the most desirable stage for initiating awareness about environmental problems.*

Discussion: Although it is well and good to initiate awareness about environmental problem at the primary stage of education, the students in the present study thought primary stage is too early to initiate awareness about environmental problems. Perhaps they thought that they are too young and immature to understand about environmental problems. Therefore this could be the reason they chose middle school stage as the most ideal stage to initiate awareness about environmental problems.

9. *Findings reveal that majority of secondary school students considered the most appropriate approach for carrying out awareness about environmental problems in the schools is through co-curricular activities.*

Discussion: Co-curricular activities are an integral part of curriculum which provides educational activities to the students and thereby help in broadening their experiences. Perhaps the secondary school students believed that awareness about environmental problems through co-curricular activities will enhance and broaden their experience about environmental

problems especially if it is organized with a specific purpose, rather than through other means such as the school syllabi, school assembly or through the school seminar.

10. Findings reveal that majority of secondary school students considered Media as the most desirable means for creating awareness about environmental problems.

Discussion: Media is defined as the means of communication, such as radio and television, newspapers and magazines which reach or influence people widely. Media has transformed our everyday life to the point where we are aware of world events within minutes of their occurrences. The possible reason why secondary school students considered Media as the most desirable means for creating awareness about environmental problems could be because they understood that mass media are prompt and are accessible to large proportions of the population and that they are good for disseminating information and are an excellent means of changing people's attitude and behaviour.

11. Findings indicated that majority of secondary school students selected family as their most preferred agency for taking accountability in imparting environmental ethics among students.

Discussion: Perhaps secondary school students understood that family is the crucible in which the early stages of children's character development takes place. Since ethics deals with the formation and expression of character, there is no better place to begin their development than in the family home. Parents are responsible for building environmental ethics into their children. This may be the probable reason why secondary school students preferred family to take accountability in imparting environmental ethics.

12. It was found that amongst the different natural resources, majority of secondary school students most wanted to conserve forest resources.

Discussion: Forest is essential to meet the socio-economic and environmental needs of the present and future generations. If they are destroyed, there is no way that human beings can survive. From the oxygen that we breathe in, the food that we eat, to the clothes we wear, we owe it all to the trees. Not only this, trees act as purifiers of air and receptacles of our waste

products. Trees have great economic value too. We get fuel, fodder, timber, medicines and numerous other valuable products from the trees. It is, therefore, not surprising that majority of secondary school students wanted to conserve forest resources.

13. It was found that amongst the different environmental problems, majority of secondary school students preferred to first of all solve pollution problem than any other environmental problems.

Discussion: Solid waste such as waste produced in our homes, businesses and some industrial sources are essentially garbage.

Solid waste production in this country is growing in volume and in toxicity. More and more of our everyday products contain toxic chemicals, such as mercury or PBDEs (flame retardant chemicals), and these toxic products are combined with a plethora of other chemicals, which eventually impact public health and the environment. This may be the reason why majority of secondary school students would like to first of all solve pollution problem than any other environmental problems like global warming, deforestation, over population etc.

14. *It was found that amongst the different environmental pollution, majority of secondary school students most wanted to solve the problem of Air pollution.*

Discussion: We can go days without food and hours without water, but we would last only a few minutes without air. Air pollution can damage trees, crops, other plants, lakes, and animals. In addition to damaging the natural environment, air pollution also damages buildings, monuments, and statues. Breathing polluted air can make our eyes and nose burn. It can irritate our throat and make breathing difficult. Air pollution can also aggravate health problems for the elderly and others with heart or respiratory diseases. Other pollutants make their way up into the upper atmosphere, causing a thinning of the protective ozone layer. This has led to changes in the environment and dramatic increases in skin cancers and cataracts (eye damage). Air pollution isn't just a threat to our health, it also damages our environment. Toxic air pollutants and the chemicals that form acid rain and ground-level ozone can damage trees, crops, wildlife, lakes and other bodies of water. Those pollutants can also harm fish and other aquatic life. Therefore, this may be the reason why secondary school teachers most wanted to solve the problem of air pollution

instead of other pollution problem such as the water pollution, noise pollution etc.

5.3.0 RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH.

5.3.1 Recommendations:

The following recommendations are proposed:

1. The Government should ensure that Environmental Education should be introduced as a separate subject in the school syllabus.
2. Environment and Pollution Control Board under the Government of Mizoram should inculcate Environmental Ethics among the Mizo community.
3. The Government should sanction more funds to the N.G.O's (such as Y.M.A, M.U.P, M.H.I.P etc) so that they can maintain cleanliness in their own locality and villages.
4. The Government should take measures so that people become aware of the harm done by the practice of Jhum cultivation and encourage Terrace farming as Jhum cultivation really pollutes our environment.

5. The Government must create awareness among people about the damage done by different kinds of pollution and how to solve them through different kinds of Media.

5.3.2 Suggestions for further research:

Suggestions for further research is proposed by the investigator as follows:

1. A study of environmental crisis in North East India.
2. A study of environmental awareness and environmental ethics among higher secondary school students in Mizoram.
3. Environmental ethics: A study of its problems and solutions in Mizoram.
4. Environmental Ethics in Middle School Students in Mizoram: Analysis of the Moral Orientation of Student Responses to Environment Dilemmas.
5. Study of Environmental Education among the Higher Secondary Students in Mizoram.

End Notes:

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SUMMARY

SUMMARY

INTRODUCTION

Man is a part of the environment and cannot afford to abuse the environment too much. Protection of the ecosystem is as much in the interest of man as for the environment. Man should realize that the environment is a natural heritage which is not for him to exploit. To live in harmony with nature, one has to respect it first, and environmental education should teach just that.

Environment:

Environment is defined as surrounding or conditions influencing development or growth. It can be understood as a system which includes all living and non-living things, i.e. air, water, soil, vegetation, flora and fauna.

In simple words, environment means conditions of life. It is a physical and biotic habitat which surrounds us, that we can see, touch, smell, hear and feel. In the words of Anne Anastassi (1937), "The environment is everything that affects the life of an individual except his genes".

Ethics:

Ethics is the branch of philosophy in which man attempts to evaluate and decide upon at particular courses of moral action of general theories of conduct. It is considered a normative science, because it is concerned with norms of human conduct.

Thus, 'Ethics' literally means the science of custom or habits of men. In India also, the word 'dharma' has been explained in two ways. On one hand, it stands for preservation of traditional values as reflected in social customs; on the other it means moral qualities of universal nature like non-violence and truth. In the history of ethics there are three principal standards of conduct, each of which has been proposed by various groups or individuals as the highest good: happiness or pleasure; duty, virtue, or obligation; and perfection, the fullest harmonious development of human potential.

Environmental ethics:

Environmental ethics studies the ethical relationship between human beings and the environment. It considers extending the traditional boundaries of ethics from solely including humans to including the non-human world.

According to Taylor (1989), “Environmental Ethics is concerned with the moral relation that holds between the humans and the natural environment”. It is the discipline that studies the value, the moral status, and the moral relationship of human beings to the natural environment and its non-human content. The early task of environmental ethics is to define an environment worthy of human sympathy, then develop and justify a theory of moral relationship between humans and the natural environment.

RATIONALE OF THE STUDY:

Few studies in the field of environmental ethics have been conducted in other parts of the states in our country as well as the world over. However, no studies have ever been conducted in the area of Environmental ethics in the state of Mizoram. Therefore, a study to find out the environmental ethics by secondary school students would provide us with an understanding of how far secondary school students perceive and are aware of the environmental ethics in their life. Moreover, studying the environmental ethics among secondary school students would enable us to make suggestions on how to build up the environmental ethics not only among the secondary

school students but to the general public since this has become an important public issue in today's world. The investigator, through this study expects to reveal the level of awareness of environmental ethics amongst our youth and to enhance this moral code for the betterment of our society in the state.

STATEMENT OF THE PROBLEM:

The present study is stated as ***“Environmental Ethics among Secondary School Students in Aizawl City”***.

OPERATIONAL DEFINITION OF THE TERMS USED:

Environmental Ethics: In the present study environmental ethics refer to the score obtained on the Environmental Ethics Scale developed by Dr. Haseen Taj (2001).

Secondary School Students: For the present study secondary school students refer to students of class IX and X studying in Govt. and Non-Govt. schools of Aizawl District affiliated to Mizoram Board of School Education (M.B.S.E).

OBJECTIVES OF THE STUDY:

1. To study the level of environmental ethics of secondary school students in Aizawl.
2. To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their gender.
3. To find out the difference in the environmental ethics of secondary school students in Aizawl city with respect to their school management.
4. To study the opinion of students with respect to different environmental issues.
5. To make suggestions for improving the environmental ethics among secondary school students in Aizawl.

HYPOTHESES:

1. There is no significant difference in the environmental ethics of *Male and Female* secondary school students in Aizawl.
2. There is no significant difference in the environmental ethics of *male and female* students coming from only *Government secondary schools*.

3. There is no significant difference in the environmental ethics of *male and female* students coming from only *non government secondary schools*
4. There is no significant difference in the environmental ethics of *Government and Non-Government* secondary school students in Aizawl.
5. There is no significant difference in the environmental ethics of only *male* students of *Government and Non-Government schools*.
6. There is no significant difference in the environmental ethics of only *female* students of *Government and Non-Government schools*.

METHODOLOGY

Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group. Studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situations are all instances of descriptive research studies. The present study would belong to the category of "descriptive research" with composite characteristics of inter-group comparison, since, the main

objective is to study the level of environmental ethics of secondary school students in Aizawl in relation to their gender and school management and to study the opinion of the students on different environmental issues. Blends of both qualitative and quantitative analysis have been employed in the present investigation.

Population: The population of the study comprise of all secondary schools students of Aizawl City

Sample: For the present study, 400 students are selected as a representative sample. The final sample size comprised of 200 girls and 200 boys studying in Government and Non-Government secondary in Aizawl City. The samples were selected following Stratified Random Sampling.

The sample distribution of the students is presented in the following table.

Table- 1

Sample Distribution of the Students

Government Schools		Non Government Schools	
Males	Females	Males	Females
100	100	100	100

Tools used:

The following tools were used for the present study:

i) Environmental Ethics Scale developed by Dr. Haseen Taj; Nandini Enterprises; Agra. (2001).

ii) Opinionnaire on issues related to environmental ethics: Developed by the investigator

Mode of data collection

The primary data for the present study were collected personally by visiting the selected schools during the months of November 2013. The tools mentioned above were administered personally to the students in the selected schools within Aizawl city.

Analysis of data:

The data collected from the 400 students, were scrutinized, classified and scored according to standard procedure. After scoring the responses of both the opinionnaire and attitude scale, they were tabulated. Each respondent was assigned a serial number in order of the variable being studied. The scores were then entered in the tabulation sheet in Excel and were subject to statistical treatment by employing the following statistical techniques for the analysis.

Measures of Central tendency, Percentages and stanine were employed to find out the nature of score distribution as well as for the purpose of categorizing the respondents into different groups.

The difference between the mean scores of the groups based upon the variable such as gender and management of schools with respect to environment ethics were tested for significance by applying the t-test.

MAJOR FINDINGS:

The following are the major findings of the present study:

1. *Level of environmental ethics among secondary school students in Aizawl.*

1. Majority of the Secondary school student (43.5%) have high level of environmental ethics, 20% of the students have average level and 36.5% of the students have low level of environmental ethics.

2. *Difference in the environmental ethics of secondary school students in Aizawl city with reference to their gender.*

1. *Female* secondary school students have significantly higher environmental ethics than the *male* secondary school students.
2. No significant difference is found between *government secondary school male and female* students with respect to their environmental ethics.

3. *Non-government secondary school female* students have significantly higher environmental ethics than the *non-government secondary school male* students.

3. *Difference in the environmental ethics of secondary school students in Aizawl city with reference to their school management.*

1. No significant difference is found between *government and non government* secondary school students with respect to their environmental ethics.
2. *Male students from government secondary schools* have significantly higher environmental ethics than the *male students from non government secondary schools* with respect to their environmental ethics.
3. *Female students from non government secondary schools* have significantly higher environmental ethics than the *female students from government secondary schools* with respect to their environmental ethics.

4. *Opinion of secondary school students with respect to environmental issues.*

1. Majority of secondary school students agreed that the existing environmental problems will hinder our future developments.
2. Majority of secondary school students said that awareness about environmental problems have been organized in their school.
3. Majority of secondary school students opined that middle school stage is the most desirable stage for initiating awareness about environmental problems.
4. Majority of secondary school students considered the most appropriate approach for carrying out awareness about environmental problems in the schools is through co-curricular activities.
5. Majority of secondary school students considered Media as the most desirable way for creating awareness about environmental problems.

6. Majority of secondary school students selected family as their most preferred organization for taking accountability in imparting environmental ethics among students.
7. Amongst the different natural resources, majority of secondary school students most wanted to conserve forest resources.
8. Amongst the different environmental problems, majority of secondary school students preferred to first of all solve pollution problem than any other environmental problems.
9. Amongst the different environmental pollution, majority of secondary school students most wanted to solve the problem of Air pollution.

5. Suggestions for improving the environmental ethics among secondary school students in Aizawl.

1. Effective awareness programmes about environmental problems should be implemented from the upper primary level to inculcate right attitude from the beginning.
2. Environmental education should be activity based learning in order to enhance, encourage and motivate the students

to learn and bring new life and meaning into their school experience rather than simple teaching through lecturing.

3. The government should provide the schools with necessary resources like teaching materials in order to enhance the learning of environmental issues.
4. Schools should offer different special activity related to environmental education.
5. Parents/ Family should be given suggestions for things to do with their children at home regarding environmental protection.
6. Different media should focus more on the need and importance of developing environmental ethics so that students will become more aware of the value of environmental ethics.
7. Adequate resource supports to teachers in the 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 in the area of environmental education.
10. Parents should not hold that teaching and training their children to develop environment friendly behaviour 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.
11. Students should be encouraged to be inquisitive about the things and events around them.
12. Students should be encouraged to collect pictorial information about the environmental issues from different journals, magazines etc and also develop their own and display these materials in their classrooms.
13. Environmental education/issues should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
14. Project works related to the contents of environmental issues should be assigned to the students for developing interest and investigative attitude.

RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH:

Recommendations:

The following recommendations are proposed:

1. The Government should ensure that Environmental Education should be introduced as a separate subject in the school syllabus.
2. Environment and Pollution Control Board under the Government of Mizoram should inculcate Environmental Ethics among the Mizo community.
3. The Government should sanction more funds to the N.G.O's (such as Y.M.A, M.U.P, M.H.I.P etc) so that they can maintain cleanliness in their own locality and villages.
4. The Government should take measures so that people become aware of the harm done by the practice of Jhum cultivation and encourage Terrace farming as Jhum cultivation really pollutes our environment.
5. The Government must create awareness among people about the damage done by different kinds of pollution and how to solve them through different kinds of Media.

Suggestions for further research:

Suggestions for further research is proposed by the investigator as follows:

1. A study of environmental crisis in North East India.
2. A study of environmental awareness and environmental ethics among higher secondary school students in Mizoram
3. Environmental ethics: A study of its problems and solutions in Mizoram
4. Environmental Ethics in Middle School Students in Mizoram: Analysis of the Moral Orientation of Student Responses to Environment Dilemmas
5. Study of Environmental Education among the Higher Secondary Students in Mizoram.

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- <http://www.iep.utm.edu/envi-eth/>(15.3.2014)
- http://en.wikipedia.org/wiki/Aizawl_district (19.3.2014)
- http://en.wikipedia.org/wiki/Secondary_school(19.3.2014)
- http://www.ripublication.com/ijeisv1n1/ijeisv3n2_03.pdf
(12.4.2015)
- <http://homepages.se.edu/cvonbergen/files/2013/01/Women-and-Men-Morality-and-Ethics.pdf>(13.5.2015)
- http://web.stanford.edu/~kcarmel/CC_BehavChange_Course/readings/Additional%20Resources/J%20Soc%20Issues%202000/zelezny_2000_6_gender_b.pdf(17.4.2015)

APPENDICES

APPENDIX - I



Consumable Booklet

of

E E S

(English Version)

Dr. Haseen Taj (Bangalore)

Please fill in the following informations :—

Name.....

Age..... Sex.....

Educational Qualification.....

Monthly Income from all sources.....

Locality—Rural/Urban.....

INSTRUCTIONS

Here are given 45 statements. Against each statement you find three response alternatives. Choose the answer closest to your opinion and tick mark (✓) on the cell below your favoured response. None of the answer is either right or wrong. It is your opinion that counts. For example :

	I agree absolutely	I slightly agree	I don't agree
Testing cosmetics on animals should be forbidden.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

You have to choose one of the three responses. If you agree absolutely with the statement please tick (✓) the cell below that statement, if you do not agree with the statement tick the cell (✓) below that response, like wise you have to respond all statements.

SCORING TABLE

Raw Score	Stanine Grade	Interpretation

Estd. 1981

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NANDINI ENTERPRISES

23/451, WAZIRPURA, AGRA – 282 003 (INDIA)

2 | Consumable Booklet of E E S

Sl. No.	STATEMENTS	Responses		
		I agree absolutely	I slightly agree	I don't agree
● 1.	Poor people are responsible for environmental degradation therefore they deserve punishment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 2.	Animal killing for purposes of consumption need not be considered as an act of cruelty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 3.	One need not hesitate to throw the peel-offs and wastes on the street pavements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 4.	Smoking in public places should not be a matter of concern.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 5.	People should use plenty of running water from tap for washing the clothes or utensils, when they get free of charge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 6.	One need not bother about putting the lights or fans out in one's work-place when he is not paying for it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 7.	It is foolish not to exhaust the freely available resources at one's disposal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 8.	Human beings are superior to all other species, so they should have all freedom to utilize any resource they want.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 9.	People should inculcate such food habits which least affect either the plants or animals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 10.	Electricity should be used in plenty only when it is provided free of charge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 11.	Legislations on prevention of killing of animals are unwanted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 12.	Acts on protection of animals are not required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 13.	One need not bother about environmental pollution while using vehicles for comfortable commuting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 14.	Environmental protection is a cumulative effort, hence single individual need not be concerned about it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sl. No.	STATEMENTS	Responses		
		I agree absolutely	I slightly agree	I don't agree
● 15.	Our houses should be kept clean by dumping all the wastes outside.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Saving energy is everybody's responsibility for national good.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 17.	Plastic bags can be thrown anywhere once they are used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 18.	Throwing broken glasses in places with less traffic is not dangerous.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Use of own vehicles should be discouraged among friends and relatives for environmental protection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 20.	One need not hesitate to pollute the waters as long as he is not using it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	People should take active part in environmental protection campaigns whether it is directly beneficial to them or not.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Protected areas for animals should be expanded to keep the animals safely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	Animal poachers should be punished severely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24.	Solar energy should be used to prevent environmental pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 25.	One should have the concern about water pollution only if he is using it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 26.	There is no meaning in taking part in tree plantation programme when it is not directly beneficial to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 27.	One should involve in community cleaning programmes in one's own area only.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 28.	One need not stop using own vehicles, when major pollution is caused by bigger concerns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 29.	The benefits derived out of the dams and reservoirs are much more than the damage caused to human and animal lives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sl. No.	STATEMENTS	Responses		
		I agree absolutely	I slightly agree	I don't agree
● 30.	There is no need to dig pits to dump wastes as long as there are open places.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 31.	Domestic and industrial waste can be thrown in running water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 32.	It is desirable to construct rich enclaves by demolishing slums.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 33.	It is not wrong to bath and wash in ponds which are used for drinking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 34.	The farm owners should use plenty of chemical fertilizers and pesticides to increase crop productivity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 35.	It is not wrong to cut trees and preserve it for fuel-wood if available freely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 36.	A businessman need not consider it wrong to use chemical additives to preserve food though hazardous to health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 37.	One need not take the risk of informing the authorities if he witnesses animal poaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 38.	One should participate in agitations only when it causes damage to personal property.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 39.	It is not wrong to exhibit animals to earn money.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 40.	It is not wrong to cage animals and birds for human pleasure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 41.	It is not wrong to exhibit animals for entertainment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 42.	Children should be taught not to drop the waste in the streets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 43.	It is not wrong to kill wild and dangerous animals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 44.	Deriving pleasure by teasing animal is not wrong.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
● 45.	High consumption is a matter of right for high income groups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX - II

Name.....

Sex: (Male/Female).....

Name of school.....

Type of organization: (Government/Private).....

OPINIONNAIRE ON ENVIRONMENTAL ISSUES

1. The existing environmental problems will hinder our future development.

Agree	<input type="checkbox"/>
Undecided	<input type="checkbox"/>
Disagree	<input type="checkbox"/>

2. Awareness about Environmental problems have been organized in our school.

Yes	<input type="checkbox"/>
Don't know	<input type="checkbox"/>
No	<input type="checkbox"/>

3. Awareness about environmental problems should be initiated at the: (tick any one)

a) Pre-primary level	<input type="checkbox"/>
b) Primary school level	<input type="checkbox"/>
c) Middle school level	<input type="checkbox"/>
d) High School level	<input type="checkbox"/>
e) Higher secondary level	<input type="checkbox"/>
f) College level	<input type="checkbox"/>
g) University level	<input type="checkbox"/>

4. Awareness about environmental problems should be carried in the school through: (tick any one)

a) School syllabus	<input type="checkbox"/>
b) Co-curricular activities	<input type="checkbox"/>
c) School seminar	<input type="checkbox"/>
d) School assembly	<input type="checkbox"/>

5. The most ideal way for creating awareness about the environmental problem is: (tick any one)

a) Community Halls	<input type="checkbox"/>
b) Sunday Schools	<input type="checkbox"/>
c) Classrooms	<input type="checkbox"/>
d) Home & Family	<input type="checkbox"/>
e) Media (newspaper, TV, Internet, Radio etc.)	<input type="checkbox"/>

6. Inculcating environmental ethics among the students in the school should be the responsibility of: (Select according to preference giving 1 (one) to the most preferred and 4 (four) to the least preferred)

- (1) The Family ()
- (2) The School ()
- (3) The Teacher ()
- (4) The Head Master/Principal ()
- (5) The Government ()
- (6) The N.G.O's ()

7. What should be our priority in conservation of natural resources? (Select according to your priority giving 1 (one) to the most preferred and 5 (five) to the least preferred)

- (1) Forest resources ()
- (2) Mineral resources ()
- (3) Water resources ()
- (4) Food resources ()
- (5) Energy resources ()

8. Amongst the following environmental problems, what should be our priority in solving them? Select according to your priority giving 1 (one) to the most preferred and 10 (ten) to the least preferred)

- (1) Global warming and climate change ()
- (2) Deforestation ()
- (3) Energy crises ()
- (4) Ozone layer depletion ()
- (5) Pollution (air, water, soil, noise etc) ()
- (6) Improper waste management ()
- (7) Depletion of resources ()
- (8) Over population ()
- (9) Nuclear issues ()
- (10) Loss of biodiversity ()

9. Amongst the following environmental pollution, what should be our priority in solving them? Select according to your preferences giving 1 (one) to the most preferred and 4 (four) to the least preferred)

- (1) Air pollution ()
- (2) Water pollution ()
- (3) Soil pollution ()
- (4) Noise pollution ()
- (5) Radiation pollution ()
- (6) Thermal pollution ()

PARTICULARS OF THE CANDIDATE

NAME OF THE CANDIDATE : CHRISTINA V.L HMANGAIHZUALI

DEGREE : M. Phil

DEPARTMENT : EDUCATION

TITLE OF DISSERTATION : Environmental Ethics Among
Secondary School Students in
Aizawl City, Mizoram.

DATE OF PAYMENT OF : 05.08.2013
ADMISSION

(Commencement of First Sem)

COMMENCEMENT OF FIRST : January 2014
SEM/DISSERTATION

(From conclusion of end and semester exams)

APPROVAL OF RESEARCH PROPOSAL

1. BOS in Education : 23.04.2014

2. SCHOOL BOARD : 09.05.2014

REGISTRATION NO. & DATE : MZU/M.Phil./156 of 09.05.2014

DUE DATE OF SUBMISSION : 31st December, 2014

EXTENSION (If Any) : Upto 31st July, 2015