ENVIRONMENTAL ETHICS OF UNDER-GRADUATE STUDENTS IN MIZORAM AND THEIR ATTITUDE TOWARDS ENVIRONMENTAL PROTECTION

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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MZU REGISTRATION NO: 407 of 2007-08

Ph.D. REGISTRATION NO: MZU/Ph.D./1056 of 06.11.2017

DEPARTMENT OF EDUCATION

SCHOOL OF EDUCATION

FEBRUARY, 2023

Environmental Ethics of Under-Graduate Students in Mizoram and their Attitude towards Environmental Protection

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CERTIFICATE

This is to certify that the thesis entitled **'Environmental Ethics of Under-Graduate Students in Mizoram and their Attitude towards Environmental Protection'**, submitted by Christina Vanlalhmangaihzuali, Ph.D. Scholar, Department of Education, Mizoram University, Regn. No. MZU/Ph.D./1056 of 06.11.2017, for the degree of Doctor of Philosophy in Education of the Mizoram University, Aizawl, India embodies the record of original investigations carried out by her under my supervision. She has been duly registered and the thesis presented is worthy of being considered for the award of Ph.D. degree. This research work has not been submitted for any degree of any other university.

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DECLARATION

I Christina Vanlalhmangaihzuali, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

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ACKNOWLEDGEMENT

First and foremost, I would like express my sincere thanks to the Almighty God for his guidance and blessings and providing me with good health to complete my thesis.

A sincere and heartfelt gratitude to my supervisor Dr. Lalhriatpuii for her sincere guidance and invaluable advice rendered to me from the start till the final completion of my thesis. Without her guidance I would not be able to bring out this thesis in its present form.

I must not fail to acknowledge my sincere gratitude to the Principals, Faculty and Staffs for their constant help and cooperation and Students of colleges of Mizoram for their responses of the tests given to them for the collection of data.

I am sincerely thankful to all the faculty and office staffs of the Department of Education, Mizoram University for their continuous support and encouragement and providing me astonishing help whenever I required.

I am forever indebted to my parents for their unconditional love and support throughout the entire work. Without their prayers and motivation this work would not be completed. I am also grateful to my brother and friends for lending me a helping hand and their emotional support throughout this study.

I dedicate this work to my son Samuel Lalpekhlua, thank you for being my inspiration.

Dated: Aizawl (CHRISTINA VANLALHMANGAIHZUALI)

The 22nd February, 2023 Department of Education

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CHAPTER I
INTRODUCTION

The environment has always been a matter of great concern for the people in general. It refers to all social, economic, biological, physical and chemical factors which constitute the surroundings of man and includes all those things on which we are directly or indirectly dependent for our survival. 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".

Education elevates a holistic approach towards the protection and conservation. Environment is the basic of life support and therefore deserves proper care and management. Environmental health hazards such as chemical substances, biological substances, human industrialization, disposal of waste, water quality, air quality etc. pose health risks and therefore methods on monitoring and control of the environmental hazards, safety precautions towards environmental hazards for healthier environment has to be carried out in school, home and community.

Environmental ethics is concerned both theory and practice about appropriate concern for, values in, and duties regarding the natural world. Ethics is all about people relating to people in justice and love. Environmental ethics starts with human concerns for a quality and hygienic. We should educate ourselves about the environment and seize responsibility as global citizens and make a positive change for our planet earth which will help us utilize our resources more efficiently and productively and without harming our environment.

Environmental ethics and positive attitude towards environment protection gives students a new meaning to exploring the gravity of nature and to see and resolve the issues which are harmful to the environment.

By providing environmental education to students, they will engage problem-solving techniques of the outer world to their subjects to understand a particular problem by implying outdoor environmental solutions and make judicious use of them.

Our environment deserves proper care, nurturing and management and therefore be responsivity for its protection. The environment is part of our cultural heritage which should be handed down to prosperity. Some resources of the environment are not easily replaceable and should be managed on a sustainable basis. The present study shall enlighten all college students on the physical components of the environment. Awareness about their dependence on the environmental resources and to develop community and environmental ethics.

State resistance to environmental education in the early stages, environmental education initiatives have generally been oriented towards grassroots developments in environmental education. Schools, centers of environmental education, and NGO's have been developing innovative ways of teaching and learning about environmental issues, ranging from scientific and economic to cultural subjects. The efforts have a double impetus. Firstly, it has to develop environmental awareness and commitment in teachers, students and, thereby, the community. Secondly, it has to develop dynamic qualities in young people, to make the understand that they, too, can contribute to their society by meaningful activities. Thus, mere textbook knowledge is hopelessly inadequate for achieving the goals of environmental education.

Environmental awareness and human dynamism are closely interdependent. Explaining complex environmental concepts through new approaches and techniques offers the development potential for human creativity, intelligence and organizational skills. (Chitrabhanu, 2007)

A good teacher will be able to deal with the multiplex problems that come up in everyday life. Education today aims at imparting positive learning outcomes and meeting the needs of learners in order to become productive and informed members of society. Teachers can act as conservationist and green warrior by managing ways to

impart environmental knowledge at every stage of educational institutions. The best way to spread ethics and protection of our environmental is through education.

Teachers play a predominant role in imparting knowledge and sensitizing the students and society about environment protection. Teachers help in gearing the various environmental issues and. Positive attitude towards environmental ethics and protection is a powerful sensitization tool for the conservation of environment, its biodiversity and the sustainable use of natural resources. Many studies finds that teachers play leading role in imparting environmental literacy and ethics and ways of its protection at all level of school education. Environmental threads and hazards have tremendously increased at the global, regional and local levels in the last few decades such as unsafe drinking water, soil pollutants, plastic hazards, garbage crisis, waste management, air pollution, harmful asbestos use etc. It is an ethical imperative to develop strategies to protect citizens from all environmental hazards. Educational institutions must invest and adopt strategies and framework to protect students from all persistent hazards so as to promote a healthy physical environment. Moreover, different environmental agencies should assist all schools and colleges in promoting and maintaining healthy physical environment.

The teachers, administrators, educational planners, parents should involve in environmental education programmes. The UGC should also accord high priority in establishing courses in colleges and universities on environmental education. The instructional materials on environmental education should be produces according to the local needs. The textbook and teaching aids should be developed to supplement instruction. Writing of textbooks on environmental education should be encouraged. Trained/ subject-expert teachers should be given high priority in recruitment to colleges to undertake the environmental science subject.

The success of educational planning will be dependent on the awareness of environmental problems and the need for conservation of the natural environment which has to be inculcated in the rural and urban masses. This can be achieved through the introduction of courses in environmental studies at different levels of university

education and by the introduction of research programmes in the university departments. (Rao & Reddy, 2012)

1.1 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 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. (Ghanta & Rao, 2003)

Environment literally meaning 'surroundings' has a wide connotation including within its purview physical, biotic and human aspects of the earth. It includes the earth surface with all its physical features and natural resources, the distribution of land and water, mountains and plains, minerals, plants and animals, the climates and all cosmic forces that play upon the earth and affect the life of man. Thus, all that surrounds a designated eco-system is called environment. (Tiwari & Yadav, 1983).

Environment is a 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 Anastassi (1937) "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"

Britannica (Encyclopedia) "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."

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

Khoshoo (1978) "The sum total of all conditions and influences that affect the development of life of all organisms."

1.1.1 FACTORS/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.

1. Non-living component or Abiotic component: Under this category are non-living things like soil, air and water though in different forms. However, on-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 is 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 (Chloro fluro carbon) 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 Spills 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 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), “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), “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) and Garrett Hardin's "The Tragedy of the Commons" (December 1968). 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).

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), 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 thinks this shape the ethics from starts 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 behavior 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 ease? 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 expanse 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 ENVIRONMENTAL PROTECTION:

Environmental protection is a practice of protecting the natural environment on individual, organisation controlled or governmental levels, for the benefit of both the environment and humans. Many people, even educated, do not know what environment protection is. Environmental protection means making the environment clean, impure by throwing all sorts of contaminated materials and perished on the roads and dumping garbage in the residential areas where people are living. It is the people, who do not have any civic sense and health consciousness, contribute to the environmental protection. The natural environment is normally clean and pure and it is man who always destroys the purity and cleanliness of the environment by his aggressive attitude toward the environment. Further, man in spite of so much of the development of science and technology, has not learned how to live a healthy life. If the environment is to be kept clean and pure, techniques should be developed to recycle the wastages and convert them into some useful material.

Environmental protection includes programs that are aimed at reducing risks to the environment from contaminants such as hazardous materials and wastes, fuels, and oils. These programs address pollution prevention measures and regulatory compliance by providing procedures for safely working with these materials, inspecting the storage vessels and locations, and designating preventative maintenance procedures. Also included are environmental emergency plans, which provide the appropriate actions to be taken in the event of a spill or release.

Indian Constitution emphasizes the need for environmental protection. Article 48-A states that "The state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country". (Article 51-A (g)) confers a fundamental duty upon every citizen of India to protect the environment, "It shall be the duty of every citizen of India to protect and improve the natural environment, including forests, lakes, rivers and wild life, and to have compassion for living creatures.

Environmental protection/conservation is the axis for the economic well-being and the peaceful existence of humanity on the surface of the earth. Hither to the need and importance of environment have not been realized by the people. But the fast development of science and technology which resulted in the establishment of a good number of variety of industries, and the quest of humanity for sophisticated living are contributing significantly for the degradation of the environment. Conservation is the careful use of land, air, water minerals and other natural resources. It is in fact the planned use of the environment using all the planning foresight and cooperation that man can master.

1.4 ENVIRONMENTAL EDUCATION:

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relations among man and his bio-physical surroundings. Environmental education also entails practice in decision making and self-formulating a code of behavior about issues concerning environmental quality. Environmental education programme requires the involvement and participation of teachers, students and administrators. (Rao & Reddy, 2012:181)

Environmental education enhances critical thinking, problem solving, and effective decision-making skills and enables individuals to weigh various sides of an environmental issue to make informed and responsible decisions.

According to UNESCO: “Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action”.

Environmental education is inter-disciplinary in nature. It involves subject matter from natural sciences. NCERT has developed national curricula for all stages of education especially emphasizing the aspects of population, land, resources and their uses, food and nutrition, conservation, pollution, health and hygiene and man in nature of environmental education.

The environmental education at higher level in India is provided by the Universities, Research Institutes. Schools of Planning and Management, Agricultural Universities, Engineering Colleges and a number of other agencies. Some of them have defined programmes of environmental education and the others have included some component of environment in their curricula. The introduction of Environmental education programme requires the involvement and participation of teachers, students and administrators etc. (Ghanta & Rao, 2003).

Environmental education has been and will always be the most potent weapon to prevent and eradicates all evils in the society. Environmental education should not only be just a study of books, it should be a process by which students can learn about their surrounding environment. Today, the students should learn more about the global issues, national and state environmental issues but less about their immediate surrounding nature. It is important to educate students to make them know their surrounding first. The teaching of environmental education should be centered from primary to university level. Environmental education brings the real world into the classroom, empowering learners to make positive changes in their local communities and in the world.

Environmental education has an important role to play in the promotion of environmental awareness. The knowledge base of a society is one important aspect of its capacity to address and cope with environmental issues. The aim of environmental education programmes should be, thus, to increase awareness of the environment and its problems; basic knowledge and understanding of the environment and its interrelationship with man, social values and attitudes which are in harmony with environmental quality; skills to solve environmental problems; and appropriate actions

to solve environmental problems to create a sustainable environment. Environmental education has always been seen as the solution to environmental degradation. (Chitrabhanu. 2007).

1.5 ENVIRONMENTAL STUDIES IN UNDER-GRADUATE LEVEL:

The importance of Environmental Studies cannot be disputed. The need for sustainable development is a key to the future of mankind. The degradation of our environment is linked to continuing problems of pollution, loss of forest, solid waste disposal, issues related to economic productivity and national as well as ecological security. The increasing levels of global warming, the depletion of the ozone layer and a serious loss of biodiversity have also made everyone aware of growing environmental concerns. The United Nations Conference on Environment and Development held in Rio De Janero in 1992, and the World Summit on Sustainable Development at Zoharbex in 2002 have drawn the attention of people around the globe to the developing condition of our environment. It is clear that no citizen of the earth can afford to be ignorant of environmental issues. Environmental management has become a part of the health care sector. Managing environmental hazards and preventing possible disasters has become an urgent need.

In spite of the developing status of the environment, the formal study of environment has so far not received adequate attention in our academic performances. The Hon'ble Supreme Court directed the UGC to introduce a basic course on environment at the undergraduate level for every student. Accordingly, the matter was considered by the UGC and it was decided that a six months compulsory core module course in environmental studies may be prepared and compulsorily implemented in all the Universities/ Colleges in India and then came into existence in the year 2013. Committee of experts was therefore appointed to advise the UGC on the curriculum for Environmental Studies at the undergraduate level, and the Committee was also requested to produce a textbook on Environmental Studies for such an undergraduate course. A very comprehensive and useful document had been produced by the committee. There is a great deal of information presented in a very simple manner

and with a large number of examples in an integrated manner.

UGC curriculum were also followed by Mizoram colleges. In 2013, Pachhunga University College, a constituent college of Mizoram University, established an Environmental Science Department along with a Biotechnology Department.

1.6 A BRIEF HISTORY OF MIZORAM:

Mizoram is one of the Seven Sister States in North-Eastern India. It covers an area of approximately 8,139 square miles (21,081 square km). 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.

Mizoram became the 23rd state of India on 20 February 1987 with Aizawl as its capital. The capital, Aizawl is the largest city in the state. It is also the center 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. There are 11 districts in Mizoram at present namely Aizawl, Lunglei, Champhai, Kolasib, Serchhip, Mamit, Lawngtlai, Siaha, Saitual, Hnahthial and Khawzawl.

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 section of the society is first and foremost to control pollution and environment respectively.

1.7 RATIONALE OF THE STUDY:

Environment 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 inhibit the earth. Environmental consciousness should be informed 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. Education must play a vital role in making children and adults environmentally conscious. If school/college activities/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, then 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. Every human being has a responsibility to conserve our environment for the sake of their future and for the sake of the next generation. College students have an even greater responsibility since they will most likely enter the world of work after they graduate.

Every human being has the right to descent 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 good environmental morals that, while we aspire for the good life, we should not sacrifice the future of the generations to come.

As part of our formal education system, environmental education has been part of a compulsory subject in college education and students are expected to have some knowledge, morals, attitude, and ability to engage in environmental activities. Few studies in the field of environmental ethics and attitude 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 and attitude towards environmental protection in the state of Mizoram. Therefore, a study to find out the environmental ethics and attitude towards environmental protection by undergraduate students would provide us with an understanding of how far the students perceive and are aware of the environmental issues in their life. Moreover, studying the environmental ethics and attitude towards environmental protection among undergraduate students would enable us to make suggestions on how to build up the environmental issues not only among the 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 and attitude 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 undergraduate students of Mizoram?
2. Is there any significant difference in the environmental ethics of male and female undergraduate students of Mizoram?
3. Is there any significant difference in the environmental ethics of undergraduate students of Mizoram with reference to their locale and stream of study?
4. What is the attitude of Mizoram college students toward the environment?
5. Is there any significant difference in the attitude towards environmental protection of male and female undergraduate students of Mizoram?
6. Is there any significant difference in the attitude towards environmental protection of undergraduate students of Mizoram with reference to their gender, locale and stream of study?

7. What is the impact of environmental ethics and attitudes towards environmental protection on students?
8. Is there any interrelationship between environmental ethics and attitudes of undergraduate students of Mizoram?

1.8 STATEMENT OF THE PROBLEM:

The title of the present study has been stated as *"**Environmental Ethics of Under-Graduate Students in Mizoram and their Attitude towards Environmental Protection".***

1.9 OBJECTIVES OF THE STUDY:

1. To assess the environmental ethics of under-graduate students in Mizoram.
2. To compare the environmental ethics of under-graduate students in Mizoram with respect to their gender.
3. To compare the environmental ethics of under-graduate students in Mizoram with respect to their locale.
4. To compare the environmental ethics of under-graduate students in Mizoram with respect to their stream of study.
5. To construct and standardize an attitude scale towards environmental protection of under-graduate students in Mizoram.
6. To assess the attitude towards environmental protection of under-graduate students in Mizoram.
7. To compare the attitude of under-graduate students in Mizoram towards environmental protection with respect to their gender.
8. To compare the attitude of under-graduate students in Mizoram towards environmental protection with respect to their locale.
9. To compare the attitude of under-graduate students in Mizoram towards environmental protection with respect to their stream of study.
10. To study the relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram.

11. To make suggestions for improving the environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram.

1.10 HYPOTHESES:

1. There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their gender.
2. There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their locale.
3. There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their stream of study.
4. There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their gender.
5. There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their locale.
6. There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their stream of study.
7. There is no relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram.

1.11 OPERATIONAL DEFINITIONS OF THE KEY TERMS USED:

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 generation.

Attitude: An attitude is technically defined as one's feelings or understanding of thing/people based on past experiences. The way an individual responds consistently to objects, people, or events in his environment is his attitude. Individuals form opinions and behaviors based on their own experiences and interpretations of those experiences.

Environmental Protection: The purpose of environmental protection is to prevent degradation of the natural environment caused by population growth, technology, and overconsumption, which negatively affect the environment and continue to threaten humans and animals.

Under-Graduate Students: Under-Graduate is a grade of education after completion of from Standards XII. Usually, students from ages 17 to 22 study in this section. The colleges were affiliated to Mizoram University. For the present study Under-Graduate students will refer to students of various colleges within the State.

Mizoram: Mizoram is one of the states in northeastern India with Aizawl as its capital city. Mizoram means 'Land of the Mizos'. After the Indian Independence from British Empire in 1947, the land became Lushai Hills district under the government of Assam. In 1972, the district was declared a union territory and given the name 'Mizoram'. Ultimately, Mizoram became a full-fledged federal state of India in 1986.

Gender: Gender refers to the male and female students.

Urban: Urban refers to the origin of the student and not to his present location.

Rural: Rural refers to the origin of the student and not to his present location. (There were no rural colleges at the time the present study was undertaken)

Stream of study: The broad three streams are Science, Commerce and Arts.

1.12 DELIMITATION OF THE STUDY:

The study was delimited to all colleges in Mizoram affiliated to Mizoram University covering all districts of Mizoram viz. Aizawl, Lunglei, Champhai, Siaha, Lawngtlai, Kolasib, Mamit, Serchhip, Hnahthial, Khawzawl and Saitual.

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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 substantive categories: Studies in India and Studies Abroad.

2.1 Studies in India:

Joshi (1981) study entitled "Development of Science Education for Upper Primary Classes based on Environmental Approach", and 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. The study also revealed that environment outside the school was potentially significant for educational purposes.

Narayan (1981) 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.

Deopuria (1984) did a comparative study on "Teaching of Science through Environment and Traditional Approach in Schools of Madhya Pradesh" and found that:

1. The environmental approach in teaching will help in developing better attitude in students towards the environment.
2. Students of primary schools of the experimental group showed improvement towards environmental awareness.
3. Environmental approach showed greater cognitive gain in knowledge, understanding and application of science concepts related to environmental education to primary, middle and secondary school levels.

Aggarwal and Narain (1985) in their report on "The State of India's Environment – a Second Citizen's Report" 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.

Chittibabu (1987) conducted a study on "Environmental Education for Conservation and Development" and found the interaction between education and environment as:

1. Education creates the urge for a clean environment.
2. It inculcates in the young minds the basic principles of sanitation and hygiene.
3. It helps pupils and students to appreciate the need for conservation of our multifaceted heritage.

Dayal (1987) conducted a study on "Environmental Education for Conservation and Development" and identified that:

1. At both formal and non-formal level there should be involvement of each and every human being on the continent.

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

Kayastha (1987) report on "Environment Pollution in Varanasi: A study of Perceptions, Problems and Management" and 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 affluents and sewage of Kanpur, reduce the Ganga water to a high state of pollution.

Kopardekar (1987) did a 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. If people are educated in this way, they are less likely to take part in spoiling nature in their day-to-day life.

Souza (1987) conducted a study on "Key issues of Human Settlements in Indian Perspective" and found that environmental education needs 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.

Shahnawaj (1990) conducted a study on "Environmental Awareness and Environmental Attitude of Secondary and Higher Secondary School Teachers and Students", in Rajasthan and found that –

1. A positive environmental attitude was observed in 95% teachers and 94% students.
2. The environmental trained teachers and untrained teachers did not differ in their attitude.
3. Teachers had more awareness of the environment than students.
4. Trained and untrained teachers did not differ on environmental awareness.
5. Girls possessed significantly more awareness of the environment than boys.

Praharaj (1991) conducted a study on "Environmental Knowledge, Environmental Attitude and Perception regarding Environmental Education among Pre-service and In-service Secondary School Teachers" and observed that:

1. The level of environmental knowledge was found low among pre-service teachers, although conceptual knowledge was moderate.
2. Among the in-service teacher's environmental knowledge was moderate and factual knowledge about the environment was low.
3. Both the group differed significantly in their level of environmental knowledge. They had a favourable attitude towards environmental education although the in-service group had a higher level of attitude than that of the preservice group.
4. Teachers perceived that environmental education should be a core part of social science subjects in secondary school as well as mass media have a potential role to play in imparting environmental education.
5. There was a moderate correlation between environmental knowledge and environmental attitude.

Saxena (1991) conducted a study on "Environment as a Separate Discipline Demonstration Method" 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 (1991) 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 endeavour 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.

Gopalakrishnan (1992) made a study on "Impact of Environmental Education on Primary School Children" and had found that:

1. Distribution of the total environmental education had a very good impact on the children.
2. Analysing the environmental education test area wise, the children of Madras scored better when compared to that of Coimbatore and the Nilgiris and this could be due to the better exposure of the Madras children.
3. The study showed that the participatory learning approach could bring about a better impact.
4. Teachers in general felt that there was no sufficient time to give importance to learner- cantered activities.

Patel and Patel (1995) conducted an investigation into "The Environmental Awareness and its Enhancement in the Secondary School Teachers: The Progress of Education" and discovered that:

1. There was a significant effect of environmental awareness programme as a whole on treatment of environmental awareness of the teachers of experimental group.
2. There was no significant difference in the mean score of environmental awareness possessing high and low experience of the teachers.
3. There was no significant interaction between independent factors of environmental awareness programme and experience upon environmental awareness of teachers.

Sabhlok (1995) study on "The Awareness and Attitude of Teachers and Students of High Schools towards Environmental Education in Jabalpur District" and 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.

Bhattacharya (1997) conducted a study on the "Environmental Awareness among Higher Secondary Students of Science and Non-Science Stream" and found out that:

1. Students belonging to science stream were better in terms of their environmental awareness compared to non-science stream.
2. Formation of attitude towards any issue or object may not depend upon the nature of discipline and the formal instructional situation as well as of curriculum structure.
3. Female groups of higher secondary students were better than their male counterparts in environmental awareness.
4. Male and female students differed significantly in terms of environmental awareness. Female students were better than their male counterparts.

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

Pandey (2000) conducted a study on "Status of Environmental Education" and 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) did research on "Development of an Identification Key on 'Inflorescence' for Higher Secondary Students" 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) did a comparative study on "Environmental Awareness of Students studying in Central Schools and other Schools at 10+ levels in Uttar Pradesh" and found that boys had better awareness about environment than girls. No significant difference was found in the environmental awareness of science and arts students of central schools.

Badkobi and Hadipour (2001) in their study on "Assessment of Primary School Teacher's Educational condition in different zones of Tehran Municipality in Environmental Subjects and the ways of elevating their awareness", reported that there is significant difference among male and female teachers in their awareness about environmental education and that male teachers had higher awareness.

Abraham et.al (2005) 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 in urban areas 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.

Prasad (2005) 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 causes 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 155 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%.

Sengupta (2005) 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.

Sundara (2005) 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. The study also concluded that the girl students possess high level of environmental ethics.

Bhosle (2006) research entitled "Environmental Education in Schools" and 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.

Deka (2006) conducted a study on "The Attitude of Teachers on introduction of Environmental Education as a separate subject at the Primary Level with special reference to greater Guwahati". The findings reveal that though the attitude was favourable and almost most of the teachers felt that Environmental Education should begin at the primary level and majority of the teachers admitted that they require training in the field of Environmental Education.

Flower (2006) 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.

Mahapatra (2006) in their study on "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 (greenhouse 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.

Molia (2006) studied "Global Issues on Environmental Education" and revealed that environmental issues can often appear disconnected from a learner's life. It can mean concepts in ecology, outdoor education, environmental science or instruction about issues.

Naseema (2006) 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 pupil's acquisition of environmental concepts.

Nayak (2006) did a study on "Ethico Environmentalism" and 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.

Sharma (2006) conducted a study on "Environmental Conservation: Key to Sustainable Development" and 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 laborers, 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 (2006) studied "Pedagogy in Environmental Education" and found that children from their earlier years should be oriented towards learning from the surroundings using the local environment as a medium for inquiry or discovery as a source of materials for realistic activities. The findings further pointed out that in environment education there is more stress on environmental actions and skills.

Kumar and Patil (2007) 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.

Nagara (2007) 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.

Paramanand and Anita (2007) conducted a study on the "Environmental Awareness and Scientific Attitudes 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.

Raju (2007) 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 student's 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.

Harjai (2008) studied the "Effectiveness of Experiential Learning Strategies for Enhancing Environmental Awareness and Sensitivity among Primary School Students with 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.

Rosaline (2008) 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.

Kaur and Kaur (2009) in their paper "Environmental Awareness of Secondary and Senior Secondary Students" and found that 44 rural students and students studying in government schools were still not aware of the various threats of environment and natural calamities and most of the Government rural schools did not possess basic literature related to Environment (in regional language). The study suggested environmental awareness campaigns to be carried out in these areas.

Kumari and Awasthi (2009) in their study "Developing Environment Friendly Behavior among Adolescents - Role of Intervention" attempted to assess the impact of intervention on environment friendly behaviour among adolescents. The study has revealed that–

1. There is significant impact of intervention on adolescents' consciousness about environment pollution and environment friendly behaviour.
2. The study has not found gender difference on environment friendly behaviour and consciousness about pollution among boys and girls.

Mondal et al. (2009) in their study "Achievement in Environmental Education in relation to Attitude, Cognitive style and Ethics". The study revealed that-

1. Boys are little better than girls but not in all aspects of EE.
2. For overall development about EE, schools should take some initiatives regarding teaching-learning process and also other activities where directly or indirectly EE is associated.

Bareh (2010) conducted a study on the "Environmental Awareness among the Class X Students at Secondary Level in Jowai Town". The study reveals that –

1. The Environmental Awareness of the male and female students are very high and there was no significant difference between male and female students in their environmental awareness.

2. Age-wise differences in Environmental Awareness differed significantly between the age group 14 and 17, 15 and 16, 15 and 17 and 16 and 17.
3. No significant difference was found between 14 to 15 and 14 to 16 years.

Nisanci (2010) conducted research on "The Effectiveness of the new 9th Grade Biology Curriculum on 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.

Tajul and Sulaiman (2010) conducted survey on "The Status on the Level of Environmental Awareness in the concept of Sustainable Development among Secondary School Students". 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.

Vellaisamy (2010) did a study of "Environmental Achievement in IX Standard Students through Environmental Awareness". 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.

Astalin (2011) did a study on "Environmental Awareness Among Higher Secondary Students and some Educational Factors Affecting it", and found that -

1. The students of 11th and 12th standard were identical as far as their environmental awareness was concerned.

2. Science students had more environmental awareness in comparison to art stream students.
3. The CBSE students had more environmental awareness in comparison to UP Board students.
4. Students whose parents belonging to literate, undergraduate, post graduate and research had more environmental awareness in comparison to students whose parents belong to high school and intermediate.
5. Finally, the male students had also more environmental awareness in comparison to female students because male students of higher secondary students are normally much attached with the society.

Bajwa and Goyal (2011) studied "Responsible Environmental Behaviour of Secondary School Students in relation to their Locus of Control and Achievement Motivation". The findings reveal that -

1. There exists significant relationship between Responsible Environmental Behaviour and Locus of Control. Further it was found that Internal Locus of 46 Control group students have better responsible environmental behaviour 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.
2. It was also found that there exists significant relationship between Responsible Environmental Behaviour and Achievement Motivation.
3. It was found that High Achievement Motivation group students have better Responsible Environmental Behaviour and developed more Civic action, educational action, financial action, Legal action, Physical action, and Persuasive action as compared to Low Achievement Motivation group students.

Nayak (2011) has conducted a study on "An Investigation into the Awareness, Knowledge and Attitude of Student Teachers towards Climate Change" and the study revealed that –

1. Though the student teachers of different stream i.e., Science, Commerce and Arts are aware of the problem of the climate change but they lack in having sufficient knowledge of climate change with regards to its causes and consequences.
2. There is no significant difference in the knowledge of climate change of Science and Commerce student teachers.
3. A significant difference was found between the student teachers of Science and Arts stream and also between Commerce and Arts stream.
4. There lies difference in the level of awareness, knowledge and attitude between the student teachers of Mumbai and Navi-Mumbai.

Selvam and Abdul (2011) 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.

Mehra and Kaur (2012) studied the "Effectiveness of Outdoor Environmental Education Programme for Enhancing Responsible Environmental Behaviour among Fifth Grade Students". The major findings of the study were –

1. Students taught environmental education by the outdoor environmental education programme exhibited better mean gains on responsible environmental behaviour and its dimensions as compared to students of control group who were taught environmental education by traditional method of instruction.
2. Students with high, average and low intelligence exhibited comparable mean gains on responsible environmental behaviour 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.
3. 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.

4. Students of average intelligence group exhibited better mean gains on knowledge of environmental issues and problems as compared to students of lower intelligence.
5. There was significant interaction between treatment and levels of intelligence in relation to mean gains on knowledge of ecological concepts.

Shair and Akhtar (2012) in their research paper "Comparative Study of Environmental Education in Adolescents and Higher Education Students" 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 –

1. Overall awareness and implementation of environmental knowledge in adolescents is far below the expectations.
2. Students with higher education were found to have largely satisfactory knowledge and skills for solving environment problems.

Singhal and Verma (2012) conducted a study on 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.

Sinha and Taneja (2012) conducted a study on "Gender Differences in Environmental Sensitivity among Primary School Students" and 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 behaviour.

Das (2013) conducted research entitled "A study on the Environmental Awareness of Primary School Students of Palasbari Town" and the study reveals that–

1. Girl students are more aware than the boy students.
2. The female teachers are more aware than the male teachers of primary school.

Dogra (2013) study on "Challenges and Issues in Environmental Studies (EVS) Teaching at the Primary Stage" and 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 help in formulating simple strategies to convert these challenges into opportunities

Mahanta (2013) did research entitled "A study on the Environmental Awareness and Environmental concern among Guwahati University Students" used self-administered questionnaire as a tool. The findings of the study revealed that majority of the students in Guwahati University have medium level of environmental awareness and environmental concern play a role in determining the level of environmental awareness of the person.

Mandhyan (2013) made a study of "Environmental Ethics among Higher Secondary Level Students" and found that –

1. There is no significant difference between environmental ethics of girls and boys.
2. The environmental ethics of commerce students are high in comparison to the art students.

3. The environmental ethics of science students are high in comparison to art students.
4. There is no significant difference between environmental ethics of science and commerce students.

Mathivanan and Pazhanivelu (2013) made a study on "Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students" and found that –

1. The higher secondary students have high environmental ethics.
2. The male and female higher secondary students do not differ significantly with respect to their environmental ethics.
3. The urban and rural higher secondary school students do not differ significantly in their environmental ethics.
4. There is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics.

Sivamoorthy et al. (2013) have conducted a study on "Environmental Awareness and Practices among College Students" and the study shows that –

1. Gender does not influence environmental awareness which means the result indicates that irrespective of gender college students are aware of environmental issues. However, gender is influencing the practice of the students since the environmental practice among girls is much higher than boys in the study area.
2. The result of the study also shows that there is no significant correlation between environmental awareness and environmental practice among the students.

Sudhir (2013) study entitled "Participatory Learning and Action for Environmental Education" and 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

imbibing 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.

Lalremruati (2014) study on "Environmental Education in Elementary Schools in Mizoram: An analytical study" and found that:

1. The contents of the textbook on environmental studies at the elementary level were all defined and relevant for their age group.
2. All sampled schools used different kinds of teaching aids for teaching environmental education and had conducted examination on the subject.
3. There is a significant difference on environmental awareness between boys and girls.
4. Female students had better awareness on environmental education than male students.

Hmangaihzuali (2015) conducted a study on "Environmental Ethics among Secondary School Students in Aizawl City, Mizoram" and finds out that –

1. Majority of the secondary school students in Aizawl had high level environmental ethics and female students have significantly higher environmental ethics.
2. Amongst the different environmental pollution majority of secondary school students most wanted to solve the problem of air pollution.

Sahu et al. (2015) did a study on "Environmental Awareness among Undergraduate Students in Rural Area". The study finds out that –

1. In both the colleges belong to tribal area, overall level of awareness was found to be average.
2. Number of students with high level of awareness is found to be extremely low whereas number of students with low level of awareness is found to be fairly high.

Sethi (2015) did research on "Attitude of Degree and B. Ed. College Students towards Environmental Pollution" The findings of the study revealed that -

1. Significant difference between the attitude of Degree and B. Ed. College students towards environmental pollution is not noticed.
2. Significant difference between the attitude of male students of Degree and B. Ed College towards environmental pollution is not noticed.
3. Significant difference between the attitude of female students of Degree and B. Ed. College towards environmental pollution is not noticed.
4. Significant difference between the attitude of science students of Degree and B. Ed. College towards environmental pollutions is noticed. They have more awareness regarding environment pollution as many experiments, extensions lectures and camps are organized. They have enough time in their three years degree course as compared to B. Ed. course of 1 year.
5. Significant difference between the attitude of arts students of Degree and B. Ed. College towards environmental pollutions partially noticed.

Bhat et al. (2016) conducted a study on the "Environmental Awareness among College Students of Kashmir Valley in the State of Jammu and Kashmir and their Attitude towards Environmental Education". The result of the study indicated that –

1. Male shows more concern than female respondents towards environmental issues.
2. Majority of the respondents are willing to pay more for products whose package does less damage to environment.
3. The students due to problems of population explosion, exhaustion of natural resources and pollution of environment are not having enough awareness and skills for identifying and solving environmental problems.

Dey and Dey (2016) in their paper "Environmental Accounting and Reporting Practices of Major Industrial Units in Assam" and it was observed that –

1. The high polluting industries were better in voluntary environmental disclosure than the low polluting industries.

2. The reasons behind the poor environmental disclosure practices may be its voluntary nature, poor environmental performance, and due to lack of awareness on the part of company's management towards environmental protection.

Hooda (2016) study titled, "A Study of Attitude and Awareness of College Students towards Environmental Pollution" The result shows that-

1. Majority of the students of the colleges are aware of the consequence of environmental pollution
2. A significant difference was found between the students of private and government schools with reference of the environmental awareness.
3. The private colleges' students are significantly more positive than government college students towards environmental problems.

Lalremruata (2016) conducted a study on "Assessment of Learning outcomes of Class IV Children in Environmental Studies in Mizoram in relation to Minimum Levels of Learning (MLL)". The findings revealed that:

1. In environmental studies 0.25% of children achieved mastery level of learning and not less than 99% of children had failed to attain mastery level of learning in environmental studies which is very low and far from satisfactory.
2. The performance of children from gov't primary schools were found significantly better than children of private primary schools in environmental studies.
3. Children of primary schools located in urban areas were significantly better than children of primary schools located in rural areas in the subject of environmental studies.
4. There is no significant difference in the performance (mean scores) of boys and girls of class IV in primary schools in environmental studies.

Qasim (2016) conducted a study on "Primary School Teachers Attitude towards the Environment". The finding of the study revealed that –

1. Teachers teaching in primary schools have favourable attitude towards environments.

2. There is significant difference in attitude of primary school teachers of rural and urban areas towards environment but no significant difference was seen between government and private school teachers.

Sharma (2016) studied the "Environmental Education at School Level: Issues at Glance" in India. From the study, it was felt the need to introduce environmental education through problem solving action-oriented approach. She also suggested that curriculum, syllabi and textbooks need to be accompanied by the capacity building programmes for teachers, pedagogical and evaluation practices.

Katoch (2017) study on "Awareness and Attitude of School Students towards Environment" and revealed that:

1. There is no difference in the environmental awareness between male and female school students. Both male and female have equal awareness towards environment.
2. There is significant difference in attitude towards environment of male and female school students. Female students are having better attitude towards environment than male students.

Naikoo (2017) conducted a study on "Teachers Attitude towards Environmental Education and Sustainable Development: A case study of Secondary School Teachers of Kupwara District of Jammu and Kashmir State, India", it was found that majority of the teachers have positive attitude towards environmental education and sustainable development.

Rani and Singh (2018) conducted a study on "The relationship between Environmental Ethics and Environmental Attitude among College Students". The main finding of the present study revealed that –

1. Environmental ethics and environmental attitude were positively correlated among college students. It means that those students who had high environmental ethics were likely to be more environmental attitude and vice-versa.

2. Environmental ethics had also showed a positive association with various dimensions of environmental attitude i.e., health & hygiene, wild life, forest, polluters, populations explosion, and environmental concern.

Rashid (2018) carried out an investigation to study the "Environmental Awareness in undergraduate students in relation to male/female, rural/urban dichotomy". The results further revealed that –

1. There is no significant difference between the male and female college students on their Environmental Awareness.
2. Moreover, the results indicate that there is significant difference between rural and urban college students on their Environmental Awareness. This study also proposes some recommendations to safeguard the environment.

Lalremruati (2019) research entitled "Environmental Education in Colleges of Mizoram: An Analytical Study" assessed the contents of the syllabus, mode of transaction, evaluation procedures of environmental education in colleges of Mizoram and the profile of college teachers teaching environmental education, the time devoted for the subject in the college time table. It also studied the attitude of college students towards their environment where there was no significant difference between male and female college students in their attitude towards the environment. This study also reveals that the syllabus has some missing units and syllabus suggested by UGC.

Chavada and Charan (2020) conducted a study on "An analysis of Environmental Ethics among - college students. The finding revealed there is significant difference was found among them with regard to gender and there is no significant difference was found among them with regard to level of education.

Thomas et al. (2020) did a study on "A study of Awareness and Attitude of College Students towards Environmental Pollution" and the study reveals that–

1. The students had high levels of concern, awareness and knowledge about the environmental pollution and understood how harmful human activities are to the environment.

2. The null hypothesis indicating no significant difference in awareness about environment pollution among college students with respect to gender was retained.

Lalhmangaihzuali (2021) research entitled "Environmental Knowledge, Attitude and Activities of College Students in Mizoram". This study revealed that-

1. Majority of college students of Mizoram had high environmental knowledge, had above average environmental attitude and had average environmental activities.
2. Male students had high environmental knowledge in comparison with female students, large section of male students had above average environmental attitude than female college students. Female students had high average environmental activities than male students.
3. Science students had the highest mean score than compare to arts and commerce students on the study of environmental knowledge, environmental attitude and environmental activities.
4. College students coming from urban areas had high environmental knowledge than rural areas students. Students coming from urban areas had average environmental activities while students from rural areas had above average environmental attitude knowledge than urban areas students.
5. There is no significant difference between male and female students, there is a significant difference in the attitude of Arts and Science students of Mizoram towards the environment at 0.05 level. there is a significant difference in the attitude of Arts and Commerce college students of Mizoram towards the environment at 0.05 level of significance, Arts and Commerce college students of Mizoram is not significant at both 0.05 and 0.01 levels
6. There is a significantly positive correlation between environmental knowledge, environmental attitude and environmental activities of college students in Mizoram.

2.2 Studies Abroad:

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

Lob (1987) study on "Project based teaching in Environmental Education", and 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.

Chan (1996) conducted a study on "Environmental Attitudes and Behaviour of Secondary School Students in Hong Kong". Findings reveal that

1. Television and school were cited as major sources of environmental information. Mass media were more important than personal media in the dissemination of environmental information.
2. Female students, students from higher forms and students living in private housing held more positive environmental attitudes and were more willing to engage in pro-environmental behaviours.
3. Factor analysis indicated that the environmental concern scale was composed of two factors, named 'personal sacrifice' and 'optimism/issue'.

Hart (1996) did a study on "Teacher's ideas about Environmental Education: Environmental Education for the Next Generation" interviewed over 200 elementary teachers across Canada. The study found and experiences that the reason that most teachers teach environmental education, is based on values knowledge. These values are based on childhood experiences, recreational pursuits, concern for health and lifestyles, and involvement in social and environmental issues.

Lindenmeier (1996) conducted a study on "Outdoor Education Components– Environmental education and adventure education". 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.

Atwood and Susan (1998) in their 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) investigated the study on "Changes in 6th grade students' and their parents' environmental knowledge, attitudes, motivation, and behaviour 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 behaviour 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.

Hough (2003) 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 helps students to understand and evaluate environmental issues in a better way.

Loughland et al. (2003) carried out a study on "Factors influencing young people's conception of environment" and found that the stresses need for students to receive some sort of environmental education in their early development years so they can view the environment as a relation rather than an object. The only way to develop this kind of thinking in students is to instil it in them at an early age so it becomes second nature to them.

Vaughan et.al. (2003) conducted a study on 'The effect of Environmental Education on school children, their parents and community members: A study of intergeneration and intercommunity learning" and the study 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.

Volk and Cheak (2003) did a study on "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.

Rider (2005) has conducted research entitled "Education, Environmental Attitudes and the Design Professions: A master's thesis". The findings reveal that –

1. Contrary to the main hypothesis of the study, undergraduate education was not seen by subjects to be a fundamental force in the decision to concentrate on sustainability.
2. A number of educational elements typically seen in environmental education, including interpersonal interactions, were mentioned by subjects as substantially influential and are therefore explored.

Chapman and Sharma (2006) investigated on the "Environmental attitude and behaviour of primary and secondary students in Asian cities: An overview strategy for implementing an eco-schools programme". Environmental attitudes and knowledge of Indian and Filipino primary and secondary school students, and their readiness to engage in pro-environmental behaviour 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 analysed 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.

Erol and Gezer (2006) 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 father's occupation their house, parents education level, family's economic status does not affect their attitude towards environmental issues.

Ling (2006) 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.

Oweini and Houri (2007) in their study "Factors Affecting Environmental Knowledge and Attitudes among Lebanese College Students" assessed the variables that would positively affect the knowledge and attitude of a group of Lebanese college students regarding the environment, namely such factors as gender, age, previous hiking experience and living abroad. Results showed –

1. Overall significance with specific patterns emerging: living abroad correlated with knowledge and experience, frequency of hiking with all dependent variables and marginally with concern, and gender marginally with willingness to act, actual behaviour and experience in favour of males.
2. The independent variables of gender, living abroad and major yielded the most significant correlations with the dependent variable of experience with the environment.
3. The strongest correlations were found between the pairs of females living abroad and knowledge, and between non-business students and experience with the environment.
4. Age consistently showed no correlation with any of the measured variables.
5. As for hiking experience, a surprising trend emerged. Those with more hiking reported less experience with the environment. Implications and recommendations based on the findings are discussed.

Ozden (2008) conducted a study on "Environmental Awareness and Attitude of student teachers: An empirical research" and revealed that female elementary student teachers in the last year of an instruction programme who have less than three brothers and sisters with high socio economic level (student teachers income level of family, fathers job and education, mothers job, living residence) living in Marmara region had more positive attitude towards the four dimensions of environmental attitude than the other student teachers.

Padmanabhan (2008) did a study on "Environmental Awareness and Environmental Attitude of Secondary School Teachers of Maldives". The findings showed that:

1. Majority of the Maldivian secondary school teachers have a moderate awareness of environmental problems, issues and other related aspects.
2. They also have a positive attitude towards conserving the environment.
3. The study revealed that there was a relationship between environmental awareness and environmental attitude.
4. There was no significant difference between male and female teachers in their awareness and attitude towards environmental education.
5. The studies also found out that the environmental awareness does predict the environmental attitude of Maldivian secondary school teachers.

Young (2009) conducted a study on "All Education is Environmental Education" to explore how secondary school students construct meanings for environmentalism. Results were analysed to identify, describe and compare the attitudes of students, and how they form meanings for environmentalism. The most significant finding was not only the apparent lack of direction these students perceive themselves to be receiving regarding Environmental Education in the secondary context, which in some cases leads to a deficiency in understanding and concern, but also their noting the prevalence of media as a source of information about environmentally-related issues.

Budvytyte (2010) study- "Environmental Education at Secondary School System in Lithuania", analysed environmental education from two perspectives: practical and institutional. It also studied possibilities for environmental education to improve its feasibility at curriculums, schools and pedagogical practices. Empirical results show that environmental education has been gradually integrated into Lithuania's national curriculum and teaching practices during the recent years, but is not fully applied. This is caused because environmental education in Lithuania is marginalized by general education discourse, and this part which is partially applied is limited by structural barriers, even though; environmental education at secondary

schools in Lithuania has the potential to influence pupils to behave pro-environmentally.

Lake et.al (2010) made a descriptive analysis of "Trends in the Environmental Attitudes, Beliefs and Behaviour 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 behaviours, 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.

Teksoz et.al (2010) in their study "A new vision for chemistry education students: Environmental Education". The finding showed that –

1. 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.
2. Pre-service chemistry teachers felt that University students must have environmental knowledge to grow the environmental awareness in the society.
3. 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.
4. Teacher education program should compulsorily have environmental education in their education curriculum so that teachers can integrate environmental issues into their lesson.
5. Those pre-service chemistry teachers enrolled in environment related courses were strongly encouraged to include in their teaching practice environmental related issues.

Mifsud (2011) conducted a study entitled "An Investigation on the Environmental Knowledge, Attitudes and Behaviour of Maltese Youth" which includes an analysis of the local social, cultural and environmental milieu in which environmental knowledge, attitudes and actions form. The results from the research indicated that –

1. Students are more knowledgeable about the global environment than about the local environment, and that students receive most information from school, television and the Internet.
2. The sources of environmental information perceived by young people are the most reliable including school, books and the Internet.
3. The overall attitude of students towards the environment appears to be strongly positive; however, students seemed to perform few positive actions towards the environment.

Sarkar (2011) prepared a paper on "Secondary students' Environmental Attitudes: The case of environmental education in Bangladesh". The study found that-

1. Students had a feeling that human activities do not influence environment greatly.
2. Overall students from both the urban and rural areas expressed favourable environmental attitudes with girls having a significantly higher level of favourable environmental attitudes than boys; in particular, rural girls had the highest level of environmental attitudes comparing among others.
3. Students in rural school contexts had a slightly higher level of environmental attitudes than that of the students in urban school contexts.

Levine and Strube (2012) conducted a study on "Environmental Attitudes, Knowledge, Intentions and Behaviours among College Students". The findings reveal that –

1. Intentions and knowledge significantly and independently predicted behaviour.
2. Environmental knowledge was not significantly related to attitudes. Implicit and explicit attitudes were significantly but only moderately related. Only explicit

attitudes, however, were strongly related to intentions, and intentions completely mediated the influence of explicit attitudes on behaviour.

3. Men were found to be more knowledgeable than women about environmental issues.
4. Older students had more favourable implicit and explicit environmental attitudes.

Heyl et.al (2013) conducted a study on "Environmental Attitude and Behaviours of College Students: A case study conducted at a Chilean University" and found that:

1. Significant differences were found between students pursuing diplomas related to the environment and those who are not.
2. No significant differences were observed between students enrolled in different levels.
3. Perceived effort, positive environmental attitude or perceived positive consequents predict the frequency of pro-environmental behaviours in students, the former (perceived effort, negative) being the most influential variable.

Sahin et.al. (2013) analysed the "Environmental Knowledge and Attitudes of University Students" in their study and it was observed that –

1. The environmental knowledge level of the students is higher than their environmental attitude level.
2. A significant relationship was observed between the environmental knowledge of the university students and their attitudes regarding this knowledge.
3. Moreover, significant relationships were determined between the general environmental knowledge and the attitude levels of the students and their individual characteristics other than their ages (such as class, gender, the education level of the father, the education level of the mother, levels of income, and whether they have acquired any environmental education prior to the university).

Naquin et.al. (2016) did research on "Environmental Health Knowledge, Attitudes and Practices of Students in Grades Four through Eight" to investigate environmental health knowledge, attitudes and practices of children enrolled in grades four through eight at a university laboratory school in southeast Louisiana, U.S.A. The study reveals that-

1. Significant differences were found by students' gender and grade level.
2. The qualitative analyses were consistent with and provided support for the quantitative findings.

Amérigo et.al. (2017) did a research work on "Analysis of Environmental Attitudes and Behaviours: An exploratory study with a sample of Brazilian University Students". The results revealed that-

1. It is possible to reconcile economic growth with environmental preservation.
2. The results show, in addition, which strategies can be worked to increase environmental awareness related to energy saving, waste management and green consumption.

Sultana et.al. (2017) conducted a study entitled "Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh" to assess the environmental knowledge and attitude of secondary level students in Tangail Sadar Upazila of Tangail district during January to April, 2015. Results of the study revealed that-

1. The level of environmental knowledge of the secondary level student was high. Their average knowledge level was 15.83 (±3.07) out of 20. They had positive attitude towards environment.
2. The order of environmental knowledge and environmental attitude of the student's group was Science> Commerce> Arts and Arts> Commerce> Science, respectively.
3. Government school students had high attitude level than private schools.
4. In case of gender of students there were no significant differences in environmental knowledge and attitude.

5. Urban students had higher knowledge level and rural students had higher attitude level.
6. Higher education of parents influenced the environmental awareness of students.
7. About fifty per cent students thought television was one of the most important sources of environmental awareness.
8. The study concluded that a high level of understanding and positive attitude of students might be achieved from the families of respondents, teachers, media, private reading and school curriculums regarding the environment that increase the environmental view among students as well as in the society.

Zachariou et.al. (2017) conducted a study on "Teachers' Attitudes towards the Environment and Environmental Education: An Empirical Study". The study focused on the case of Viotia prefecture, Greece. The results indicated –

1. The teachers' attitudes towards EE are strongly related to their attitudes towards the environment and environmental problems in their areas of residence, while knowledge and information on environmental issues are strongly related to the positive attitudes towards EE.
2. The results of this study indicated possible factors involved in the formation of the attitudes of EE teachers and also possible aspects to be considered for the design of effective policies for EE teacher training.

Magulod (2018) conducted a study on "Climate Change Awareness and Environmental Attitude of College students in one campus of a State University in the Philippines". Results of the study revealed that 1. The undergraduate students of Cagayan State University at Lasam have a high level of awareness on climate change and a high level of environmental attitude 2. It was also found that there is a significant relationship between climate change awareness and environmental attitude of the respondents.

Ningrum and Herdiansyah (2018) conducted a study on "Environmental Awareness and Behaviour of College Students in regards to the Environment in Urban Area". The results show that-

1. The level of environmental awareness and behaviours is 'good' among the respondents irrespective of gender differences, however there lies a difference between genders in practice level.
2. This research concludes that college students have good environmental awareness and behaviour.

Danilo et.al. (2019) conducted a study on "Environmental Awareness and Practices of Science Students: Input for Ecological Management Plan". Findings revealed that-

1. The Science students are very aware on environmental concepts and state of environment; and very aware in environmental issues and problems. They often practice taking actions to solve environmental problems and sometimes practice the need to possess a high degree of commitment.
2. There is a moderate correlation between students' awareness on environmental concepts and issues and their practices to solve the environmental problems and possess a high degree of commitment.
3. The study recommends that information dissemination programs regarding environmental concepts, state of the environment, ecological issues and problems could be sustained by the school to keep the ecological awareness of the students high.
4. Environmental advocacies and eco-movement may likewise be institutionalized in the school through student organizations like YES-O and Science clubs.
5. The crafted ecological management plan is recommended for implementation to increase the degree of commitment of students towards ecological conservation.

Lahnstein and Ryder (2019) in their studies on "School Teachers' conceptions of Environmental Education: Reinterpreting a Typology through a Thematic Analysis" and revealed that there were full and partial associations between the teachers' ideas and Sauvé typology which shows that the conceptions of teachers

were complex and could not be fully represented by single environmental education types.

Msengi et.al. (2019) in their study "Assessment of Knowledge and Awareness of "Sustainability" initiatives among College Students" assessed college students' knowledge and awareness of sustainability issues. Findings indicate that-

1. Only a minority of the students knew what sustainability was, but 95.8% indicated it was important. Although the university has committed to climate and sustainability agreements, majority of the students were not aware of it and only about 17% knew that the University's Strategic Plan has a sustainability component.
2. Nearly 36% of the students reported receiving information about sustainability during their campus orientation.
3. In terms of recycling, majority of the students indicated unawareness of ewaste recycling on campus; however, more than 70% reported that the library limited free printing in computer labs.
4. More than half of the students also indicated that sustainability issues were not infused into curriculum courses or programs, and they had no knowledge of any alternative power source for the university.
5. The study concluded that a majority of the students were not conversant with sustainability issues and were largely unaware of campus sustainability initiatives.

Shafiei and Maleksaedi (2020) in their study "Pro-environmental behaviour of University Students: Application of protection Motivation Theory". This study shows that-

1. Environmental attitude, self-efficacy, perceived costs of pro-environmental behaviour and perceived intrinsic and extrinsic rewards of current environmentally unfriendly behaviours were the direct determinants of pro-environmental behaviour, while rewards indirectly influenced pro-environmental behaviour via environmental attitude and response costs.

2. Response efficacy through self-efficacy had an indirect influence on pro-environmental behaviour.
3. Overall, considering the importance of environmental attitudes and self-efficacy, using measures and incentives to improve students' attitude on the necessity of environmental protection and improving their sense of self-efficacy can help increase the likelihood of pro-environmental behaviours in community.

2.3 An Overview:

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, environmental activities, 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 ethics among under-graduate students. There are studies done in Mizoram to understand the level of environmental awareness or knowledge, attitude towards environment and activities among college 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

This chapter deals with the methodology adopted in the present study. 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. Environmental Ethics Scale (EES)
6. Attitude Scale towards Environmental Protection (2021)
7. Administration of tools and data collection
8. Tabulation of data
9. Statistical technique for analysis

3.1 Method of the Study:

The present study is descriptive in nature. Therefore, descriptive survey method has been employed. Blends of both qualitative and quantitative analysis has been employed in the present investigation.

3.2 Population:

The population of the study comprised of all under-graduate students of Mizoram affiliated to Mizoram University. The Enrolment of Under-Graduate Students in Mizoram is presented in the following table.

Table no: 3.1

Enrolment of Under-Graduate Students in Mizoram

Sl No	Name of College	District	Type of Management		Enrolment of Students		Total
					Male	Female	
1	Pachhunga University	Aizawl	Central Government	Under-Graduate College	1433	1690	3123
2	Govt. Aizawl College	Aizawl	State Government	Under-Graduate College	985	976	1961
3	Govt. Aizawl North College	Aizawl	State Government	Under-Graduate College	735	643	1378
4	Govt. Aizawl West College	Aizawl	State Government	Under-Graduate College	473	504	977
5	Govt. Hrangbana College	Aizawl	State Government	Under-Graduate College	1034	1175	2209
6	Govt. Johnson College	Aizawl	State Government	Under-Graduate College	738	592	1330
7	Govt. J. Thankima College	Aizawl	State Government	Under-Graduate College	571	457	1028
8	Govt. T.Romana College	Aizawl	State Government	Under-Graduate College	751	643	1394
9	Govt. Zirtiri Residential College	Aizawl	State Government	Under-Graduate College	526	388	914

10	Lunglei Govt. College	Lunglei	State Government	Under-Graduate College	638	599	1237
11	Govt. J. Buana College	Lunglei	State Government	Under-Graduate College	273	295	568
12	Govt.Saiha College	Siaha	State Government	Under-Graduate College	294	256	550
13	Govt. Champhai College	Champhai	State Government	Under-Graduate College	424	410	834
14	Govt. Kolasib College	Kolasib	State Government	Under-Graduate College	412	341	753
15	Govt. Serchhip College	Serchhip	State Government	Under-Graduate College	236	262	498
16	Govt. Mamit College	Mamit	State Government	Under-Graduate College	167	79	246
17	Govt. Zawlnuam College	Mamit	State Government	Under-Graduate College	50	40	90
18	Govt. Lawngtlai College	Lawngtlai	State Government	Under-Graduate College	217	159	376
19	Govt. Kamalanagar College	Lawngtlai	State Government	Under-Graduate College	261	73	334

20	Govt. Hnahthial College	Hnahthial	State Government	Under-Graduate College	83	95	178
21	Govt. Saitual College	Saitual	State Government	Under-Graduate College	132	149	281
22	Govt. Khawzawl College	Khawzawl	State Government	Under-Graduate College	50	52	102
23	Govt. Mizoram Law College	Aizawl	State Government	Profe-ssional Institutes	77	102	179
24	Institute of Advanced Study in Mizoram (IASE)	Aizawl	State Government	Profe-ssional Institutes	321	365	686
25	Mizoram Hindi Training College	Aizawl	State Government	Profe-ssional Institutes	58	199	257
26	Women's Polytechnic, Durtlang	Aizawl	State Government	Profe-ssional Institutes	0	239	239
27	Mizoram Polytechnic, Lunglei	Lunglei	State Government	Profe-ssional Institutes	243	62	305
28	HATIM	Lunglei	Private	Under-Graduate College	212	162	374

29	Helen Lowry College	Aizawl	Private	Under-Graduate College	84	61	145
30	Mizoram Christian College	Aizawl	Private	Under-Graduate College	157	80	237
31	St. Xavier's College	Aizawl	Private	Under-Graduate College	46	26	72
32	Aizawl City College	Aizawl	Private	Under-Graduate College	29	16	45
33	Divine Mercy College	Aizawl	Private	Under-Graduate College	11	15	26
34	Faith College	Aizawl	Private	Under-Graduate College	38	16	54
35	Kapthangi College, Lunglei	Lunglei	Private	Under-Graduate College	22	13	35
36	Kawnpui College	Kolasib	Private	Under-Graduate College	14	23	37

(Annual Publications, Statistical Cell, Directorate of Higher and Technical Education, 2021)

3.3 Sample:

For the present study, to study and compare environmental ethics and attitude, 900 students were selected as a representative sample. The final sample size comprised of 450 males and 450 females offering Arts, Science and Commerce of under-graduate students studying in Mizoram.

The samples were selected following Stratified Random Sampling technique. The name of colleges and sample distribution of the students is presented in the following Table no. 3.2

Table no: 3.2

Name of Colleges and sample distribution of the students

Sl. No	Name of College	District	Number of Respondent		Total
			Male	Female	
1	Pachhunga University College	Aizawl	140	145	**285**
2	Govt. Aizawl College	Aizawl	20	22	**42**
3	Govt. Aizawl North College	Aizawl	10	12	**22**
4	Govt. Aizawl West College	Aizawl	20	19	**39**
5	Govt. Johnson College	Aizawl	20	22	**42**
6	Govt. Hrangbana College	Aizawl	21	23	**44**
7	Govt. J. Thankima College	Aizawl	15	13	**28**
8	Govt. T.Romana College	Aizawl	25	22	**47**
9	Govt. Zirtiri Residential College	Aizawl	42	38	**80**

10	Govt. Champhai College	Champhai	17	18	**35**
11	Govt. Hnahthial College	Hnahthial	3	8	**11**
12	Govt. Khawzawl College	Khawzawl	8	10	**18**
13	Govt. Kolasib College	Kolasib	12	13	**25**
14	Govt. Kamalanagar College	Lawngtlai	15	12	**27**
15	Govt. J. Buana College	Lunglei	20	25	**45**
16	HATIM	Lunglei	14	11	**25**
17	Lunglei Govt. College	Lunglei	11	6	**17**
18	Govt. Mamit College	Mamit	14	10	**24**
19	Govt. Saiha College	Siaha	9	8	**17**
20	Govt. Saitual College	Saitual	4	2	**6**
21	Govt. Serchhip College	Serchhip	10	11	**21**

There are 24 Government aided Colleges, 1 constituent college i.e., Pachhunga University College and 2 un-aided colleges. The present study covers all the districts of Mizoram and out of these, 9 colleges were from Aizawl district. 2 Govt. colleges and 1 un-aided college from Lunglei. Since there is only 1 college each in Champhai, Siaha, Lawngtlai, Kolasib, Mamit, Serchhip, Hnahthial, Khawzawl and Saitual sample were taken from the above-mentioned colleges.

Table no: 3.3

Gender, Stream and Locale Wise Distribution of Sample of Students

Gender				
Sl. No.	**Sample of students**	**No. of Male Students**	**No. of Female Students**	**Total**
1.	Male and Female	450	450	**900**
Streams				
	Stream of Study	**No. of Male Students**	**No. of Female Students**	**Total**
2.	Arts	200	200	400
3.	Science	150	150	300
4.	Commerce	100	100	200
TOTAL		**450**	**450**	**900**
Locale				
	Locale	**No. of Male Students**	**No. of Female Students**	**Total**
5.	Urban	225	225	450
6.	Rural	225	225	450
TOTAL		**450**	**450**	**900**

As shown in the above table 3.1 and 3.2, sample of students were randomly selected out of all colleges affiliated to Mizoram University. 900 students with 450 males and 450 females were selected. Out of 900 students, 400 students were selected from arts stream, 300 students from science stream and 200 students from commerce stream. Altogether 900 students comprising of 450 urban and 450 rural students were selected from their locale.

3.4 Tools for data collection:

The following tools were used for the present study:

1. Environmental Ethics Scale (EES) (2001) developed by Dr. (Mrs.) Haseen Taj; Professor, Department of Education, Bangalore University, Bengaluru.
2. Attitude Scale towards Environmental Protection (2021) developed by the investigator.

3.4.1 Environmental Ethics Scale (EES)

Environmental Ethics Scale is developed by Dr. (Mrs.) 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 no: 3.4

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, 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 1st half-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. 3.5

Table no: 3.5

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 - 2nd half)	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 Attitude Scale towards Environmental Protection (2021):

Attitude Scale towards Environmental Protection (2021) was developed by the investigator which consists of 38 statements in a five-point Likert-type scale. Each item has five alternative responses- 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. In a positive item, the point for 'strongly agree' is 5, 'agree' is 4, 'undecided' is 3, 'disagree' is 2 and 'strongly disagree' is 1 and in a negative item 'strongly agree' is 1, 'agree' is 2, 'undecided' is 3, 'disagree' is 4 and 'strongly disagree' is 5 respectively. The negative items are given star-mark. The highest possible score on the test was (38 X 5) 190 and the lowest possible score is (38 X 1) 38. Thus, the range of the scale is 38 – 190.

Procedure for construction and standardization of Questionnaire:

In order to construct statements to assess the attitude towards environmental protection, the investigator examined questionnaire design, journals and literature review to determine how questionnaires should be framed. From the study of these questionnaire, journals and from literature review and came up with 70 statements. The first set of statements of attitude toward environmental protection was generated. After consulting and advised by the supervisor, in order to find out the content validity of the 70 statements, it was given to 7 subject matter experts within the University for editing as well as for validating the statements. On the basis of the opinions of the experts, 10 items were rejected and some items were modified. After this, the draft now contained 60 statements, expressing both positive and negative attitude scale. The

instructions for the scale required subjects to respond to each item on a 5-point Likert-type scale, the response categories being 'strongly agree,' 'agree,' 'undecided,' 'disagree' and 'strongly disagree.'

Trying out of the scale:

After preparing the 60 items attitude scale, it was first tried out and was administered to hundred 5th Semester students selected from Pachhunga University College, Aizawl. In the beginning of the test, instructions were given, but no further instructions were required. After administering the test to hundred students, the scale was again collected within a time gap of 15 days and item analysis was done by finding out the discrimination value of each item

Item analysis:

After administration of the test to hundred 5th semester students, scoring was done using Likert scoring procedure. The scores were then arranged in descending order, and the upper 27% and lower 27% were set aside for item analysis and discrimination. Student's t-test and Discriminating Index were calculated. A t-test for each of the items was calculated from the upper 27% and lower 27%.

The mean and standard deviation were computed separately for the above-mentioned top and bottom groups. After this, those items having t-value above 2.68 i.e., statements which are significant at 0.01 level of confidence and t-value between 2.01 and 2.68 i.e., statements which are significant at 0.05 level of confidence were retained for the final scale and statements having t value less than 2.01 were rejected. Out of 60 statements, 22 statements were rejected/not significant and the significant items consists of 38 statements. The Mean and Standard Deviation value of top and bottom group on each of the 60 statements and the discrimination value in the form of 't-value' are given in Table No. 3.6

Table no: 3.6

Mean, Standard Deviation and t-value of High and Low groups on different Items of Attitude towards Environmental Protection

Item No	High Group		Low Group		t-value	Significance
	Mean	SD	Mean	SD		
1	2.33	1.00	1.80	1.44	1.47	NS
2	2.56	0.46	2.27	1.22	0.97	NS
3	2.72	0.64	2.46	0.56	1.85	NS
4	4.85	0.36	3.77	0.92	6.35	**
5	2.55	0.85	2.27	1.26	0.80	NS
6	4.85	0.36	4.37	0.65	4.80	**
7	4.37	0.55	3.85	0.64	3.06	**
8	3.22	0.64	2.82	1.01	2.00	NS
9	3.72	0.80	3.50	0.50	1.57	NS
10	4.07	0.63	3.33	0.44	7.40	**
11	4.37	0.70	3.70	0.54	4.78	**
12	4.33	0.70	3.22	0.90	5.55	**
13	4.33	0.58	3.59	0.67	5.29	**
14	2.34	0.90	2.04	0.70	1.5	NS
15	4.44	0.31	3.62	0.73	5.86	**
16	4.74	0.52	4.03	0.48	7.1	**
17	4.77	0.4	3.37	1.22	6.36	**
18	4.74	0.54	3.92	0.70	4.82	**
19	2.56	0.46	2.38	0.80	0.90	NS
20	4.33	0.33	3.48	0.58	8.5	**
21	2.70	1.14	2.30	0.81	1.43	NS
22	4.74	0.37	4.07	0.6	6.7	**
23	4.51	0.80	3.44	0.67	6.29	**
24	2.55	0.85	2.27	1.26	0.80	NS
25	4.81	0.44	4.14	0.72	6.7	**
26	4.77	0.51	4.03	0.7	7.4	**
27	4.85	0.36	4.03	0.58	8.2	**
28	2.45	1.95	3.15	1.04	1.66	NS
29	3.40	0.80	4.33	0.63	5.47	**
30	2.93	1.41	2.37	1.09	1.70	NS

31	4.81	0.41	3.85	0.65	9.6	**
32	2.60	1.83	3.03	0.92	1.13	NS
33	4.29	0.78	3.74	0.54	3.92	**
34	4.48	0.38	3.48	0.59	10	**
35	4.70	0.45	3.81	0.74	6.36	**
36	4.18	0.61	3.44	0.67	5.29	**
37	4.29	0.58	3.59	0.58	5	**
38	2.6	1.43	2.97	0.94	1.23	NS
39	4.29	0.64	3.66	0.66	4.5	**
40	3.55	1.71	3.18	1.07	1.23	NS
41	4.81	0.50	3.92	0.88	5.23	**
42	2.56	0.88	2.04	1.08	1.62	NS
43	2.55	0.58	2.67	0.48	0.46	NS
44	3.11	0.99	2.74	0.75	1.54	NS
45	4.96	0.53	3.70	1.08	6.3	**
46	4.55	0.37	3.37	0.86	8.43	**
47	4.66	0.31	3.62	0.66	10.4	**
48	4.62	0.54	3.37	0.73	8.92	**
49	3.62	1.65	3.33	1.22	0.72	NS
50	4.59	0.58	3.40	1.02	5.95	**
51	4.88	0.36	3.62	1.07	6.3	**
52	4.22	0.81	3.33	0.91	4.04	**
53	2.61	0.10	2.09	0.59	1.73	NS
54	4.70	0.54	3.81	0.50	8.9	**
55	4.55	0.48	3.62	0.84	6.64	**
56	4.81	0.41	3.70	0.77	7.93	**
57	4.74	0.70	3.29	1.00	7.25	**
58	4.70	0.45	3.48	0.67	12.2	**
59	1.76	1.04	2.24	1.03	1.37	NS
60	3.81	1.57	3.44	0.74	1.23	NS

*NS means Not Significant, ** means significant at both 0.01 and 0.05 level*

Reliability:

The investigator applied 'Test-Retest Method' for the establishment of reliability of the scale. For this, Test had been conducted with a time gap of 15 days on a sample of 100 5th semester college students. The co-efficient of reliability was computed between the two tests by using the "Product Moment Correlation". The co-efficient of reliability of the scale came out to be 0.90 which can be considered adequate for an attitude scale. The detailed information on reliability co-efficient are presented in table no. 3.7

Table no: 3.7

Reliability Indices for Attitude Scale towards Environmental Protection

RELIABILTIES		
Mean	**SD**	**Product-Moment Correlation**
N=100 (college students) after 15 days	N=100 (college students) after 15 days	N=100
185.17	16.90	0.90

Validity:

For the present scale, content validity was established by requesting seven (7) experts consisting of professionals and faculties from Mizoram University for validating the test items. To establish criterion-related validity, the investigator administered "Environmental Attitude Scale" by Dr. (Mrs.) Haseen Taj. The correlation coefficient between the two scales was found to be 0.95, which was considered highly adequate to study the attitudes of under-graduate students towards environmental protection.

The validity indices are shown in Table 3.8. A sample of the Attitude scale towards environmental protection is attached in APPENDIX-2

Table no: 3.8

Validity Indices

VALIDITY		
Mean	**SD**	**Criterion Validity**
N=100 (College students)	N=100 (College students)	N=100
177.89	18.56	0.95

Scoring:

The scoring pattern for Attitude scale suggested by Likert was followed for the present attitude scale. Each item has five alternative responses - 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. For scoring purposes, the positive statements were given the scores 5, 4, 3, 2, 1 and the negative statements were given the scores 1, 2, 3, 4, 5. The negative items are given star-mark. The highest possible score on the test was (38 X 5) 190 and the lowest possible score is (38 X 1) 38. Since the total number of statements in the scale is 38. Thus, the range of the scale is 38-190. The item numbers for positive and negative statements are given in the following Table 3.9

Table no: 3.9

Serial Number of Positive and Negative Statements

Type of statements	Item Numbers	Total
Positive	1, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33, 34, 36, 37, 38	28
Negative	2, 3, 4, 5, 8, 16, 20, 27, 30, 35	10
TOTAL		**38**

Standardization:

For the last step in standardization of the scale, the investigator administered a final try out on a sample of 900 under-graduate students randomly selected from all the colleges of Mizoram. The sampled students comprised of 5^{th} semesters from Arts, Science and Commerce Stream, both male and female coming from rural and urban areas of Mizoram. The sample students are randomly selected in such a way that the scale was administered using online app (Google Form app). The link for the scale was obtained and was sent to Arts, Commerce and Science students studying in colleges of all the districts of Mizoram during the time the sample was taken.

Norms and Interpretation of Attitude Scale:

The newly constructed attitude scale was administered on 900 under-graduate students selected from all the colleges of Mizoram. For the purpose of establishing norms for interpretation of the scale, the investigator converted the raw score into z-score and then transform into the standard score.

The norm for interpretation of the score on attitude towards environmental protection is given in the following table no. 3.10

Table no: 3.10

Interpretation of Attitude towards Environmental Protection

Score Range	Interpretations
176 and above	High (1σ and above)
153 – 175	Average (-1σ to 1 σ)
108 – 152	Low (-1σ and below)

3.5 Administration of tools and data collection:

Both the Environmental Ethics scale comprising of 45 statements and the Attitude towards Environmental Protection scale consisting of 38 statements was administered to all 900 students, Google form app was used to collect the data. The purposes of the study as well as instructions for marking 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 Tabulation of data:

The data collected from the 900 students, were scrutinized, classified and scored according to standard procedure. After scoring the responses of both the questionnaire 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 and were subject to statistical treatment by employing the following statistical techniques for the analysis.

3.7 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. Analysis of data was done by making use of descriptive and inferential statistics like Mean, Standard Deviation, Pearson's Product Moment Correlation, ANOVA and t-test.

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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 Under-Graduate Students in Mizoram, and to compare the differences with respect to gender, locale and stream of study. The objectives also comprise of finding out the Attitude towards Environmental Protection of Under-Graduate Students of Mizoram, to compare the differences with respect to gender, locale and stream of study and thereby to study the relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students of Mizoram.

The data relating to the level of environmental ethics were collected by administering the Environmental Ethics Scale (EES) developed by Dr. (Mrs.) Haseen Taj, and the Attitude Scale towards Environmental Protection (ASEP) developed by the investigator. The responses obtained from the subjects were scored following the standard scoring procedures. The scores were classified, tabulated and analysed. 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 this chapter in accordance with the objectives stated in chapter 1 as follows:

4.1 Objective No.1: Level of Environmental Ethics of Under-Graduate Students in Mizoram.

In order to find out the environmental ethics of under-graduate students in Mizoram, 'Environmental Ethics Scale (EES)' developed by Dr. (Mrs.) Haseen Taj was administered to all the 900 under-graduate students. After scoring, their scores were tabulated. In order to establish the norms, the raw scores of all 900 under-graduate students 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 no: 4.1

Score Range, Stanine Grade and Interpretation of Environmental Ethics

No.	Score Range	Grade	Interpretations
1	131-135	9	High Ethics
2	125-130	8	
	118-124	7	
3	112-117	6	Average ethics
	105-111	5	
	99-104	4	
4	92-98	3	Low ethics
	85-91	2	
5	61-84	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 and figure show the number and percentages of all respondent's level of environmental ethics.

Table no: 4.2

Level of Environmental Ethics of Under-Graduate Students in Mizoram

N	Mean	SD	High Ethics	Average Ethics	Low Ethics
900	112.95	14.33	576 (64%)	113 (12.6%)	211 (23.4%)

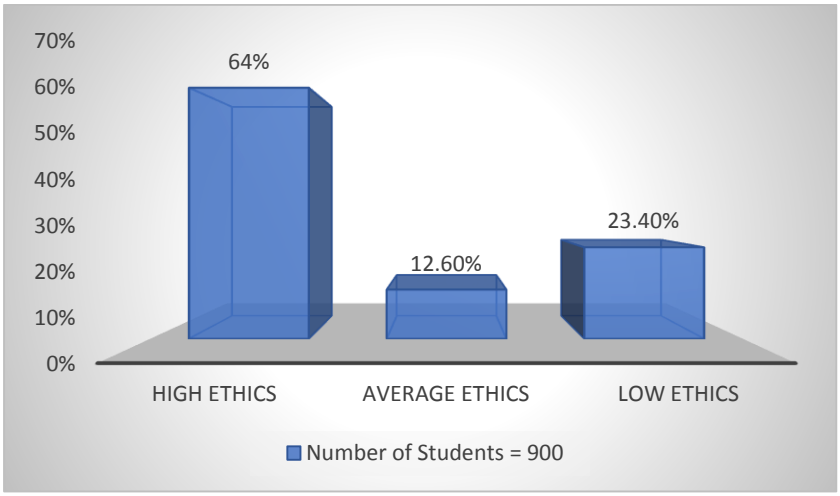

Figure 4.1*: Level of Environmental Ethics of Under-Graduate Students in Mizoram.*

The above table 4.2 and figure 4.1 reveals that out of 900 respondents, majority 576 (64%) of the under-graduate students have high level of environmental ethics, while 113 (12.6%) of the under-graduate students have average level of environmental ethics and 211 (23.4%) of the under-graduate students have low level of environmental ethics. The mean score of college students is 112.95 and standard deviation is 14.33 respectively. Therefore, we can conclude that the under-graduate students in Mizoram have a high level of environmental ethics.

4.2 Objective No.2: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their gender.

The under-graduate 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 under-graduate students in Mizoram with respect to their gender".

The following table 4.3 and figure 4.2 shows the comparison of Male and Female respondents with respect to their Environmental Ethics.

Table no: 4.3

Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their gender

Gender	N	High Ethics	Average Ethics	Low Ethics
Male	450	254 (56.4%)	57 (12.7%)	139 (30.9%)
Female	450	322 (71.6%)	56 (12.4%)	72 (16%)

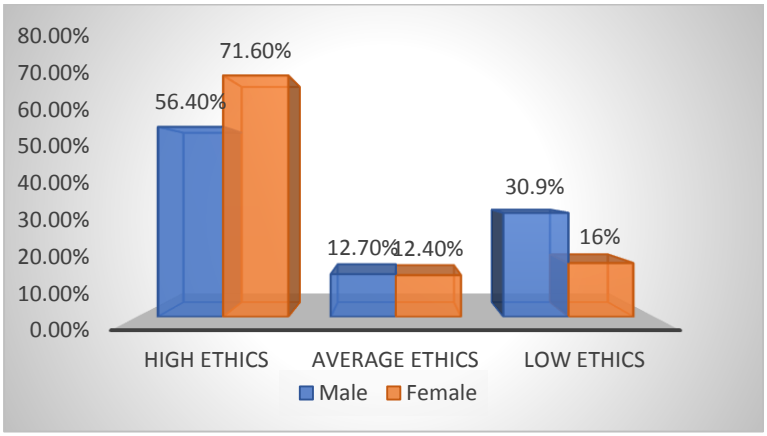

Figure 4.2*: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their gender.*

It is evident from table 4.3 that both female and male under-graduate students have a high level of environmental ethics. Among the male under-graduate students, majority 254 (56.4%) have high level of environmental ethics, 57 (12.7%) have average level of environmental ethics and 139 (30.9%) under-graduate students have low level of environmental ethics. Among the female under-graduate students, 322 (71.6%) have a high level of environmental ethics, 56 (12.4%) have average level of environmental ethics and 72 (16%) have low level of environmental ethics.

Table no. 4.4 shows the calculation of t-test of Male and Female respondents with respect to their Environmental Ethics.

Table no: 4.4

Difference in the Environmental Ethics of Under-Graduate Students in Mizoram with reference to their gender

Gender	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Male	450	109.88	898	15.39	6.59	1.96	2.59	**
Female	450	116.01		12.48				

**Significant at both 0.05 and 0.01 level

A result of the above table 4.4 reveals that the 't' value for the significance of difference between male and female under-graduate students is 6.59. Since the calculated 't' value is greater than the criterion 't' value at 0.05 and 0.01 level, it can be concluded that there is a significant difference between male and female under-graduate students with respect to environmental ethics. Therefore, the null hypothesis (No.1) that assumes "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their gender" is rejected, since the two groups differed significantly at 0.05 and 0.01 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 under-graduate females possess better environmental ethics than their male counterparts i.e. the under-graduate males.

4.3 Objective No.3: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their locale.

The under-graduate students' levels of environmental ethics were compared on the basis of their locale. 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 environmental ethics with reference to locale.

Hypothesis No.2 states that "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their locale".

Table 4.5 and figure 4.3 shows the comparison of Urban and Rural respondents with respect to their Environmental Ethics.

Table no: 4.5

Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their locale

Locale	N	High Ethics	Average Ethics	Low Ethics
Urban	450	319 (70.9%)	57 (12.7%)	74 (16.4%)
Rural	450	257 (57.2%)	56 (12.4%)	137 (30.4%)

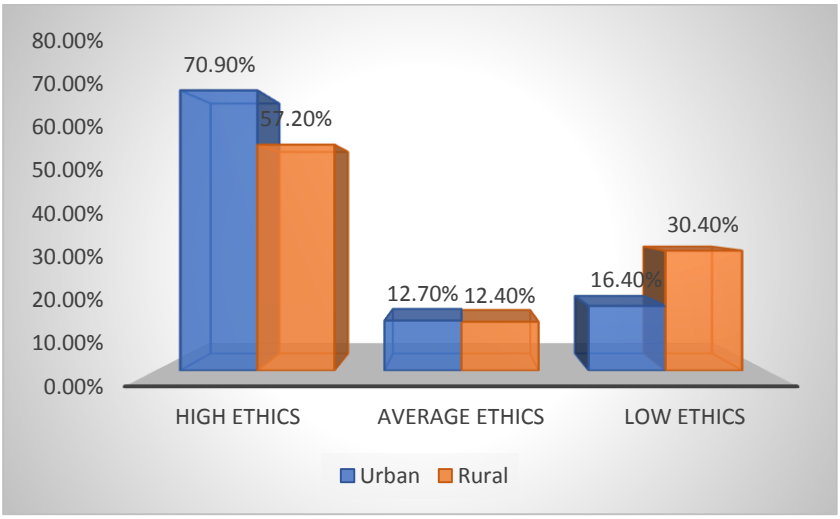

Figure 4.3*: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their locale.*

Looking at table 4.5, it shows that both urban and rural areas under-graduate students have almost the same level of environmental ethics, urban under-graduate students have slightly higher level of environmental ethics. We can see that 319 (70.9%) of the under-graduate students coming from urban areas have high level of environmental ethics, 57 (12.7%) have average level of environmental ethics and 74 (16.4%) students have low level of environmental ethics, while 257 (57.2%) of the under-graduate students coming from rural areas have a high level of environmental ethics, 56 (12.4%) have average level of environmental ethics and 137 (30.4%) have

low level of environmental ethics and it shows that more awareness about environmental concern should be done more in the rural areas.

Table 4.6 shows the calculation of t-test of Urban and Rural area respondents with respect to their Environmental Ethics.

Table no: 4.6

Difference in the Environmental Ethics of Under-Graduate Students in Mizoram with reference to their locale

Locale	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Urban	450	115.39	898	13.15	5.20	1.96	2.59	**
Rural	450	110.5		15.04				

**Significant at both 0.05 and 0.01 level

Table 4.6 shows that the calculated t-value for the significance of difference between under-graduate students coming from rural and urban areas is 5.20 which is more than the critical value at 0.05 and 0.01. This means that it is significant and the hypothesis (No.2) stating "There is no significant difference in the environmental ethics of under-graduate students with respect to their locale" has to be rejected since the two groups differed significantly at 0.05 and 0.01 level of confidence. A comparison of their mean scores shows that urban students have higher mean score than the rural students, this means that although there is a difference of 4.89 between the mean scores of students coming from rural and urban areas therefore it can be concluded that urban students have higher level of environmental ethics than the rural students.

4.4 Objective No.4: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their stream of study.

The under-graduate students' levels of environmental ethics were compared on the basis of their stream of study. 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.

4.4.1 Difference in environmental ethics with reference to stream of study.

Hypothesis No.3 states that "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their stream of study".

The following table and figure show the comparison of Arts, Science and Commerce respondents with respect to their Environmental Ethics.

Table no: 4.7

Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their stream of study

Stream of Study	N	High Ethics	Average Ethics	Low Ethics
Arts	400	206 (51.5%)	58 (14.5%)	136 (34%)
Science	300	232 (77.3%)	31 (10.4%)	37 (12.3%)
Commerce	200	138 (69%)	24 (12%)	38 (19%)

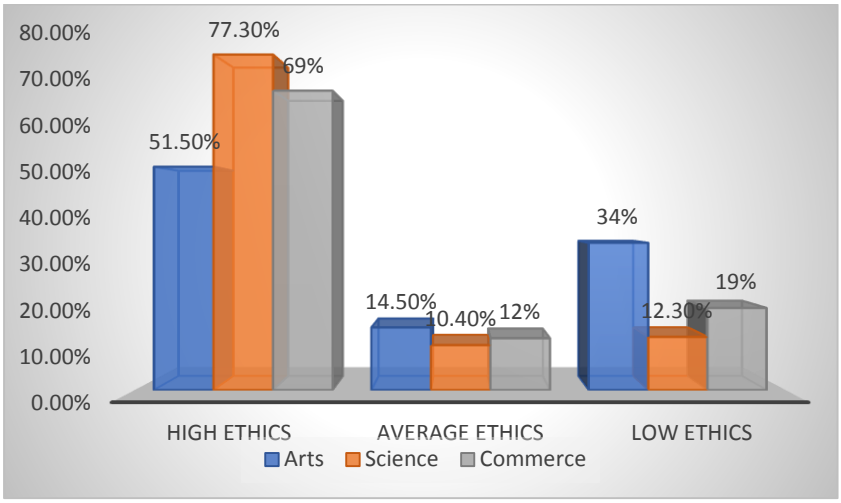

Figure 4.4*: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their stream of study.*

It is perceptible from table 4.7 that among the three streams of study, Science under-graduate students have the best environmental ethics. 232 (77.3%) of them have high level of environmental ethics, 31 (10.4%) have average level of environmental ethics and only 37 (12.3%) have low level of environmental ethics. Among the Arts under-graduate students, 206 (51.5%) have high level of environmental ethics, 58 (14.5%) have average level of environmental ethics while 136 (34%) of them have low level of environmental ethics. Commerce under-graduate students have the least environmental ethics in comparison with the other two streams. We can see that 138 (69%) of the Commerce under-graduate students have high level of environmental ethics, 24 (12%) have average level of environmental ethics and 38 (19%) have low level of environmental ethics.

To test the said hypothesis, ANOVA was employed and the results are shown in table 4.8

Table no: 4.8

Difference in the Environmental Ethics of Under-Graduate Students in Mizoram with reference to their stream of study

Source of Variation	SS	df	MS	F	P-value	F crit
Between groups	16079.29	2	8039.64	42.77	0	3.005
Within Groups	168600.35	897	187.96			
Total	184679.64	899				

By looking at table 4.8 it can be seen that the calculated F value figure is larger than the critical value of F figure which means that there is significant difference between the three streams of study in their ethics towards environment. Therefore, further analysis was required to find out where the difference between the three variables was. A t-test was employed to compare two of all three variables separately.

The results of the t-tests are reflected in table 4.9

Table no: 4.9

Difference in the Environmental Ethics of Arts and Science Under-Graduate Students in Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Arts	400	108.35	898	15.79	8.96	1.96	2.59	**
Science	300	117.71		11.85				

**Significant at both 0.05 and 0.01 level

Table 4.9 shows that the calculated t-value is 8.96 which is more than both the critical values at 0.05 and 0.01 levels, there is a significant difference between the environmental ethics of Arts and Science under-graduate students of Mizoram. Therefore, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their stream of study" has to be rejected. A comparison of the mean scores between Arts and Science students shows that Science students showed a higher mean value at 117.71 when compared with Arts students who had a mean value of 108.35. Therefore, it can be concluded that Science students have higher level of environmental ethics when compared with Arts under-graduate students during the time this research was undertaken.

In order to compare Arts and Commerce students with regards to their environmental ethics, a t-test was performed and the results are shown in table 4.10

Table no: 4.10

Difference in the Environmental Ethics of Arts and Commerce Under-Graduate Students in Mizoram

Stream	**N**	**Mean Value**	**df**	**SD**	**Calculated t - value**	**Critical value**		**Sig Level**
						0.05	**0.01**	
Arts	400	108.35	898	15.79	5.82	1.96	2.59	**
Commerce	200	114.99		11.66				

**Significant at both 0.05 and 0.01 level

The above table 4.10 shows that the calculated t-value for the significance of difference between Arts and Commerce under-graduate students is 5.82 which is more than both the critical values at 0.05 and 0.01 levels, this means that there is a significant difference between environmental ethics of Arts and Commerce under-graduate students of Mizoram. Therefore, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their stream of study" has to be rejected. A comparison of the

mean scores between Arts and Commerce students shows that Commerce students showed a higher mean value at 114.99 when compared with Arts under-graduate students who have a mean value of 108.35. Therefore, it can be concluded that Commerce under-graduate students have better level of environmental ethics when compared with Arts under-graduate students.

In order to compare Science and Commerce students with regards to their environmental ethics, a t-test was performed and the results are shown in 4.11

Table no: 4.11

Difference in the Environmental Ethics of Science and Commerce Under-Graduate Students in Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Science	300	117.71	898	11.85	2.54	1.96	2.59	*
Commerce	200	114.99		11.66				

*Significant at 0.05 level

Looking at Table 4.11, it shows that the t-value of Science and Commerce under-graduate students of Mizoram is 2.54 which is more than the critical value at 0.05 level. This means that there is a significant difference in the ethics of Science and Commerce under-graduate students of Mizoram towards the environment at 0.05 level. The calculated t-value was not significant at 0.01 level and at 0.05 level it was found to be significant. Thus, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of under-graduate students in Mizoram with respect to their stream of study" was rejected. Science students have better mean score of 117.71 in comparison with Commerce students who have a mean score of 114.99. It can be concluded that there is a significant difference in the environmental ethics of Science and Commerce under-graduate students of Mizoram.

4.5 Objective No.5: Construct and Standardize of Attitude Scale towards Environmental Protection of Under-Graduate Students in Mizoram.

In order to find out an attitude towards environmental protection of under-graduate students in Mizoram, the investigator came across several readymade attitude scales, but could hardly find any scale of attitude towards environmental protection. The investigator decided to construct and standardized a scale because it is a known fact that whenever population changes, it is often better to have an updated scale suited for the population from where samples are to be drawn. The reliability and validity of the scale can be established for the population under study. Therefore, in order to be as accurate as possible, the investigator constructed a Likert type attitude scale which is reliable as well as valid. The procedure adopted for its construction and standardization of the attitude scale towards science were given as below:

4.5.1 Procedure for construction and standardization of Questionnaire:

In order to construct statements to assess the attitude towards environmental protection, the investigator examined questionnaire design, journals and literature review to determine how questionnaires should be framed. From the study of these questionnaire, journals and from literature review and came up with 70 statements. The first set of statements of attitude toward environmental protection was generated. After consulting and advised by the supervisor, in order to find out the content validity of the 70 statements, it was given to 7 subject matter experts within the University for editing as well as for validating the statements. On the basis of the opinions of the experts, 10 items were rejected and some items were modified. After this, the draft now contained 60 statements, expressing both positive and negative attitude scale. The instructions for the scale required subjects to respond to each item on a 5-point Likert-type scale, the response categories being ‘strongly agree,’ ‘agree,’ ‘undecided,’ ‘disagree’ and ‘strongly disagree’.

4.5.2 Trying out of the scale:

After preparing the 60 items attitude scale, it was first tried out and was administered to hundred 5th Semester students selected from Pachhunga University College, Aizawl. In the beginning of the test, instructions were given, but no further instructions were required. After administering the test to hundred students, the scale was again collected within a time gap of 15 days and item analysis was done by finding out the discrimination value of each item.

4.5.3 Item analysis:

After administration of the test to hundred 5th semester students, scoring was done using Likert scoring procedure. The scores were then arranged in descending order, and the upper 27% and lower 27% were set aside for item analysis and discrimination. Student's t-test and Discriminating Index were calculated. A t-test for each of the items was calculated from the upper 27% and lower 27%.

The mean and standard deviation were computed separately for the above-mentioned top and bottom groups. After this, those items having t-value above 2.68 i.e., statements which are significant at 0.01 level of confidence and t-value between 2.01 and 2.68 i.e., statements which are significant at 0.05 level of confidence were retained for the final scale and statements having t value less than 2.01 were rejected. Out of 60 statements, 22 statements were rejected/not significant and the significant items consists of 38 statements. The Mean and Standard Deviation value of top and bottom group on each of the 60 statements and the discrimination value in the form of 't-value' are given in Table 4.12.

Table no: 4.12

Mean, Standard Deviation and t-value of High and Low groups on different Items of Attitude towards Environmental Protection

Item No	High Group		Low Group		t-value	Significance
	Mean	SD	Mean	SD		
1	2.33	1.00	1.80	1.44	1.47	NS
2	2.56	0.46	2.27	1.22	0.97	NS
3	2.72	0.64	2.46	0.56	1.85	NS
4	4.85	0.36	3.77	0.92	6.35	**
5	2.55	0.85	2.27	1.26	0.80	NS
6	4.85	0.36	4.37	0.65	4.80	**
7	4.37	0.55	3.85	0.64	3.06	**
8	3.22	0.64	2.82	1.01	2.00	NS
9	3.72	0.80	3.50	0.50	1.57	NS
10	4.07	0.63	3.33	0.44	7.40	**
11	4.37	0.70	3.70	0.54	4.78	**
12	4.33	0.70	3.22	0.90	5.55	**
13	4.33	0.58	3.59	0.67	5.29	**
14	2.34	0.90	2.04	0.70	1.5	NS
15	4.44	0.31	3.62	0.73	5.86	**
16	4.74	0.52	4.03	0.48	7.1	**
17	4.77	0.4	3.37	1.22	6.36	**
18	4.74	0.54	3.92	0.70	4.82	**
19	2.56	0.46	2.38	0.80	0.90	NS
20	4.33	0.33	3.48	0.58	8.5	**
21	2.70	1.14	2.30	0.81	1.43	NS
22	4.74	0.37	4.07	0.6	6.7	**
23	4.51	0.80	3.44	0.67	6.29	**
24	2.55	0.85	2.27	1.26	0.80	NS
25	4.81	0.44	4.14	0.72	6.7	**
26	4.77	0.51	4.03	0.7	7.4	**
27	4.85	0.36	4.03	0.58	8.2	**
28	2.45	1.95	3.15	1.04	1.66	NS
29	3.40	0.80	4.33	0.63	5.47	**
30	2.93	1.41	2.37	1.09	1.70	NS
31	4.81	0.41	3.85	0.65	9.6	**

32	2.60	1.83	3.03	0.92	1.13	NS
33	4.29	0.78	3.74	0.54	3.92	**
34	4.48	0.38	3.48	0.59	10	**
35	4.70	0.45	3.81	0.74	6.36	**
36	4.18	0.61	3.44	0.67	5.29	**
37	4.29	0.58	3.59	0.58	5	**
38	2.6	1.43	2.97	0.94	1.23	NS
39	4.29	0.64	3.66	0.66	4.5	**
40	3.55	1.71	3.18	1.07	1.23	NS
41	4.81	0.50	3.92	0.88	5.23	**
42	2.56	0.88	2.04	1.08	1.62	NS
43	2.55	0.58	2.67	0.48	0.46	NS
44	3.11	0.99	2.74	0.75	1.54	NS
45	4.96	0.53	3.70	1.08	6.3	**
46	4.55	0.37	3.37	0.86	8.43	**
47	4.66	0.31	3.62	0.66	10.4	**
48	4.62	0.54	3.37	0.73	8.92	**
49	3.62	1.65	3.33	1.22	0.72	NS
50	4.59	0.58	3.40	1.02	5.95	**
51	4.88	0.36	3.62	1.07	6.3	**
52	4.22	0.81	3.33	0.91	4.04	**
53	2.61	0.10	2.09	0.59	1.73	NS
54	4.70	0.54	3.81	0.50	8.9	**
55	4.55	0.48	3.62	0.84	6.64	**
56	4.81	0.41	3.70	0.77	7.93	**
57	4.74	0.70	3.29	1.00	7.25	**
58	4.70	0.45	3.48	0.67	12.2	**
59	1.76	1.04	2.24	1.03	1.37	NS
60	3.81	1.57	3.44	0.74	1.23	NS

*NS means Not Significant, ** means significant at both 0.01 and 0.05 level*

4.5.4 Reliability:

Reliability is the degree to which an assessment tool produces stable and consistent result. It is important that any standardized scale should be reliable enough to obtain trustworthy results. The investigator applied ‘Test- Retest Method’ for the

establishment of reliability of the scale. The scale was administered to hundred (100) 5th semester students selected from Pachhunga University College, Aizawl, Mizoram. There was an interval of 15 days between the first-test and the second test was again given to the same students. The answer sheets of these 100 students were scored and tabulated. The co-efficient of reliability was computed between the scores of the two tests by using the "Product Moment Correlation". The co-efficient of reliability of the scale came out to be 0.90 which indicates a strong correlation which means there is a high degree of correlation between the scores of the students in the first-test and the second test. The detailed information on reliability co-efficient are presented in table 4.13.

Table no: 4.13

Reliability Indices for Attitude Scale towards Environmental Protection

RELIABILTIES		
Mean	**SD**	**Product-Moment Correlation**
N=100 (college students) after 15 days	N=100 (college students) after 15 days	N=100
185.17	16.90	0.90

4.5.5 Validity :

The scale possesses content validity, the method of selecting items supports this supposition. Content validity was established by requesting seven (7) experts consisting of professionals and faculties from Mizoram University for judging the worth of each statement and validating the test items. The experts approved on the validity of the content of items. To establish criterion-related validity, the investigator administered "Environmental Attitude Scale" by Dr. (Mrs.) Haseen Taj along with the newly constructed "Attitude Towards Environmental Protection" to all the 100 respondents. The correlation coefficient between the two scales was found to be 0.95, which was considered highly adequate to study the attitudes of under-graduate students

towards environmental protection. The following table 4.14 shows the validity of the two tests.

Table no: 4.14

Validity Indices

VALIDITY		
Mean	**SD**	**Criterion Validity**
N=100 (College students)	N=100 (College students)	N=100
177.89	18.56	0.95

4.5.6 Scoring:

The scoring pattern for Attitude scale suggested by Likert was followed for the present attitude scale. Each item has five alternative responses- 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. For scoring purposes, the positive statements were given the scores 5, 4, 3, 2, 1 and the negative statements were given the scores 1, 2, 3, 4, 5. The negative items are given star-mark. The highest possible score on the test was (38 X 5) 190 and the lowest possible score is (38 X 1) 38. Since the total number of statements in the scale is 38. Thus, the range of the scale is 38-190. The item numbers for positive and negative statements are given in the following Table 4.15.

Table no: 4.15

Serial Number of Positive and Negative Statements

Type of statements	Item Numbers	Total
Positive	1, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33, 34, 36, 37, 38	28
Negative	2, 3, 4, 5, 8, 16, 20, 27, 30, 35	10
TOTAL		**38**

4.5.7 Standardization:

For the last step in standardization of the scale, the investigator administered a final try out on a sample of 900 under-graduate students randomly selected from all the colleges of Mizoram. The sampled students comprised of 5^{th} semesters from Arts, Science and Commerce Stream, both male and female coming from rural and urban areas of Mizoram. The sample students are randomly selected in such a way that the scale was administered using online app (Google Form app). The link for the scale was obtained and was sent to Arts, Commerce and Science students studying in colleges of all the districts of Mizoram during the time the sample was taken.

4.5.8 Norms and Interpretation of Attitude Scale:

The norms and interpretation for the present study have been prepared as under. The investigator administered the attitude towards environmental protection scale on a sample of 900 under-graduate students selected from all the colleges of Mizoram. For the purpose of establishing norms for interpretation of the scale, the investigator converted the raw score into z-score and then transform into the standard score.

The norm for interpretation of the score on attitude towards environmental protection is given in the following table

Table no: 4.16

Interpretation of Attitude towards Environmental Protection

Score Range	Interpretations
176 and above	High (1σ and above)
153 – 175	Average (-1σ to 1 σ)
108 – 152	Low (-1σ and below)

4.6 Objective No.6: Level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

In order to study the attitude towards environmental protection of under-graduate students in Mizoram, the investigator made use of the attitude scale towards environmental protection prepared by the investigator itself.

The following table 4.17 and figure 4.5 shows the number and percentage of all respondent's level of attitude towards environmental protection.

Table no: 4.17

Level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram

N	Mean	SD	High Attitude	Average Attitude	Low Attitude
900	164.35	11.76	144 (16%)	629 (69.9%)	127 (14.1%)

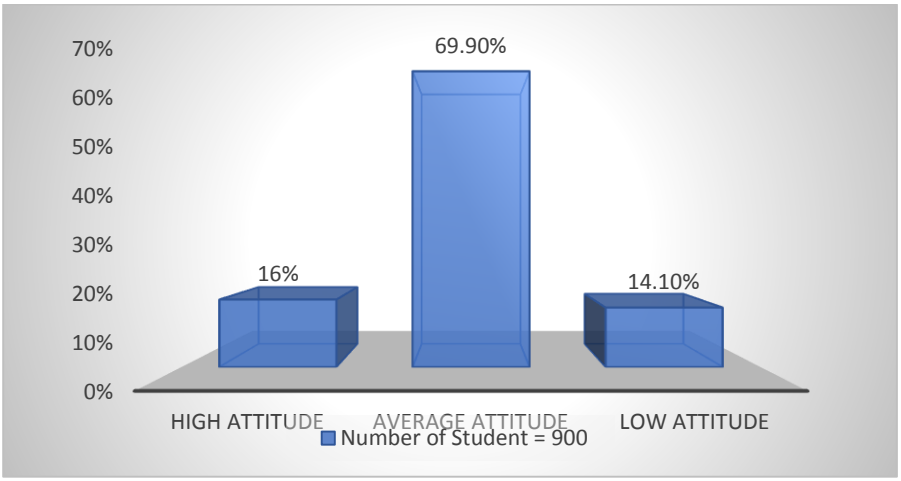

Figure 4.5*: Level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.*

Looking at table 4.17, out of all the 900 under-graduate students it can be seen that majority i.e., 629 (69.9%) of under-graduate students in Mizoram have average level of attitude towards environmental protection. The table also shows that 144 (16%) of under-graduate students in Mizoram have high level of attitude towards environmental protection while 127 (14.1%) have low level of attitude towards environmental protection. The mean score of attitudes towards environmental protection of under-graduate students in Mizoram was 164.35 and standard deviation was 11.76 respectively.

4.7 Objective No.7: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their gender.

The under-graduate students' levels of attitude towards environmental protection 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.

4.7.1 Difference in attitude towards environmental protection with reference to gender.

Hypothesis No.4 states that "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their gender".

Table 4.18 and figure 4.6 shows the comparison of Male and Female respondents with respect to their attitude towards environmental protection.

Table no: 4.18

Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their gender

Gender	N	High Attitude	Average Attitude	Low Attitude
Male	450	74 (16.4%)	299 (66.5%)	77 (17.1%)
Female	450	70 (15.6%)	330 (73.3%)	50 (11.1%)

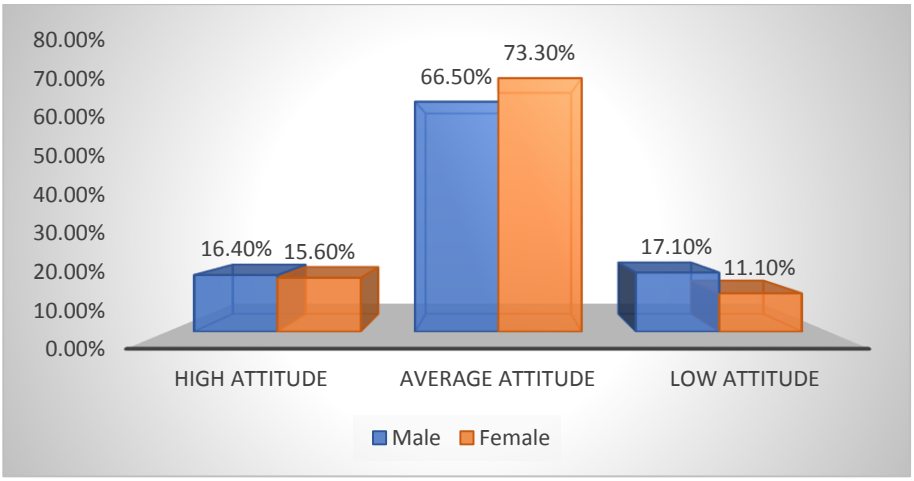

Figure 4.6*: Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their gender.*

It is perceptible from table 4.18 shows that majority i.e., 299 (66.5%) of male under-graduate students have average attitude towards environmental protection while 74 (16.4%) of male students have high level of attitude towards environmental protection and 77 (17.1%) have low level of attitude towards environmental protection. It can also be seen that 70 (15.6%) of under-graduate female students have high level of attitude towards environmental protection, while 330 (73.3%) have average level of attitude towards environmental protection and 50 (11.1%) of female students have low level of attitude towards environmental protection.

Table 4.19 shows the calculation of t-test of Male and Female respondents with respect to their attitude towards environmental protection.

Table no: 4.19

Difference in the Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their gender

Gender	**N**	**Mean Value**	**df**	**SD**	**Calculated t - value**	**Critical value**		**Sig Level**
						0.05	**0.01**	
Male	450	163.70	898	12.59	1.67	1.96	2.59	*NS*
Female	450	165.01		10.85				

*NS – Not Significant

Table 4.19 shows that the 't' value for the significance of difference between male and female under-graduate students is 1.67. Since the calculated 't' value is less than the criterion 't' value at 0.05 and 0.01 level, it can be concluded that there is no significant difference between male and female under-graduate students with respect to their attitude towards environmental protection. Therefore, the null hypothesis (No.4) assumes that "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their gender" cannot be rejected, since the two groups does not differ significantly at 0.05 and 0.01 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 under-graduate students have higher level of attitude towards environmental protection than the under-graduate males.

4.8 Objective No.8: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their locale.

The under-graduate students' levels of attitude towards environmental protection were compared on the basis of their locale. 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.

4.8.1 Difference in attitude towards environmental protection with reference to locale.

Hypothesis No.5 states that "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their locale".

The following table 4.20 and figure 4.7 shows the comparison of Urban and Rural respondents with respect to their attitude towards environmental protection.

Table no: 4.20

Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their locale

Locale	N	High Attitude	Average Attitude	Low Attitude
Urban	450	88 (19.6%)	305 (67.8%)	57 (12.6%)
Rural	450	56 (12.4%)	324 (72%)	70 (15.6%)

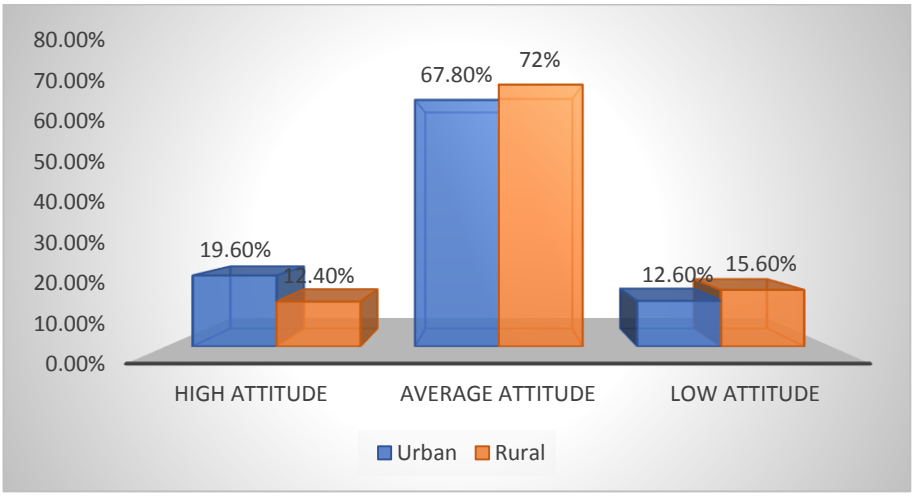

Figure 4.7*: Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their locale.*

By looking at table 4.20, it can be seen that majority of i.e., 305 (67.8%) of under-graduate students coming from urban areas have average level of attitude towards environmental protection while 324 (72%) of under-graduate students coming from rural areas have average level of attitude towards environmental protection. However, 88 (19.6%) of under-graduate students coming from urban areas have high level of attitude towards environmental protection while 56 (12.4%) of under-graduate students coming from rural areas have high level of attitude towards environmental protection. It can also be seen that 57 (12.6%) of under-graduate students coming from urban areas have low level of attitude towards environmental protection, 70 (15.6%) of under-graduate students coming from rural areas have low level of attitude towards environmental protection.

Table 4.21 shows the calculation of t-test of Urban and Rural area respondents with respect to their Environmental Ethics.

Table no: 4.21

Difference in the Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their locale

Locale	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Urban	450	165.54	898	11.88	3.04	1.96	2.59	**
Rural	450	163.17		11.54				

**Significant at both 0.05 and 0.01 level

The above table shows that the calculated t-value for the significance of difference between students coming from rural and urban areas is 3.04 which is more than the critical value at 0.05 and 0.01. This means that it is significant and the hypothesis (No.5) stating "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their locale" can be rejected since the two groups differed significantly at 0.05 and 0.01 level of confidence. A look at the mean value of both under-graduate students coming from rural and urban areas, urban under-graduate students have slightly better mean scores than rural under-graduate students. Therefore, it can be concluded that urban under-graduate students have slightly better level of environmental protection than the rural under-graduate students.

4.9 Objective No.9: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their stream of study.

The under-graduate students' levels of attitude towards environmental protection were compared on the basis of their stream of study. 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.

4.9.1 Difference in attitude towards environmental protection reference to their stream of study.

Hypothesis No.6 states that "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their stream of study".

Table 4.22 and figure 4.8 shows the comparison of Arts, Science and Commerce respondents with respect to their attitude towards environmental protection.

Table no: 4.22

Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their stream of study

Stream of Study	N	High Attitude	Average Attitude	Low Attitude
Arts	400	42 (10.5%)	288 (72%)	70 (17.5%)
Science	300	68 (22.7%)	205 (68.3%)	27 (9%)
Commerce	200	34 (17%)	136 (68%)	30 (15%)

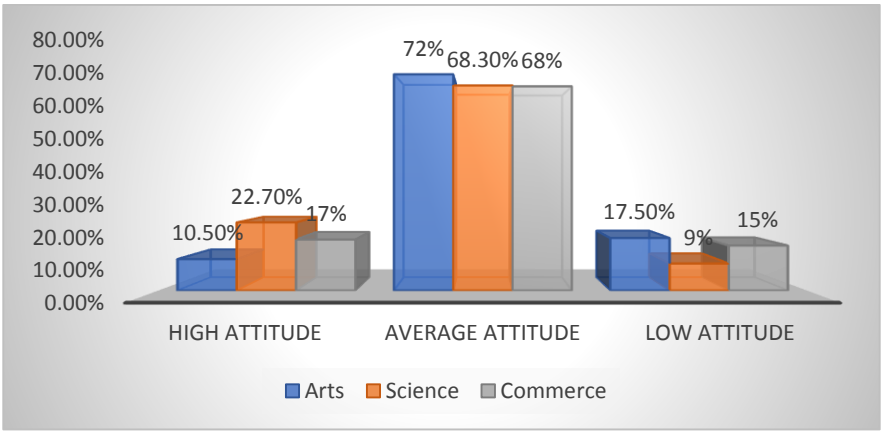

Figure 4.8: Comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with respect to their stream of study.

It is apparent from table 4.22 that among the three streams of study, 288 (72%) of Arts under-graduate students have average level of attitude towards environmental protection, while 70 (17.5%) have low level of attitude towards environmental protection and 42 (10.5%) of them have high level of attitude towards environmental protection. Among the Science students, 205 (68.3%) have average level of attitude towards environmental protection, 68 (22.7%) have high level of attitude towards environmental protection while 27 (9%) of them have low level of attitude towards environmental protection. This table also shows that 136 (68%) of the Commerce under-graduate students have average level of attitude towards environmental protection, 30 (15%) have low level of attitude towards environmental protection and 34 (17%) have high level of attitude towards environmental protection.

To test the said hypothesis, ANOVA was employed and the results are shown in table 4.23

Table no: 4.23

Difference in the Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their stream of study

Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between groups	5140.28	2	2570.13	19.32	6.04	3.005
Within Groups	119271.66	897	132.96			
Total	124411.94	899				

Looking at table 4.23, it can be seen that the calculated F value is larger than the critical value of F which means that there is significant difference between the three streams of study in their attitude towards environmental protection. Therefore,

further analysis was required to find out where the difference between the three variables was. A t-test was employed to compare two of all three variables separately.

The results of the t-tests are reflected in table no. 4.24

Table no: 4.24

Difference in the Attitude towards Environmental Protection of Arts and Science Under-Graduate Students in Mizoram

Stream	**N**	**Mean Value**	**df**	**SD**	**Calculated t - value**	**Critical value**		**Sig Level**
						0.05	**0.01**	
Arts	400	161.97	898	11.79	6.42	1.96	2.59	**
Science	300	167.44		10.66				

** Significant at both 0.05 and 0.01 levels

Table 4.24 shows that since the calculated t-value is 6.42 which is more than both the critical values at 0.05 and 0.01 levels, there is a significant difference between the attitude towards environmental protection of Arts and Science under-graduate students of Mizoram. Therefore, the null hypothesis (No.6) stating "There is no significant difference in the attitude of under-graduate students in Mizoram towards environmental protection with respect to their stream of study" has to be rejected. A comparison of the mean scores between Arts and Science students shows that Science students showed a higher Mean value at 167.44 when compared with Arts students who had a Mean value of 161.97. Therefore, it can be concluded that Science students have higher level of attitude towards environmental protection when compared with Arts students.

In order to compare Arts and Commerce students with regards to their attitude towards environmental protection, a t-test was performed and the results are shown in table 4.25

Table no: 4.25

Difference in the Attitude towards Environmental Protection of Arts and Commerce Under-Graduate Students in Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Arts	400	161.97	898	11.79	2.40	1.96	2.59	*
Commerce	200	164.49		12.24				

*Significant at 0.05 level

The above table 4.25 shows that the calculated t-value is 2.40 and it was not significant at 0.01 level and was found to be significant at 0.05 level, Thus, the null hypothesis (No.6) stating "There is no significant difference in the attitude of under-graduate students of Mizoram towards environmental protection with respect to their stream of study" was rejected. Commerce students showed a slightly higher mean value at 164.49 when compared with Arts students who have a mean value of 161.97 respectively. Therefore, it can be concluded that there is a significant difference between Arts and Commerce under-graduate students in their attitude towards environmental protection.

In order to compare Science and Commerce students with regards to their environmental ethics, a t-test was performed and the results are shown in 4.26

Table no: 4.26

Difference in the Attitude towards Environmental Protection of Science and Commerce Under-Graduate Students in Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Sig Level
						0.05	0.01	
Science	300	167.44	898	10.66	2.78	1.96	2.59	**
Commerce	200	164.49		12.24				

**Significant at both 0.05 and 0.01 level

Looking at table 4.26, it shows that the t-value of Science and Commerce under-graduate students of Mizoram is 2.78 which is more than the critical value at 0.05 and 0.01 level. This means that there is a significant difference in the attitude towards environmental protection of Science and Commerce under-graduate students of Mizoram at both levels. Thus, the null hypothesis (No.6) stating "There is no significant difference in the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their stream of study" was rejected. Commerce students have better mean score of 12.24 in comparison with science students who have a mean score of 10.66 respectively. It can be concluded that there is a significant difference in the attitude towards environmental protection between Science and Commerce under-graduate students of Mizoram.

4.10 Objective No.10: Relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

In order to find out the relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram, Pearson product moment correlation was employed.

Table no: 4.27

Relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram (N=900)

Variables	Critical r value		Calculated r	Significance
Ethics	0.05	0.01	0.98	Significant
Attitude	0.062	0.081		

Table 4.27 indicates that the R-value is 0.98 in relation to the correlation between environmental ethics and attitude towards environmental protection of under-graduate students, which is high or extremely high correlation. By looking at the critical table it reveals that the r value at 0.05 and 0.01 levels of significance are 0.062

and 0.081 respectively. Since the calculated r value is higher than the critical value of r, it may be concluded that there is a significantly positive correlation between environmental ethics and attitude towards environmental protection of under-graduate students of Mizoram. Hence, the null hypothesis (No. 7) stating "There is no relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram" is rejected. This implies that with greater ethics about environment, attitude towards environmental protection will also increase.

CHAPTER V
MAJOR FINDINGS AND DISCUSSIONS, SUGGESTIONS FOR FURTHER RESEARCH AND CONCLUSION

The present chapter deals with the major findings, discussions, suggestions for further research and to make suggestions for improving the environmental ethics and attitude towards environmental protection for further research among under-graduate students in Mizoram.

5.1. Findings and discussion regarding the level of Environmental Ethics of Under-Graduate Students in Mizoram.

Findings – The findings of the present study revealed that out of 900 under-graduate students in Mizoram, majority i.e. 576 (64%) of the under-graduate students have high level of environmental ethics, while 113 (12.6%) of the under-graduate students have average level of environmental ethics and 211 (23.4%) of the under-graduate students have low level of environmental ethics. The mean score and standard deviation of under-graduate students was found out to be 112.95 and 14.33 respectively. Therefore, it can conclude that majority of under-graduate students in Mizoram have a high level of environmental ethics.

Discussion - The present study found that the majority of under-graduate students in Mizoram have high level of environmental ethics. The similar findings were investigated by Raju (2007); Mathivanan & Pazhanivelu (2013) and Hmangaihzuali (2015) and they also found out that majority of the students have high level of environmental ethics. The topics on environmental studies is incorporated in the schools and as a compulsory paper at 4^{th} Semester in the college under Mizoram University. The study further elaborated that the probable reason why under-graduate students in Mizoram possessed high environmental ethics could be because the students were influenced by what they learnt in the schools and colleges.

5.2 Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their gender.

Findings – The findings of the study showed that out of 900 under-graduate students in Mizoram, majority i.e., 254 (56.4%) of male under-graduate students have high level of environmental ethics, while 57 (12.7%) have average level of environmental ethics and 139 (30.9%) of male under-graduate students have low level of environmental ethics. Among the female under-graduate students, we can see that 322 (71.6%) have high level of environmental ethics, while 56 (12.4%) have average level of environmental ethics and 72 (16%) of female under-graduate students have low level of environmental ethics. The mean score of male under-graduate students was 109.88 and the mean score of female under-graduate students was 116.01. Standard deviation of male and female under-graduate students was 15.39 and 12.48 respectively. The 't' value for the significance of difference between male and female under-graduate students was 6.59 which show that there is a significant difference between male and female under-graduate students at both 0.01 and 0.05 levels.

Discussion – By looking at the present study, it was found that there is a significant difference between male and female under-graduate students in Mizoram and by comparing their mean scores, it shows that female under-graduate students have higher mean score than the male under-graduate students, therefore it can be concluded that female under-graduate students have a better ethics about the environment than their counterparts i.e., under-graduate males. The finding of the present study also concurred with the findings of Raju (2007); Sundara (2005) and Hmangaihzuali (2015) they also found that female students possess high level of environmental ethics. Contrary to our findings, Mathivanan & Pazhanivelu (2013) and Mandhyan (2013) also found that there was no significant difference in the environmental ethics of male and female school students. Hence, the reasons why male under-graduate students have lower environmental ethics than the female under-graduate students are that male under-graduate 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 under-graduate students consider environmental ethics in terms

of care and compassion, there is every reason why female under-graduate student should have higher environmental ethics than the male under-graduate students. Conceivably, female under-graduate 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 under-graduate students possessed higher environmental ethics compared to the male under-graduate students.

5.3 Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their locale.

Findings – The findings of the present study indicated that majority 319 (70.9%) of the under-graduate students in Mizoram coming from urban areas have high level of environmental ethics, 57 (12.7%) have average level of environmental ethics and 74 (16.4%) under-graduate students have low level of environmental ethics, while 257 (57.2%) of the under-graduate students coming from rural areas have a high level of environmental ethics, while 56 (12.4%) have average level of environmental ethics and 137 (30.4%) have low level of environmental ethics. The mean score of urban under-graduate students was 115.39 and the mean score of rural under-graduate students was 110.5. Standard deviation of urban under-graduate students was 13.15 and rural under-graduate students was 15.04. The 't' value for the significant of difference between under-graduate students coming from urban and rural areas was 5.20 which is more than the critical value at 0.05 and 0.01 which means that there is a significant difference between urban and rural under-graduate students. Both urban and rural areas have almost the same level of environmental ethics, urban under-graduate students have slightly higher level of environmental ethics.

Discussion – The present study found that there is a significant difference between urban and rural areas under-graduate students with respect to their environmental ethics. By comparing their mean scores, it shows that under-graduate students from urban area shows higher mean score than the rural area under-graduate students, therefore it can be concluded that urban area under-graduate students have higher level

of environmental ethics than the rural area under-graduate students. The finding of the present study is in contradictory to the findings of Sundara (2005); Flower (2006); and Raju (2007) where they also found out that environmental ethics level was higher in the students from rural than urban region. This finding is coherent with the finding of Mathivanan & Pazhanivelu (2013) and found that the urban and rural higher secondary school students do not differ significantly in their environmental ethics. From this study, we can see and shows that more awareness about environmental concern should be done more in the urban and rural areas not only within the institution but also to a society as a whole.

5.4 Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their stream of study.

Findings – The results of the study revealed that among the three streams of study, Science under-graduate students in Mizoram have the best level of environmental ethics. 232 (77.3%) of them have high level of environmental ethics, 31 (10.4%) have average level of environmental ethics and only 37 (12.3%) have low level of environmental ethics. Among the Arts students, 206 (51.5%) have high level of environmental ethics, 58 (14.5%) have average level of environmental ethics while 136 (34%) of them have low level of environmental ethics. Commerce under-graduate students have the least environmental ethics in comparison with the other two streams. We can see that 138 (69%) of the Commerce under-graduate students have high level of environmental ethics, 24 (12%) have average level of environmental ethics and 38 (19%) have low level of environmental ethics. Among the three streams of study, Science under-graduate students have the highest mean score and arts under-graduate students had the lowest mean score (Science = 117.71 > Commerce =114.99> Arts = 108.35). Standard deviation was lowest among the commerce under-graduate students. (Commerce = 11.66 < Science = 11.85 < Arts = 15.79). The calculated F value figure was 42.77 which is larger than the critical value of F i.e., 3.005 which means that there is significant difference between the three streams of study in their ethics towards environment.

Discussion - The findings indicated that among the three streams of study, not surprisingly, science under-graduate students have the highest level of environmental ethics compare to its counterparts i.e., under-graduate students from arts and commerce. The reason for this finding could be that science subject provides with a broad understanding of current environmental issues. The present study also revealed that there is a significant difference between the environmental ethics of Arts, Science and Commerce streams. The present finding was supported by the findings of Mandhyan (2013) and found that the environmental ethics of science students are high in comparison to arts students and the environmental ethics of commerce students are high in comparison to the art students and there is no significant difference between environmental ethics of science and commerce students.; Mathivanan & Pazhanivelu (2013) also found that there is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics. The finding is contradicting the finding of Raju (2007) found that the types of schools where they happened to study do not have any influence on their environmental ethics.

From this study, it is clear that similar environmental knowledge/awareness should be impart in Arts, Science and Commerce stream.

5.5 Findings and discussion regarding the objective - To construct and standardize an Attitude scale towards Environmental Protection of Under-Graduate Students in Mizoram.

A Likert type attitude scale towards environmental protection has been constructed and standardised for the present study. Reliability was computed by test-retest method by using "Product Moment Correlation". The co-efficient of reliability of the scale came out to be 0.90 which indicates a strong correlation which means there is a high degree of correlation between the scores of the under-graduate students in the first-test and the second test. Content validity was established by requesting experts consisting of professionals and faculties from Mizoram University for judging the worth of each statement and validating the test items. The experts approved on the validity of the content of items. Criterion-related validity had been administered using

"Environmental Attitude Scale" by Dr. (Mrs.) Haseen Taj along with the newly constructed "Attitude towards Environmental Protection". The correlation coefficient between the two scales was found to be 0.95, which was considered highly adequate to study the attitudes of under-graduate students towards environmental protection.

5.6 Findings and discussion regarding the level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

Findings – The findings of the present study revealed that out of all the 900 under-graduate students in Mizoram, it can be seen that majority i.e., 629 (69.9%) of under-graduate students have average level of attitude towards environmental protection. 144 (16%) of under-graduate students have high level of attitude towards environmental protection while 127 (14.1%) have low level of attitude towards environmental protection. The mean score and standard deviation of under-graduate students' attitudes towards environmental protection was 164.35 and 11.76 respectively.

Discussion - The present study found that the majority of the under-graduate students have average level of attitude towards environmental protection. There were a few under-graduate students who have a low level of attitude towards environmental protection, while a large number of under-graduate students were found to have high attitude towards environmental protection. The similar finding investigated by Magulod (2018) also found out that the undergraduate students of Cagayan State University at Lasam have a high level of environmental attitude towards conserving the environment. This finding also adheres with the finding of Lalhmangaihzuali (2021) and found that majority of college students of Mizoram have above average environmental attitude. Therefore, the main reason why under-graduate students in Mizoram possessed high level of attitude towards environmental protection could be because the students were influenced by what they have learnt from schools, colleges, home and community.

5.7 Findings and discussion regarding the comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their gender.

Findings - The findings indicates that out of 900 under-graduate students, majority i.e., 299 (66.5%) of male under-graduate students have average level of attitude towards environmental protection while 74 (16.4%) of male under-graduate students have high level of attitude towards environmental protection and 77 (17.1%) have low level of attitude towards environmental protection. It can also be seen that 70 (15.6%) of under-graduate female students have high level of attitude towards environmental protection, while 330 (73.3%) have average level of attitude towards environmental protection and 50 (11.1%) of female students have low level of attitude towards environmental protection. The mean score of male under-graduate students was 163.70 and the mean score of female under-graduate students was 165.01. Standard deviation of male and female under-graduate students was 12.59 and 10.85 respectively. The 't' value for the significance of difference between male and female under-graduate students was 1.67. Since the calculated 't' value is less than the criterion 't' value at 0.05 and 0.01 level, it can be concluded that there is no significant difference between male and female under-graduate students in Mizoram with respect to their attitude towards environmental protection.

Discussion - The present study found that there is no significant difference between male and female under-graduate students in Mizoram with respect to their attitude towards environmental protection. But by comparing their mean scores, it shows that female under-graduate students have higher mean score than the male under-graduate students, therefore it can be concluded that female under-graduate students have higher level of attitude towards environmental protection than the under-graduate males. The finding of the present study is similar to the finding of Kumar & Patil (2007) and found that there is no significant difference between male and female under-graduate students in their attitude towards environmental pollution and related issues. In contrary to our findings, Katoch (2017) found that there is significant difference in attitude towards environment of male and female students. On the other hand, the

findings of Levine & Strube (2012) and Lalhmangaihzuali (2021) found that large section of male students were found to be more knowledgeable than female students.

5.8 Findings and discussion regarding the comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their locale.

Findings – The findings of the present study showed that out of 900 under-graduate students, majority i.e., 305 (67.8%) coming from urban areas have average level of attitude towards environmental protection, while 324 (72%) of under-graduate students coming from rural areas have average level of attitude towards environmental protection. However, 88 (19.6%) of under-graduate students coming from urban areas have high level of attitude towards environmental protection while 56 (12.4%) of under-graduate students coming from rural areas have high level of attitude towards environmental protection. It can also be seen that 57 (12.6%) of under-graduate students coming from urban areas have low level of attitude towards environmental protection, 70 (15.6%) of under-graduate students coming from rural areas have low level of attitude towards environmental protection. The mean score of urban under-graduate students was 165.54 and the mean score of rural under-graduate students was 163.17. Standard deviation of urban students was 11.88 and rural students was 11.54. The calculated t-value for the significance of difference between students coming from rural and urban areas was 3.04 which is more than the critical value at 0.05 and 0.01 which means that there is a significant difference between urban and rural areas under-graduate students with respect to their attitude towards environmental protection.

Discussion - The present study found that there is a significant difference between urban and rural areas under-graduate students in Mizoram with respect to their attitude towards environmental protection. By comparing their mean scores, it shows that urban area under-graduate students show slightly higher mean score than the rural area under-graduate students, therefore it can be concluded that urban area under-graduate students have higher level of attitude towards environmental protection than the rural area under-graduate students. The finding of the present study by Lalhmangaihzuali

(2021) and also found that urban students showed a slightly high mean score than the rural area students and found no significant difference between them. Contrary to our findings, Sarkar (2011) also found that students in rural areas had a slightly higher level of environmental attitude than that of the students in urban areas. The plausible reason behind this may be the difference in the stages of education or the difference in location.

5.9 Findings and discussion regarding the comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their stream of study.

Findings – The findings of the study revealed that among the three streams of study, 42 (10.5%) of arts students have high level of attitude towards environmental protection, majority of 288 (72%) of arts students have average level of attitude towards environmental protection, while 70 (17.5%) have low level of attitude towards environmental protection. Among the science students, 68 (22.7%) have high level of attitude towards environmental protection, 205 (68.3%) under-graduate students have average level of attitude towards environmental protection and 27 (9%) of them have low level of attitude towards environmental protection. 34 (17%) under-graduate students from commerce stream have high level of attitude towards environmental protection, 136 (68%) of the commerce under-graduate students have average level of attitude towards environmental protection and 30 (15%) under-graduate students have low level of attitude towards environmental protection. Science students have the highest mean score, arts students have the lowest mean score (Science=167.44> Commerce=164.49>Arts=161.97). The standard deviation was highest among commerce stream (Commerce=12.24<Arts=11.79<Science=10.66). The calculated F value was 19.32 which is larger than the critical value of F i.e., 3.005 which means that there is significant difference between the three streams of study in their attitude towards environmental protection.

Discussion - The findings indicate that among the three streams of study science under-graduate students in Mizoram have higher level of attitude towards environmental protection than students from arts and commerce. One possible explanation for this finding could be that science is primarily based on learning by doing principle, so there is a strong chance for students to have a deep understanding of the concept. The finding is similar to the finding of Sultana et.al. (2017) and found that the order of environmental knowledge and environmental attitude of the student's group was Science> Commerce> Arts. On adverse to our finding, Heyl et.al. (2013) found that no significant differences were observed between students enrolled in different levels.

5.10 Findings and discussion regarding the relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

The study shows that the relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram is 0.98. Since the calculated r value is higher than the critical value of r, it may be concluded that there is a significantly positive correlation between environmental ethics and attitude towards environmental protection of under-graduate students of Mizoram. This implies that a student who have good ethics about the environment will also have good attitude towards environment protection. This finding signified with the findings of Padmanabhan (2008); Sahin et.al. (2013); Magulod (2018) and Lalhmangaihzuali (2021) also found that there is a significantly positive correlation between environmental knowledge, awareness, activities and attitude of the students. This finding is in clashed with the findings of Levine and Strube (2012) and the findings reveal that environmental knowledge of college students was not significantly related to their attitudes.

5.11 Suggestions for improving the Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

Importance should be given to environmental ethics and attitude towards environmental protection 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 for further research:

1. Effective awareness programs about environmental issues to be implemented from the upper primary level to inculcate right attitude at the grassroot level.
2. Environmental education/Environmental studies shall be made an activity-based learning in order to enhance, invigorate and motivate the students to learn and bring new life thereby generating into their classroom experience rather than simple teaching through lecturing.
3. The government should take initiatives for all schools and institutions with necessary environmental resource management so as to enhance the learning through environmental ethics.
4. The government should provide necessary funding and other support to train teachers to incorporate environmental education into their everyday lesson plans and to develop students' reliance and skills through environmental awareness.
5. Every institution should offer different special activity related to environmental education such as reusing materials, plantation of trees, homemade resources, saving electricity, water harvesting.
6. Parents/ Family should be encouraged to foster concern for the protection of the environment and also parents should consign themselves doing outdoor activities with their children.
7. Mass media can be a productive source of information and to escalate environmental awareness so as to make the citizens acknowledge about the fragility of environment and the demand of its protection.
8. 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.

9. Parents should not hold that teaching and training their children to develop environment friendly behaviour is the only responsibility of the institution. As such they must be willing and should put all their efforts to develop environment friendly behaviour with their children.
10. Students should be encouraged to be inquisitive about the things and events around them.
11. 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.
12. Environmental education/issues should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
13. Projects and assignments relating to environmental crisis, environmental control and contents of environmental issues should be assigned to the students for developing interest and investigative attitude.
14. Volunteering with local charities and serving the community will positively impact a healthy environment.
15. Protect the environment by recycling, reusing, and composting; making better choices about transportation; reducing electricity usage; buying local; donating to conservation groups; and avoiding toxic chemicals.
16. Local environmental campaigns should be a part of the college's activities.
17. The Government should sanction more funds to the N.G.O's (such as Y.M.A, M.U.P, M.H.I.P) so that they can maintain cleanliness in their own locality and villages.
18. 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.
19. 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.
20. The Government should ensure that Environmental Education should be strictly enforced as a compulsory subject in the school syllabus.

21. Environment and Pollution Control Board under the Government of Mizoram should inculcate Environmental Education among the Mizo community.

5.12 Educational Implications.

Environmental ethics/knowledge and attitude towards environment are interrelated and these proves that everyone has the same responsibility to conserve, to protect and care for it. Educating children about the environment builds critical thinking and creative thinking skills, and it motivates them to take part in their communities more actively. If we don't teach ourselves from the beginning, we won't know how to protect our environment and that we can make our surrounding uninhabitable. Knowledge and wisdom do not start only in education, we can all start from our own homes and things that surround us. Since education plays the most vital role in our lives and the most effective tool for social change, the educators, the administrators and the teachers play an extremely important role, students should be provided with the right knowledge of the need to conserve and protect the environment. Education elevates a holistic approach toward the protection and conservation of environment. Environment is the basic of life support and therefore deserves proper care and management. Environmental health hazards such as chemical substances, biological substances, human industrialization, disposal of waste, water quality, air quality etc. pose health risks and therefore methods on monitoring and control of the environmental hazards, safety precautions towards environmental hazards for healthier environment has to be carried out in school, home and community.

From the findings of the present study, it was found that majority of the undergraduate students have high environmental ethics and however, majority of the undergraduate students of Mizoram have average attitude towards environmental protection. Among the three streams of study i.e., arts, science and commerce, students from science stream show a much more ethics towards the environment and students from arts stream have a high attitude towards environment protection rather than the other two streams. In this way, students from different streams would have the same

attitude towards the environment if teachers made the same effort to establish a positive attitude in students. The study also shows that environmental ethics and attitude towards environmental protection of undergraduate students of Mizoram have a significantly positive interrelationship between one another. This implies that students who have good ethics regarding the environment will also have good attitudes towards the environment. The probable reason might be that since environmental education has been introduced since elementary school, college students have developed a healthy attitude towards the environment, and only need a deeper understanding of it so they can apply it to their daily lives. Teachers play a crucial role in guiding students towards environmental knowledge, awareness, far more than Government officials and administrators. By changing the attitude of every citizen towards environmental protection, a new generation needs new approaches and strategies.

5.13 Suggestions for further Research.

The following suggestions are proposed:

1. A study of environmental crisis covering north eastern region of India.
2. A study of environmental awareness/ethics and environmental conservation among different levels of education in Mizoram.
3. A critical study of environmental education of both non-governmental and governmental organizations.
4. Environmental ethics: A study of its problems and solutions in Mizoram.
5. Analysis of the moral orientation of student responses to environment dilemmas.
6. A comparative study of environmental education practices among the various states of the country.
7. A comparative study of under-graduate students' attitudes towards the environmental protection and conservation.
8. Mizo society and environmental protection: A case study.

9. Content analysis on the elementary/secondary/college and university level on environmental awareness/ethics and environmental conservation in Mizoram.
10. A cross-sectional study on Sensitization towards Eco-Spirituality and its impact on human health among the stakeholders, policy makers, administrators and public citizens.
11. A study on household waste management practices under Aizawl Municipal Corporation in Mizoram can be taken up for further study.
12. Empirical study on the key factors in environmental hazards and its ways of protection for safety environment can also be taken up for further research.\

5.14 Conclusion.

Based on the findings of the present study, the following conclusions have been drawn. The present study can be concluded that the ethics of under-graduate students of Mizoram was in a positive direction. Majority of the students had high ethics, and these shows that in terms of understanding the environment, students have high grasp towards the environment. As a result, under-graduate students in Mizoram had high environmental ethics may be the result that environmental ethics is an integral part of environmental studies since it establishes human-environment relationships. Most of the students had an average attitude towards the environment protection, and shows that in terms of understanding the environment, students still have an average grasp of the subject. Developing the right attitude is more important since having average environmental protection is not enough to conserve the environment that is degrading. However, having average attitude towards environmental protection is not enough in order to conserve the degrading environment. Significant difference was found between male and female under-graduate students with respect to their environmental ethics. Male and female students did not show any difference in their attitude towards environmental protection and by comparing their mean scores, it shows that female students had higher mean score than the male students, therefore it can be concluded that female under-graduate students had a better ethics about the environment and attitude towards environmental protection than their counterparts i.e., under-graduate males. Urban and rural students differ a significant difference in the

environmental ethics and attitude towards environmental protection. Urban students showed higher level of environmental ethics and attitude towards environmental protection than the rural students. Among the three streams of study, Arts, Science and Commerce students' environmental ethics and attitudes towards environmental protection were not far apart. Majority of the students from Arts, Science and Commerce streams students shows that they had high ethics towards the environment, Science students were better in comparison with the other two streams in environmental ethics and in their attitude towards environmental protection. However, there was a significant difference between the three streams of study.

Our environment should be adequately understood by imparting knowledge and training to solve various environmental problems in a systematic manner. Deeper attention about environmental education is needed for future generations as they must be more aware and keeping the state as the cleanest environment. Therefore, it is also essential to nurture in the home environment as well as inside the classroom. A deep understanding about the environmental issues should be implemented in institutions from the early stage. Environmental education/awareness should be accessed not only within the institutions, it should be enhanced within the society as a whole. A greater investment in this subject may result in greater results. An individual itself can also do a lot to protect the environment not only as a group. The indication about environmental knowledge, awareness and positive activities towards environment should be implemented more in the institution, and real action should be taken to protect the environment.

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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.	☐	☐	☑

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 **✆(0562) 352245**

NANDINI ENTERPRISES

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

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.	☐	☐	☐
• 2.	Animal killing for purposes of consumption need not be considered as an act of cruelty.	☐	☐	☐
• 3.	One need not hesitate to throw the peel-offs and wastes on the street pavements.	☐	☐	☐
• 4.	Smoking in public places should not be a matter of concern.	☐	☐	☐
• 5.	People should use plenty of running water from tap for washing the clothes or utensils, when they get free of charge.	☐	☐	☐
• 6.	One need not bother about putting the lights or fans out in one's work-place when he is not paying for it.	☐	☐	☐
• 7.	It is foolish not to exhaust the freely available resources at one's disposal.	☐	☐	☐
• 8.	Human beings are superior to all other species, so they should have all freedom to utilize any resource they want.	☐	☐	☐
9.	People should inculcate such food habits which least affect either the plants or animals.	☐	☐	☐
• 10.	Electricity should be used in plenty only when it is provided free of charge.	☐	☐	☐
• 11.	Legislations on prevention of killing of animals are unwanted.	☐	☐	☐
• 12.	Acts on protection of animals are not required.	☐	☐	☐
• 13.	One need not bother about environmental pollution while using vehicles for comfortable commuting.	☐	☐	☐
• 14.	Environmental protection is a cumulative effort, hence single individual need not be concerned about it.	☐	☐	☐

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

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.	☐	☐	☐
• 31.	Domestic and industrial waste can be thrown in running water.	☐	☐	☐
• 32.	It is desirable to construct rich enclaves by demolishing slums.	☐	☐	☐
• 33.	It is not wrong to bath and wash in ponds which are used for drinking.	☐	☐	☐
• 34.	The farm owners should use plenty of chemical fertilizers and pesticides to increase crop productivity.	☐	☐	☐
• 35.	It is not wrong to cut trees and preserve it for fuel-wood if available freely.	☐	☐	☐
• 36.	A businessman need not consider it wrong to use chemical additives to preserve food though hazardous to health.	☐	☐	☐
• 37.	One need not take the risk of informing the authorities if he witnesses animal poaching.	☐	☐	☐
• 38.	One should participate in agitations only when it causes damage to personal property.	☐	☐	☐
• 39.	It is not wrong to exhibit animals to earn money.	☐	☐	☐
• 40.	It is not wrong to cage animals and birds for human pleasure.	☐	☐	☐
• 41.	It is not wrong to exhibit animals for entertainment.	☐	☐	☐
42.	Children should be taught not to drop the waste in the streets.	☐	☐	☐
• 43.	It is not wrong to kill wild and dangerous animals.	☐	☐	☐
• 44.	Deriving pleasure by teasing animal is not wrong.	☐	☐	☐
• 45.	High consumption is a matter of right for high income groups.	☐	☐	☐

APPENDIX – II

ATTITUDE SCALE TOWARDS ENVIRONMENTAL PROTECTION

Name:

Sex: (Male/Female):

Age:

Class:

Stream of Study:

Address:

Permanent:

Present:

Suggestions (If any):

Item No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Every individual has a responsibility to preserve the environment for future generations.					
*2.	Purified air is not necessary for healthy living.					
*3.	We can expect 100% purity in the air that we breathe.					
*4.	Due to soil erosion, the vitamins in our foods increase.					
*5.	There is no harm in noise pollution.					
6.	Silencers must be used in all types of vehicles.					

7.	Air pollution causes acid rain, which is harmful to plants and animals.					
*8.	Gases released by vehicles do not need to be purified.					
9.	Checking vehicles periodically can help prevent air pollution.					
10.	For the livelihood of people and the health of the environment, water is essential.					
11.	Diarrhoea, dysentery, and other illnesses are caused by water pollution.					
12.	A wide variety of infections are spread by drinking and using contaminated water.					
13.	Air pollution is caused by factories and motor vehicles releasing gas/smokes.					
14.	By taking public transportation instead of driving our own cars, we will reduce air pollution and traffic congestion.					
15.	All of us should take part in the Community Cleanliness Drive.					
*16.	Individual action does not help to prevent pollution of our environment.					
17.	Environmental protection is a priority for the Government as well as every individual.					
18.	A high population growth has led to environmental pollution.					
19.	Aware news relating to Environmental Protection should be broadcast through T.V, Radio, Newspaper etc.					

*20.	Many people in our country should not mind the outcomes that environmental pollution caused.					
21.	Rainwater harvesting should be practiced by every household.					
22.	Waste must be recycled to the greatest extent possible.					
23.	The authorities should penalize people who consume excessive amounts of energy.					
24.	People who contaminate their living environments should be severely penalized or fined.					
25.	Instead of plastic carry bags, the shopkeeper should hand out paper bags.					
26.	The restriction of using disposable plates, cups etc. by the Government of Mizoram should be strictly followed.					
*27.	Water is not a significant/an essential part of human life.					
28.	Having trouble breathing is a sign of more pollution in the air.					
29.	In cities and towns today, garbage, smokes and dust greatly pollute the entire region.					
*30.	Human activities do not harm the environment.					
31.	Wastes and rubbish are thrown everywhere without realizing the value of public health.					

32.	Every household should follow a proper and effective drainage system.					
33.	Municipal Council and Corporation Administration fail to consistently clean the streets and paths.					
34.	To preserve forests and trees, we must utilize paper carefully.					
*35.	The environment would be better if factories and industries were located in the cities.					
36.	The number of trees and plants in cities and towns should increase for generating environmental temperature.					
37.	Jhum Cultivation must be stopped to protect our environment.					
38.	When compared with chemical fertilizers, organic farming is more beneficial for the environment.					

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Original Article

College Students' Attitude Towards Environmental Protection: A Cross Sectional Study

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DOI: 10.47750/pnr.2022.13.S07.141

Abstract

The purpose of the study is to determine the level of students' attitude towards environmental protection. The study used "descriptive research" to study the level of attitude towards environmental protection of under-graduate students of Mizoram in relation to their gender and stream of study. There were 900 students participated in the study randomly chosen from the three streams of study i.e., Arts, Science and Commerce. Statistical techniques like Mean, Standard Deviation, ANOVA and t-test, were used to analyse the objectives of the study and the findings were meaningfully interpreted. The study revealed that majority of the under-graduate students had average level of attitude towards environmental protection, female students have slightly higher mean score than male students but no significant difference were found between male and female students with respect to their attitude towards environmental protection. Science students have the highest score with compare to Arts and Commerce students., and it was also found that significant difference is found between the three streams of study with respect to their environmental protection.

Key words: Attitude, Environment protection, Under-graduate students, Mizoram, Gender, Stream of study.

Introduction:

Environment is defined as surrounding or conditions influencing development or growth. It is the combination of living and non-living substances. 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. An environment that is protected is one that is not polluted by harmful substances. There is a possibility that it has a hazardous impact on the natural environment and on the activities of living things. To meet our needs, we use the environment's resources like air, land, and water. Improvement additionally implies addressing the necessities of individuals. The environment suffers as we meet the ever-growing needs. there is a need to create 'awareness' about Environmental conservation and protection. While efforts are being made at the national and international level to protect our environment, it is also the responsibility of every citizen to use our environmental resources with care and protect them from degradation. Here we need to discuss the meaning and causes of environmental degradation and the importance of environmental conservation.

Environmental protection is a practice of protecting the natural environment on individual, organisation controlled or governmental levels, for the benefit of both the environment and humans. Many people, even educated, do not know what environment protection is. Environmental protection means making the environment clean, impure by throwing all sorts of contaminated materials and perished on the roads and dumping garbage in the residential areas where people are living. It is the people, who do not have any civic sense and health consciousness, contribute to the environmental protection. The natural environment is normally clean and pure and it is man who always destroys the purity and cleanliness of the environment by his aggressive attitude toward the environment. Further, man in spite of so much of the development of science and technology, has not learned how to live a healthy life. If the environment is to be kept clean and pure, techniques should be developed to recycle the wastages and convert them into some useful material.

Review of Related Literature:

Kumar, K. Shiva. and Patil, S. Mangala. (2007) 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.

Levine and Strube (2012) conducted a study on "Environmental Attitudes, Knowledge, Intentions and Behaviors among College Students". The findings reveal that –

1. Intentions and knowledge significantly and independently predicted behavior.
2. Environmental knowledge was not significantly related to attitudes. Implicit and explicit attitudes were significantly but only moderately related. Only explicit attitudes, however, were strongly related to intentions, and intentions completely mediated the influence of explicit attitudes on behavior.
3. Men were found to be more knowledgeable than women about environmental issues.
4. Older students had more favorable implicit and explicit environmental attitudes.

Heyl at al. (2013) conducted a study on "Environmental Attitude and Behaviors of College Students: A case study conducted at a Chilean University" and found that:

1. Significant differences were found between students pursuing diplomas related to the environment and those who are not.
2. No significant differences were observed between students enrolled in different levels.
3. Perceived effort, positive environmental attitude or perceived positive consequents predict the frequency of pro-environmental behaviors in students, the former (perceived effort, negative) being the most influential variable.

Katoch (2017) in his study on "Awareness and Attitude of School Students towards Environment" and revealed that:

1. There is no difference in the environmental awareness between male and female school students. Both male and female have equal awareness towards environment.

2. There is significant difference in attitude towards environment of male and female school students. Female students are having better attitude towards environment than male students.

Sultana et al. (2017) conducted a study entitled "Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh" to assess the environmental knowledge and attitude of secondary level students in Tangail Sadar Upazila of Tangail district during January to April, 2015. Results of the study revealed that-

1. The level of environmental knowledge of the secondary level student was high. Their average knowledge level was 15.83 (±3.07) out of 20. They had positive attitude towards environment.
2. The order of environmental knowledge and environmental attitude of the student's group was Science> Commerce> Arts and Arts> Commerce> Science, respectively.
3. Government school students had high attitude level than private schools.
4. In case of gender of students there were no significant differences in environmental knowledge and attitude.
5. Urban students had higher knowledge level and rural students had higher attitude level.
6. Higher education of parents influenced the environmental awareness of students.
7. About fifty per cent students thought television was one of the most important sources of environmental awareness.
8. The study concluded that a high level of understanding and positive attitude of students might be achieved from the families of respondents, teachers, media, private reading and school curriculums regarding the environment that increase the environmental view among students as well as in the society.

Gilbert and Magulod (2018) conducted a study on "Climate Change Awareness and Environmental Attitude of College students in one campus of a State University in the Philippines". Results of the study revealed that

1. The undergraduate students of Cagayan State University at Lasam have a high level of awareness on climate change and a high level of environmental attitude.
2. They also found out that there is a significant relationship between climate change awareness and environmental attitude of the respondents.

Lalhmangaihzuali (2022) in her research entitled "Environmental Knowledge, Attitude and Activities of College Students in Mizoram". This study revealed that-

1. Majority of college students of Mizoram had high environmental knowledge, had above average environmental attitude and had average environmental activities.
2. Male students had high environmental knowledge in comparison with female students, large section of male students had above average environmental attitude than female college students. Female students had high average environmental activities than male students.
3. Science students had the highest mean score than compare to arts and commerce students on the study of environmental knowledge, environmental attitude and environmental activities.
4. College students coming from urban areas had high environmental knowledge than rural areas students. Students coming from urban areas had average environmental activities while students from rural areas had above average environmental attitude knowledge than urban areas students.
5. There is no significant difference between male and female students, there is a significant difference in the attitude of Arts and Science students of Mizoram towards the environment at 0.05 level. there is a significant difference in the attitude of Arts and Commerce college students of Mizoram towards the environment at 0.05 level of significance, Arts and Commerce college students of Mizoram is not significant at both 0.05 and 0.01 levels
6. There is a significantly positive correlation between environmental knowledge, environmental attitude and environmental activities of college students in Mizoram.

Objectives of the Study:

1. To find out the level of attitude towards environmental protection of Under-Graduate Students of Mizoram.
2. To compare the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender.
3. To compare the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their stream of study.

Hypotheses:

1. There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender.
2. There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their stream of study.

Methodology:

The present study is descriptive in nature. Therefore, descriptive survey method has been employed. The present study belongs to the category of "descriptive research" with composite characteristics of inter-group comparison, since the main objective is to study the level of attitude towards environmental protection of Under-Graduate Students of Mizoram in relation to their gender and stream of study.

Population:

The population of the study comprised of all under-graduate students of Mizoram affiliated to Mizoram University.

Sample:

For the present study, 900 students are selected as a representative sample. The final sample size comprised of 450 males and 450 females offering Arts, Science and Commerce of under-graduate students studying in Mizoram.

Tool:

For the present study, Attitude Scale towards Environmental Protection (2021) was developed by the investigator.

Data collection and analysis:

The objectives of the present study include finding out the level of attitude towards environmental protection of Under-Graduate Students of Mizoram, and to compare the differences with respect to their gender and stream of study.

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 like Mean, Standard Deviation, ANOVA and t-test, keeping in view the objectives of the study and the findings were pertinently interpreted.

Data interpretation and discussion:

Objective No 1: Level of attitude towards environmental protection of Under-Graduate Students of Mizoram.

In order to study the attitude towards environmental protection of Under-Graduate Students of Mizoram, the investigator made use of the Attitude Scale towards Environmental Protection prepared by the investigator herself.

The following table shows the number and percentage of all respondent's level of attitude towards environmental protection.

Table no. 1 Level of Attitude towards Environmental Protection of Under-Graduate Students of Mizoram

N	Mean	SD	High Attitude	Average Attitude	Low Attitude
900	164.35	11.76	144 (16%)	629 (69.9%)	127 (14.1%)

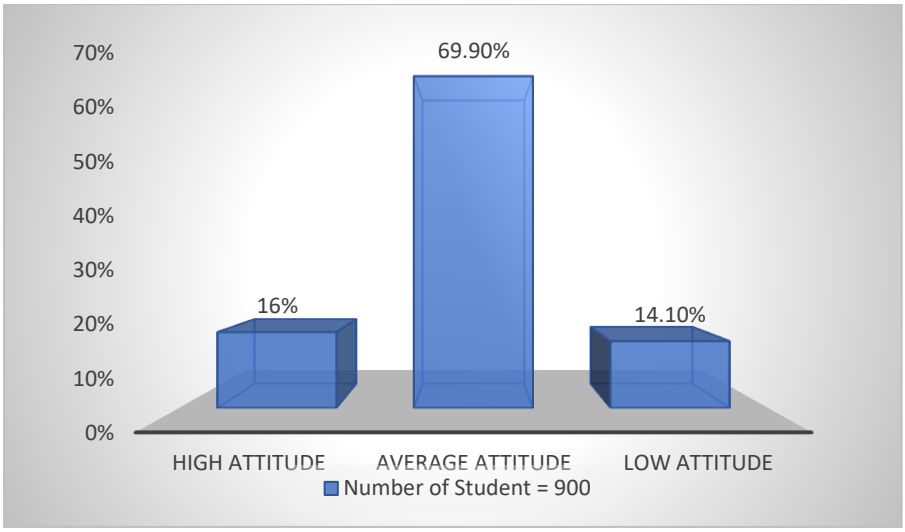

Figure 1: Level of Attitude towards Environmental Protection of Under-Graduate students of Mizoram.

Looking at table 1, out of all the 900 respondents it can be observed that majority i.e., 629 (69.9%) of under-graduate students of Mizoram have an average attitude towards environmental protection. The table also shows that 144 (16%) of under-graduate students of Mizoram had high attitude towards environmental protection while 127 (14.1%) had low attitude towards environmental protection. The Mean score of attitudes towards environmental protection of under-graduate students of Mizoram was 164.35 and Standard Deviation was 11.76.

Objective No.2: Comparison of Under-Graduate Student's Attitude towards environmental protection with respect to their gender.

The students' levels of attitude towards environmental protection 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.

Difference in attitude towards environmental protection with reference to gender.

Hypothesis No.1 states that "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender".

Table no. 2 shows the comparison of Male and Female respondents with respect to their attitude towards environmental protection.

Table no. 2 Comparison of Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with respect to their gender

Gender	N	High Attitude	Average Attitude	Low Attitude
Male	450	74 (16.4%)	299 (66.5%)	77 (17.1%)
Female	450	70 (15.6%)	330 (73.3%)	50 (11.1%)

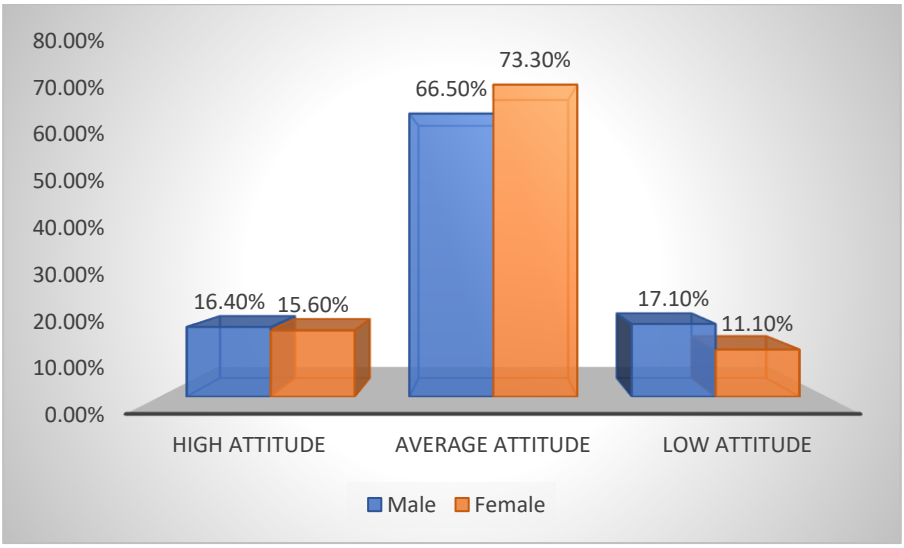

Figure 2: Comparison of Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with respect to their gender.

It is perceptible from Table No. 2 that majority i.e., 299 (66.5%) of male under-graduate students had average attitude towards environmental protection while 74 (16.4%) of male students had high attitude towards environmental protection and 77 (17.1%) had low attitude. It can also be seen that 70 (15.6%) of under-graduate female students had high attitude towards environmental protection, while 330 (73.3%) had average attitude and 50 (11.1%) of female students had low attitude towards environmental protection.

Table no. 3 indicated the calculation of t-test of Male and Female respondents with respect to their attitude towards environmental protection.

Table no.3 Difference in the Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with reference to their gender

Gender	N	Mean Value	df	SD	Calculated t – value	Critical value		Significance
						0.05	0.01	
Male	450	163.70	898	12.59	1.67	1.96	2.59	Not significant at both 0.05 and 0.01
Female	450	165.01		10.85				

Table no. 3 shows that the 't' value for the significance of difference between male and female under-graduate students is 1.67. Since the calculated 't' value is less than the criterion 't' value at 0.05 and 0.01 level, it can be concluded that there is no significant difference between male and female under-graduate students with respect to their attitude towards environmental protection. Therefore, the null hypothesis 1 that assumes "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender" cannot be rejected, since the two groups does not differ significantly at 0.05 and 0.01 level of confidence. A comparison of their mean scores shows that female students had higher mean score than the male students, therefore it can be concluded that female under-graduate students had higher level of attitude towards environmental protection than the under-graduate males.

Objective No.3: Comparison of Under-Graduate Student's Attitude towards environmental protection with respect to their stream of study.

The students' levels of attitude towards environmental protection were compared on the basis of their stream of study. For this, the Mean and Standard Deviation of the scores were calculated. The mean differences were tested by applying 't' test and the results can be indicated in table 4, figure 3 and table 5.

Difference in Attitude towards Environmental Protection of Under-Graduate Students of Mizoram reference to their stream of study.

Hypothesis No.2 states that "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their stream of study".

Table no. 4 shows the comparison of Arts, Science and Commerce respondents with respect to their attitude towards environmental protection.

Table no. 4 Comparison of Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with respect to their stream of study

Stream of Study	N	High Attitude	Average Attitude	Low Attitude
Arts	400	42 (10.5%)	288 (72%)	70 (17.5%)
Science	300	68 (22.7%)	205 (68.3%)	27 (9%)
Commerce	200	34 (17%)	136 (68%)	30 (15%)

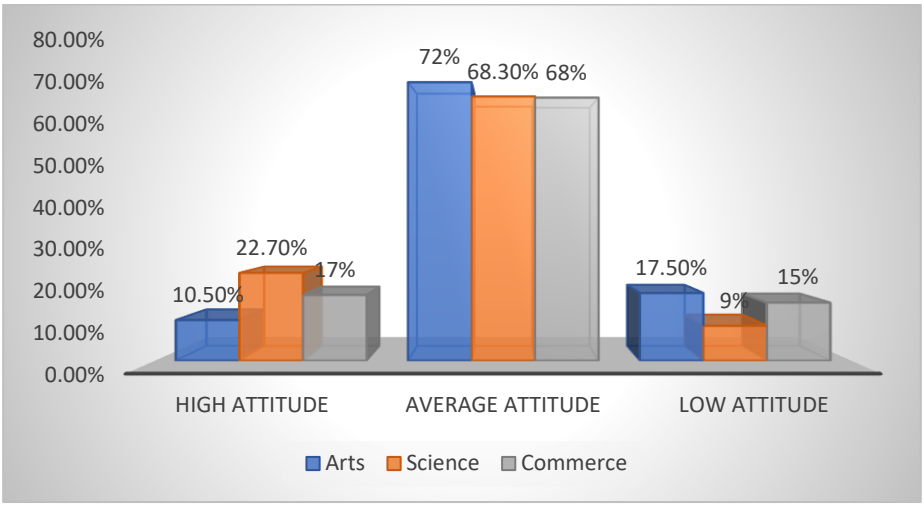

Figure 3: Comparison of Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with respect to their stream of study.

It is evident from table 4, that among the three streams of study, 288 (72%) of Arts students had average attitude towards environmental protection, while 70 (17.5%) had low environmental protection and 42 (10.5%) of them had high environmental protection. Among the Science students, 205 (68.3%) had average attitude towards environmental protection, 68 (22.7%) had high attitude while 27 (9%) of them had low attitude towards environmental protection. This table also shows that 136 (68%) of the Commerce students had average attitude towards environmental protection, 30 (15%) had low environmental protection and 34 (17%) had high attitude towards environmental protection.

To test the said hypothesis, ANOVA was employed and the results are shown in table no.5.

Table no. 5 Difference in the Attitude towards Environmental Protection of Under-Graduate Students of Mizoram with reference to their stream of study

Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between groups	5140.28	2	2570.13	19.32	6.04	3.005
Within Groups	119271.66	897	132.96			
Total	124411.94	899				

Looking at table no. 5 it can be seen that the calculated F value is larger than the critical value of F which means that there is significant difference between the three streams of study in their attitude towards environmental protection. Therefore, further analysis was required to find out where the difference between the three variables was. A t-test was employed to compare two of all three variables separately.

The results of the t-tests are reflected in table no. 6

Table no. 6 Difference in the Attitude towards Environmental Protection between Arts and Science Under-Graduate students of Mizoram

Stream	**N**	**Mean Value**	**df**	**SD**	**Calculated t – value**	**Critical value**		**Significance**
						0.05	**0.01**	
Arts	400	161.97	898	11.79	6.42	1.96	2.59	Significant at both 0.05 and 0.01 levels of significance
Science	300	167.44		10.66				

Table No. 6 shows that since the calculated t-value is 6.42 which is more than both the critical values at 0.05 and 0.01 levels, there is a significant difference between the attitude towards environmental protection of Arts and Science under-graduate students of Mizoram. Therefore, the null hypothesis 2, which states that "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender" has to be rejected. A comparison of the mean scores between Arts and Science students shows that Science students showed a higher Mean value at 167.44 when compared with Arts students who had a Mean value of 161.97. Therefore, it can be concluded that Science students have higher level of attitude when compared with Arts students.

In order to compare Arts and Commerce students with regards to their attitude towards environmental protection, a t-test was performed and the results are shown in table no.7

Table no. 7 Difference in the Attitude towards Environmental Protection of Arts and Commerce Under-Graduate students of Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Arts	400	161.97	898	11.79	2.40	1.96	2.59	Significant at both 0.05 Not significant at 0.01
Commerce	200	164.49		12.24				

Table No. 7 shows that the calculated t-value is 2.40 and it was not significant at 0.01 level and was found to be significant at 0.05 level, Thus, the null hypothesis 2, which states that "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender" was rejected. Commerce students showed a slightly higher Mean value at 164.49 when compared with Arts students who had a Mean value of 161.97. Therefore, it can be concluded that there is a significant difference between Arts and Commerce students in their attitude towards environmental protection.

In order to compare Science and Commerce students with regards to environmental protection, a t-test was performed and the results are shown in table no. 8

Table no. 8 Difference in the Attitude towards Environmental Protection of Science and Commerce Under-Graduate students of Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Science	300	167.44	898	10.66	2.78	1.96	2.59	Significant at both 0.05 Not significant at 0.01
Commerce	200	164.49		12.24				

Looking at Table no. 8 shows that the t-value of Science and Commerce under-graduate students of Mizoram is 2.78 which is more than the critical value at 0.05 and 0.01 level. This means that there is a significant difference in the attitude towards environmental protection of Science and Commerce under-graduate students of Mizoram at both levels. Thus, the null hypothesis 2, which states that "There is no significant difference in the attitude of Under-Graduate Students of Mizoram towards environmental protection with respect to their gender" was rejected. Commerce students had better Mean score of 12.24 in comparison with science students who had a Mean score of 10.66. It can be concluded that there is a significant difference in the attitude towards environmental protection between Science and Commerce under-graduate students of Mizoram.

Major Findings:

The following are the major findings of the present study:

Findings and discussion regarding the attitude towards environmental protection of Under-Graduate Students of Mizoram.

Findings - This study revealed that out of all the 900 respondents it can be seen that majority i.e., 629 (69.9%) of under-graduate students of Mizoram had average attitude towards environmental protection. 144 (16%) of under-graduate students of Mizoram had high attitude towards environmental protection while 127 (14.1%) had low attitude towards environmental protection. The Mean score of attitudes towards environmental protection of under-graduate students of Mizoram was 164.35 and Standard Deviation was 11.76.

Discussion – The present findings of the study can further be assimilated with the findings investigated by Gilbert and Magulod (2018) in his study entitled "Climate Change Awareness and Environmental Attitude of College students in one campus of a State University in the Philippines" he found out that the undergraduate students of Cagayan State University at Lasam have a high level of environmental attitude towards conserving the environment. This finding also adheres with the finding of Lalhmangaihzuali (2022) on "Environmental Knowledge, Attitude and Activities of College Students in Mizoram" who also found that majority of college students of Mizoram had above average environmental attitude. Therefore, the main reason why under-graduate students of Mizoram possessed high environmental attitude could be because the students were adapted to best practices they learned from schools, colleges, home and community.

Findings and discussion regarding the comparison of the environmental attitude towards environmental protection of Under-Graduate Students of Mizoram with reference to their gender.

Findings – Out of 900 respondents, majority i.e., 299 (66.5%) of male under-graduate students had average attitude towards environmental protection while 74 (16.4%) of male students had high attitude towards environmental protection and 77 (17.1%) had low attitude. It can also be seen that 70 (15.6%) of under-graduate female students had high attitude towards environmental protection, while 330 (73.3%) had average attitude and 50 (11.1%) of female students had low attitude towards environmental protection. The mean score of male students was 163.70 and the mean score of female students was 165.01. Standard Deviation of male students was 12.59 and female students was 10.85. There is no significant difference between male and female under-graduate students with respect to their attitude towards environmental protection.

Discussion - The finding of the present study is similar to the finding of Kumar, K. Shiva. and Patil, S. Mangala. (2007) when they conducted a research on "Influence of Environmental Education on Environmental Attitude of the Post-graduate Students Attitude towards Environmental Pollution", and found that there is no significant difference between male and female students in their attitude towards environmental pollution and related issues and Katoch (2017) in his study on "Awareness and Attitude of School Students towards Environment" and found that there is significant difference in attitude towards environment of male and female students. On the other hand, Levine and Strube (2012) conducted a study on "Environmental Attitudes, Knowledge, Intentions and Behaviors among College Students" and found that male students were found to be more knowledgeable than women about environmental issues. Lalhmangaihzuali (2021) conducted a study on "Environmental Knowledge, Attitude and Activities of College Students in Mizoram", and found that large section of male students had above average environmental attitude than female college students.

Findings and discussion regarding the comparison of the environmental attitude towards environmental protection of Under-Graduate Students of Mizoram with reference to their stream of study.

Findings – Among the three streams of study, 42 (10.5%) of them had high environmental protection, 288 (72%) of Arts students had average attitude towards environmental protection, while 70 (17.5%) had low environmental protection. Among the Science students, 68 (22.7%) had high attitude towards environmental protection, 205 (68.3%) students had average attitude and 27 (9%) of them had low attitude towards environmental protection. 34 (17%) students from Commerce stream had high attitude towards environmental protection, 136 (68%) of the

Commerce students had average attitude towards environmental protection and 30 (15%) students had low environmental protection. There is a significant difference between the attitude towards environmental protection of Arts and Science under-graduate students of Mizoram, there is a significant difference between Arts and Commerce students in their attitude towards environmental protection. There is a significant difference in the attitude towards environmental protection of Science and Commerce under-graduate students of Mizoram at both levels.

Discussion - The findings indicate that among the three streams of study science students have higher attitude than students from arts and commerce. One possible explanation for this finding could be that science is primarily based on learning by doing principle, so there is a strong chance for students to have a deep understanding of the concept. The finding is similar to the finding of
Heyl at al. (2013) conducted a study on "Environmental Attitude and Behaviors of College Students: A case study conducted at a Chilean University" and found that no significant differences were observed between students enrolled in different levels. Sultana et al. (2017) conducted a study entitled "Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh" and found that the order of environmental knowledge and environmental attitude of the student's group was Science> Commerce> Arts.

Conclusion:

From the present study, it can be concluded that the attitude of under-graduate students of Mizoram are not in a very bad place and was in a positive direction towards environmental protection. Most of the students had an average attitude towards the environment, and shows that in terms of understanding the environment, students still have an average grasp of the subject. Developing the right attitude is more important since having average environmental protection is not enough to conserve the environment that is degrading. Male and female students did not show any difference in their attitude towards environmental protection. Among the three streams of study, majority of the students from Arts, Science and Commerce streams students shows that they had an average attitude towards the environment. Science students were far better than the other two streams in their attitude. However, there was a significant difference between the three streams of study in their attitude towards the environment protection. A deep understanding about the environmental issues should be implemented in institutions from the early stage. Environmental education/awareness should be accessed not only within the institutions, it should be enhanced within the society as a whole. A greater investment in this subject may result in greater results.

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IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 27, Issue 10, Series 1 (October, 2022) 01-08
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

An Analysis of the Environmental Ethics of Undergraduate Students of Mizoram

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Abstract
The purpose of the study is to determine the level ofEnvironmental Ethics of Under-Graduate Students of Mizoram.This study consisted of 900 sample undergraduate students. The study analyses the environmental ethics of undergraduate students of Mizoram by employing descriptive statistics like mean, standard deviation, ANOVA and inferential statistic i.e., t test. The study revealed that majority of college students in Mizoram had 'High' environmental ethics. Hypothesis of the study no.1 indicates- "There is no significant difference in the environmental ethics of Under-Graduate Students of Mizoram with respect to their gender" and Hypothesis of the study no.2 states that "There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study" has to be rejected, since the two groups differed significantly at 0.05 and 0.01 level of confidence.

Key words: Environment Ethics, Under-Graduate Students, Mizoram, Gender, Stream of Study.

Date of Submission: 18-09-2022 Date of Acceptance: 03-10-2022

I. Introduction:

Environment may be defined as conditions or circumstances that surround both living and non-living organisms. Environment not only includes air, land, water and soil it also includes our physical surroundings such as buildings, roads etc.A clean and healthy environment is the most important impact for people's physical and emotional wellbeing. It is also important to meet the people's needs in order to develop.Educational systems today should place a high value on environmental education as it is an essential component for life.In the words of Anne Anastassi (1937), "The environment is everything that affects the life of an individual except his genes".

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. It is man himself who is destroying the environment in many ways. Environmental ethics education should be carried out not only at schools but it should be engaged from family and the community. It should be conducted at all ages, according to their own developmental stage. It should be carried out not only to get knowledge but also to learn skills, develop attitudes and activities to protect the environment. Respecting nature is the first step to living in harmony with it.

II. Review of Related Literature:

Hmangaihzuali (2015)[66] conducted a study on "Environmental Ethics among Secondary School Students in Aizawl City, Mizoram" and finds out that –

1. Majority of the secondary school students in Aizawl had high level environmental ethics and female students have significantly higher environmental ethics.
2. Amongst the different environmental pollution majority of secondary school students most wanted to solve the problem of air pollution.

Mathivanan, K and Dr.G. Pazhanivelu (2013)[62] made a study on "Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students" and found that

1. The higher secondary students have high environmental ethics.

2. The male and female higher secondary students do not differ significantly with respect to their environmental ethics.
3. The urban and rural higher secondary school students do not differ significantly in their environmental ethics.
4. 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)[63] made a study of "Environmental Ethics among Higher Secondary Level Students" and found that –

1. There is no significant difference between environmental ethics of girls and boys.
2. The environmental ethics of commerce students are high in comparison to the art students.
3. The environmental ethics of science students are high in comparison to art students.
4. There is no significant difference between environmental ethics of science and commerce students.

Raju, G (2007)[38] 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 student's 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.

Sundra Selvan (2005) 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.

Objectives of the Study:

1. To find out the level of environmental ethics of undergraduate students of Mizoram.
2. To compare the environmental ethics of undergraduate studentsof Mizoram with respect to their gender.
3. To compare the environmental ethics of undergraduate students of Mizoram with respect to their stream of study.

Hypothesis:

1. There is no significant difference in the environmental ethics of undergraduate students of Mizoram with respect to their gender.
2. There is no significant difference in theenvironmental ethics of undergraduate students of Mizoram with respect to their stream of study.

Methodology:

The present study is descriptive in nature. Primary data was used to assess the environmentalethics of undergraduate students in Mizoram.

Population:

The population of the study comprise of all under-graduate students of Mizoram affiliated at Mizoram University.

Sample:

For the present study,stratifiedrandom sampling technique was employed. The sample consisted of 900 students as a representative sample. The final sample size comprised of 450 males and 450 females offering Arts, Science and Commerce of under-graduate students studying in Mizoram.

Tool:

The following tool was used for the present study

1. Environmental Ethics Scale (EES) (2001) developed by Dr. (Mrs.) Haseen Taj; Professor, Department of Education, Bangalore University, Bengaluru.

III. Data collection and analysis:

The objective of the present study includes finding out the level of attitude towards environmental protection of undergraduate students of Mizoram, and to compare the differences with respect to their gender and stream of study. The data relating to the level of environmental ethics were collected by administering the Environmental Ethics Scale (EES).

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 like Mean, Standard Deviation, ANOVA andinferential statistical technique i.e., t-test, keeping in view the objectives of the study and the findings were meaningfully interpreted.

Data interpretation and discussion:

Objective No 1: To find out the level of environmental ethics of undergraduate students of Mizoram.

In order to find out the environmental ethics of under-graduate students of Mizoram, 'Environmental Ethics Scale (EES)' developed by Dr. (Mrs.) Haseen Taj was administered to all the 900 respondents

The following table shows the number and percentage of all respondent's level of environmental ethics.

Table no. 1
Level of Environmental Ethics of Under-Graduate Students ofMizoram

N	Mean	SD	High Ethics	Average Ethics	Low Ethics
900	112.95	14.33	576 (64%)	113 (12.6%)	211 (23.4%)

The above table reveals that out of all 900 respondents, majority 576 (64%) of the student respondents had high environmental ethics, while 113 (12.6%) of the students had average ethics and 211 (23.4%) of the student respondents had low ethics. The Mean score of college students is 112.95 and Standard Deviation is 14.33. Therefore, we can conclude that majority of under-graduate students in Mizoram had a high level of environmental ethics.

Objective No.2: To compare the environmental ethics of Under-Graduate Students of Mizoram 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.

Difference in environmental ethics with reference to gender.

Hypothesis No.1 states that "There is no significant difference in the environmental ethics of Under-Graduate Students of Mizoram with respect to their gender".

Table no.2 shows the comparison of Male and Female respondents with respect to their Environmental Ethics.

Table no.2
Comparison of Environmental Ethics of Under-Graduate Students of Mizoram with respect to their gender

Gender	N	High Ethics	Average Ethics	Low Ethics
Male	450	254 (56.4%)	57 (12.7%)	139 (30.9%)
Female	450	322 (71.6%)	56 (12.4%)	72 (16%)

Table no.2 clearly shows that both female and male college students had a high environmental ethics. Among the male students, majority 254 (56.4%) students had high environmental ethics, 57 (12.7%) had average environmental ethics and 139 (30.9%) students had low environmental ethics. Among the female students, 322 (71.6%) had a high environmental ethics, 56 (12,4%) had average environmental ethics and 72 (16%) had low environmental ethics.

Table no.3 shows the calculation of t-test of Male and Female respondents with respect to their Environmental Ethics.

Table no. 3
Difference in the Environmental Ethics of Under-Graduate Students of Mizoram with reference to their gender

Gender	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Male	450	109.88	898	15.39	6.59	1.96	2.59	Significant at both 0.05 and 0.01 levels of significance
Female	450	116.01		12.48				

A result of the above table, it reveals that the 't' value for the significance of difference between male and female under-graduate students is 6.59. Since the calculated 't' value is greater than the criterion 't' value at 0.05 and 0.01 level, it can be concluded that there is a significant difference between male and female under-graduate students with respect to environmental ethics. Therefore, the null hypothesis (No.1) that assumes "There is no significant difference in the environmental ethics of Under-Graduate Students of Mizoram with respect to their gender" has to be rejected, since the two groups differed significantly at 0.05 and 0.01 level of confidence. A comparison of their mean scores shows that female students had higher mean score than the male students, therefore it can be concluded that female students had higher level of environmental ethics than the males. This indicates that under-graduate females possess better environmental ethics than their counterparts, the under-graduate males.

Objective No.3: To compare the environmental ethics of Under-Graduate Students of Mizoram with respect to their stream of study.

The students' levels of environmental ethics were compared on the basis of their stream of study. 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.

Difference in environmental ethics with reference to stream of study.

Hypothesis No.2 states that "There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study".

Table no.4 shows the comparison of Arts, Science and Commerce respondents with respect to their Environmental Ethics.

Table no. 4
Comparison of Environmental Ethics of Under-Graduate Students of Mizoram with respect to their stream of study

Stream of Study	N	High Ethics	Average Ethics	Low Ethics
Arts	400	206 (51.5%)	58 (14.5%)	136 (34%)
Science	300	232 (77.3%)	31 (10.4%)	37 (12.3%)
Commerce	200	138 (69%)	24 (12%)	38 (19%)

Looking at table no.4, it can be seen that among the three streams of study, Science students had the best environmental ethics. 232 (77.3%) of them had high environmental ethics, 31 (10.4%) had average environmental ethics and only 37 (12.3%) low environmental ethics. Among the Arts students, 206 (51.5%) had high environmental ethics, 58 (14.5%) had average environmental ethics while 136 (34%) of them had low environmental ethics. Commerce students had the least environmental ethics in comparison with the other two

streams. We can see that 138 (69%) of the Commerce students had high environmental ethics, 24 (12%) had average environmental ethics and 38 (19%) had low environmental ethics.

To test the said hypothesis, ANOVA was employed and the results are shown in table no.5

Table no.5

Difference in the Environmental Ethics of Under-Graduate Students of Mizoram with reference to their stream of study

Source of Variation	SS	df	MS	F	P-value	F crit
Between groups	16079.29	2	8039.64	42.77	0	3.005
Within Groups	168600.35	897	187.96			
Total	184679.64	899				

Looking at table no.5 it can be seen that the calculated F value is larger than the critical value of F which means that there is significant difference between the three streams of study in their ethics towards environment. Therefore, further analysis was required to find out where the difference between the three variables was. A t-test was employed to compare two of all three variables separately.

The results of the t-tests are reflected in table no.6

Table no. 6

Difference in the Environmental Ethics of Arts and Science Under-Graduate Students of Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Arts	400	108.35	898	15.79	8.96	1.96	2.59	Significant at both 0.05 and 0.01 levels of significance
Science	300	117.71		11.85				

Table no. 6 shows that since the calculated t-value is more than both the critical values at 0.05 and 0.01 levels, there is a significant difference between the environmental ethics of Arts and Science under-graduate students of Mizoram. Therefore, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study" has to be rejected. A comparison of the mean scores between Arts and Science students shows that Science students showed a higher Mean value at 117.71 when compared with Arts students who had a Mean value of 108.35. Therefore, it can be concluded that Science students have higher level of environmental ethics when compared with Arts students during the time this research was undertaken.

In order to compare Arts and Commerce students with regards to their environmental ethics, a t-test was performed and the results are shown in table no.7

Table no. 7

Difference in the Environmental Ethics of Arts and Commerce Under-Graduate Students of Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Arts	400	108.35	898	15.79	5.82	1.96	2.59	Significant at both 0.05 and 0.01 levels of significance
Commerce	200	114.99		11.66				

Table no.7 shows that the calculated t-value for the significance of difference between Arts and Commerce students is 5.82 which is more than both the critical values at 0.05 and 0.01 levels, this means that there is a significant difference between environmental ethics of Arts and Commerce under-graduate students of

Mizoram. Therefore, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study" has to be rejected. A comparison of the mean scores between Arts and Commerce students shows that Commerce students showed a higher Mean value at 114.99 when compared with Arts students who had a Mean value of 108.35. Therefore, it can be concluded that Science students had better level of environmental ethics when compared with Arts students.

In order to compare Science and Commerce students with regards to their environmental ethics, a t-test was performed and the results are shown in table no.8

Table no. 8

Difference in the Environmental Ethics of Science and Commerce Under-Graduate Students of Mizoram

Stream	N	Mean Value	df	SD	Calculated t - value	Critical value		Significance
						0.05	0.01	
Science	300	117.71	898	11.85	2.54	1.96	2.59	Significant at 0.05 Not significant at 0.01
Commerce	200	114.99		11.66				

Looking at Table no.8 shows that the t-value of Science and Commerce under-graduate students of Mizoram is 2.54 which is more than the critical value at 0.05 level. This means that there is a significant difference in the ethics of Science and Commerce under-graduate students of Mizoram towards the environment at 0.05 level. The calculated t-value was not significant at 0.01 level and at 0.05 level it was found to be significant. Thus, the null hypothesis (No.3) stating "There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study" was rejected. Science students had better Mean score of 117.71 in comparison with Commerce students who had a Mean score of 114.99. It can be concluded that there is a significant difference in the environmental ethics of Science and Commerce under-graduate students of Mizoram.

IV. Discussion of Findings:

The following are the discussions of findings of the present study:

Discussion regarding the Environmental Ethics of Under-Graduate Students of Mizoram.

The present study found that the majority of under-graduate students had high level of ethics. The similar findings were investigated by Raju, G (2007) when he studied the "Environmental Ethics of Higher Secondary Students" studying in the schools of Cuddalore district of Tamil Nadu and found that environmental ethics of the higher secondary students of Cuddalore district is high.; Mathivanan, K and Dr. G. Pazhanivelu (2013)in their study "Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students" also found that the higher secondary students have high environmental ethics.; Hmangaihzuali (2015) conducted a study on "Environmental Ethics among Secondary School Students in Aizawl City, Mizoram" and finds out that majority of the secondary school students in Aizawl had high level environmental ethics.The topics on environmental studies is incorporated in the schools and as a compulsory paper at 4^{th} Semester in the college in Mizoram. Therefore, the probable reason why undergraduate students in Mizoram possessed high environmental ethics could be because the students were influenced by what they learnt in the schools and colleges.

Discussion regarding the comparison of the EnvironmentalEthics of Under-Graduate Students of Mizoramwith reference to their gender.

By looking at the present study, it was found thatthere is a significant difference between male and female under-graduate students and by comparing their mean scores, it shows that female students had higher mean score than the male students, therefore it can be concluded that female under-graduate students had a better ethics about the environment than their counterparts i.e., under-graduate males. The finding of the present study also concurred with the findings of Raju, G (2007) when he studied the "Environmental Ethics of Higher Secondary Students" studying in the schools of Cuddalore district of Tamil Nadu. He found out that Girls' students have more environmental ethics than the boy's students.;Sundra Selvan (2005) in his study on "Environmental Ethics among the Secondary pupils of Gudaloor District" and found that girl students possess

high level of environmental ethics. Contrary to our findings, Mathivanan, K and G. Pazhanivelu (2013)in their study on "Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students" and Ms. Prerna Mandhyan (2013) on her study of "Environmental Ethics among Higher Secondary Level Students" stated that there is no significant difference in the environmental ethics of male and female school students.; Hmangaihzuali (2015) conducted a study on "Environmental Ethics among Secondary School Students in Aizawl City, Mizoram" and finds out that female students have significantly higher environmental ethics.Hence, the reasons why male under-graduate students have lower environmental ethics than the female students because male 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 under-graduate students consider environmental ethics in terms of care and compassion, there is every reason why female student should have higher environmental ethics than the male under-graduate students. Conceivably, female 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 under-graduate students possessed higher environmental ethics compared to the male under-graduate students.

Discussion regarding the comparison of the Environmental Ethics of Under-Graduate Students of Mizoram with reference to their stream of study.

The findings indicate that among the three streams of study, not surprisingly, science students have the highest ethics compare to its counterparts i.e., students from arts and commerce. The reason for this finding could be that science subject provides with a broad understanding of current environmental issues. The present study also revealed that there is a significant difference between the environmental ethics of Arts, Science and Commerce streams. The finding is supported by the findings of Ms. Prerna Mandhyan (2013) made a study of "Environmental Ethics among Higher Secondary Level Students" and found that the environmental ethics of science students are high in comparison to art students and the environmental ethics of commerce students are high in comparison to the art students and there is no significant difference between environmental ethics of science and commerce students.; Mathivanan, K and Dr.G. Pazhanivelu (2013) in their study on "Environmental Ethics and Participation in Environmental Activities among Higher Secondary Students" and found that there is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics. The finding is contradicting the finding of Raju, G (2007) on his study "Environmental Ethics of Higher Secondary Students" studying in the schools of Cuddalore district of Tamil Nadu and found that the types of schools where they happened to study do not have any influence on their environmental ethics.

From this study, it is clear that similar environmental knowledge/awareness should be impart in Arts, Science and Commerce stream.

V. Conclusion:

By looking at the present study, it can be concluded that the ethics of under-graduate students of Mizoram was in a positive direction. Majority of the students had high ethics, and these shows that in terms of understanding the environment, students have high grasp towards the environment.Significant difference was found between male and female under-graduate students and by comparing their mean scores, it shows that female students had higher mean score than the male students, therefore it can be concluded that female under-graduate students had a better ethics about the environment than their counterparts i.e., under-graduate males. Among the three streams of study, majority of the students from Arts, Science and Commerce streams students shows that they had high ethics towards the environment. However, there was a significant difference between the three streams of study. An individual itself can also do a lot to protect the environment not only as a group.The indication about environmental knowledge, awareness and positive activities towards environment should be implemented more in the institution, and real action should be taken to protect the environment.

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1. DRC : 31.10.2017
2. BOS : 03.11.2017
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MZU REGISTRATION NO. : 407/2007-08

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ABSTRACT

ENVIRONMENTAL ETHICS OF UNDER-GRADUATE STUDENTS IN MIZORAM AND THEIR ATTITUDE TOWARDS ENVIRONMENTAL PROTECTION

AN ABSTRACT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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DEPARTMENT OF EDUCATION

SCHOOL OF EDUCATION

FEBRUARY, 2023

ABSTRACT

Environmental Ethics of Under-Graduate Students in Mizoram and their Attitude towards Environmental Protection

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INTRODUCTION:

The conditions or situations that surrounds both living and non-living creatures can be referred to as the environment. The term "environment" refers to not only the air, land, water, and soil but also the actual surroundings that surround us, such as the roads and buildings. The greatest influence on people's physical and mental well-being is a clean and healthy environment. In order to grow, it's also critical to address the requirements of the populace. Environmental education should be highly valued in today's educational systems since it is vital to life. "The environment is everything that affects the life of an individual except his genes," said Anne Anastassi in 1937.

Understanding the effects of our consumption on the environment and taking personal and societal responsibility to preserve natural resources and save the planet for future generations are referred to as environmental ethics. In many respects, man is the one harming the ecosystem. Education on environmental ethics should not just take place in schools but also in families and the community. All ages should participate in it in accordance with their own developmental stage. It should be done not just to acquire knowledge but also to acquire skills, cultivate positive attitudes, and engage in environmental protection actions. Living in harmony with nature begins with respect for it.

For the benefit of the environment and people, environmental protection is the practise of preserving the natural environment at the individual, organisational, and governmental levels. Even those with higher education’s tend to be ignorant about environmental preservation. Protecting the environment entails keeping it clear of pollutants by disposing of waste in residential areas and dumping various polluted materials and dead animals on the highways. The people who contribute to environmental conservation lack civic consciousness and health consciousness. The natural world is typically pristine and uncontaminated, but because of man's hostile attitude towards the environment, the natural world is constantly being destroyed.. Further, man in spite of so much of the development of science and technology, has not learned how to live a healthy life. If the environment is to be kept clean and pure,

techniques should be developed to recycle the wastages and convert them into some useful material.

RATIONALE OF THE STUDY:

The environment addresses matters pertaining to people's rights that are essential to life and welfare. Not only are the needs of every individual today a priority, but so are the requirements of our future generations. It also addresses the rights of other organisms that inhabit the planet. All universities and institutions should incorporate environmental concern into their curricula. The entire educational process can incorporate these elements. Environmental education is becoming a significant part of the curriculum. Studying environmental issues include understanding about their sources, effects, and potential remedies. For both adults and children to become environmentally sensitive, education is essential. Students may learn to appreciate the environment for the rest of their lives if school and college activities and curricula were changed to ensure greater appreciation, better protection, and more responsible utilization of the environment. We must live, work, and coexist with the environment in a more harmonious manner if we are to survive on this planet.

Our environment is the most valuable resource that we have. The environment is changing significantly, and man is both the cause of these changes and the one who is most impacted by them. If environmental awareness is being raised in schools and colleges, then someone must be aware that they have significant responsibilities in this area. In addition to raising public knowledge of environmental challenges, we also need to encourage pro-environmental action. Real-world experiences are the most effective method for highlighting environmental ethics among the many available. In addition, all employees should receive environmental education. Students should be given factual information that explains the interrelationships between the biotic and abiotic environments, and it will help them develop an appreciation and respect for the environment by showing them how they can effectively contribute to environmental protection. For their own future and the benefit of the next generation, all humans have an obligation to preserve the environment. Since college graduates will almost certainly enter the workforce, they have much more obligation.

Every human has the right to a decent life, yet there are things in our current surroundings that work against achieving and enjoying such a life. Untold suffering may result from the environment's pollution getting worse. Humans often experience unhappiness and suffering due to our disregard for the welfare of others, as well as our lack of ethics and a feeling of responsibility for maintaining a healthy ecosystem. We must work together to stop the planet's rising toxicity if we are to strive for a higher quality of life that will guarantee freedom from sickness, lack, and dread itself. We need everyone to take immediate, concerned action to detoxify the environment in order to defuse this environmental time bomb. However, this action can only be taken if we reorient the values of the populace, that is, if we instill in them appropriate attitudes and values (ethics), particularly those that will foster a greater concern for maintaining the equilibrium of the ecosystem in addition to teaching them how to prevent further environmental degradation and contribute to making the environment a more progressive, healthy place to live. Therefore, it becomes imperative that each and every citizen cultivate strong environmental values, understanding that even if we should strive for a fulfilling existence, we should not compromise the future generations.

Environmental education is a required topic in college education as part of our formal education system, and students are expected to have certain information, morality, an attitude, and the capacity to participate in environmental activities. There haven't been many researches done on environmental ethics and attitudes in other states in our nation or throughout the world. But in the state in Mizoram, no research has ever been done on environmental ethics or attitudes towards environmental conservation. Therefore, a research to determine undergraduate students' attitudes towards environmental conservation and environmental ethics will help us understand how much the students comprehend and perceive environmental challenges in their life. Moreover, studying the environmental ethics and attitude towards environmental protection among undergraduate students would enable us to make suggestions on how to build up the environmental issues not only among the students but to the general public since this has become an important public issue in today’s world. The researcher hopes that this study will shed light on the youth's understanding of environmental

ethics and attitudes and strengthen the moral code for the benefit of the state's society. Keeping this in mind, the researcher developed the following set of study questions:

1. What is the level of environmental ethics among undergraduate students in Mizoram?
2. Are there any differences in the environmental ethics of male and female among undergraduate students in Mizoram?
3. Is there any significant difference in the environmental ethics of undergraduate students in Mizoram with reference to their locale and stream of study?
4. Is there any attitude towards environmental protection scale ever been developed in Mizoram?
5. What is the attitude in Mizoram college students toward the environment?
6. Is there any significant difference in the attitude towards environmental protection of undergraduate students in Mizoram with reference to their gender, locale and stream of study?
7. What is the impact of environmental ethics and attitude among students?
8. Is there any interrelationship between environmental ethics and attitudes of undergraduate students in Mizoram?

STATEMENT OF THE PROBLEM:

With a view to find out the knowledge and attitude of under-graduate students towards environment within the State in Mizoram with reference to their gender, stream of study and locale, the present study is formulated as below:

*"**Environmental Ethics of Under-Graduate Students in Mizoram and their Attitude towards Environmental Protection".***

OBJECTIVES OF THE STUDY:

1. To assess the environmental ethics of Under-Graduate Students in Mizoram.
2. To compare the environmental ethics of Under-Graduate Students in Mizoram with respect to their gender.
3. To compare the environmental ethics of Under-Graduate Students in Mizoram with respect to their locality.
4. To compare the environmental ethics of Under-Graduate Students in Mizoram with respect to their stream of study.
5. To construct and standardize an attitude scale towards environmental protection of Under-Graduate Students in Mizoram.
6. To assess the attitude towards environmental protection of Under-Graduate Students in Mizoram.
7. To compare the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their gender.
8. To compare the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their locality.
9. To compare the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their stream of study.
10. To study the relationship between environmental ethics and attitude towards environmental protection of Under-Graduate Students in Mizoram.
11. To make suggestions for improving the environmental ethics and attitude towards environmental protection of Under-Graduate Students in Mizoram.

NULL HYPOTHESES:

1. There is no significant difference in the environmental ethics of Under-Graduate Students in Mizoram with respect to their gender.
2. There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their locality.
3. There is no significant difference in the environmental ethics of Under-Graduate Students with respect to their stream of study.
4. There is no significant difference in the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their gender.
5. There is no significant difference in the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their locality.
6. There is no significant difference in the attitude of Under-Graduate Students in Mizoram towards environmental protection with respect to their stream of study.
7. There is no relationship between environmental ethics and attitude towards environmental protection of Under-Graduate Students in Mizoram.

REVIEW OF RELATED LITERATURE:

A total of 118 reviews have been incorporated in the study. There were 81 studies done in India and 37 studies done abroad. The review period ranges from 1977 to 2021.

METHOD OF THE STUDY

The present study is descriptive in nature. Therefore, descriptive survey method has been employed. Blends of both qualitative and quantitative analysis have been employed in the present investigation.

POPULATION:

The population of the study comprised of all under-graduate students in Mizoram affiliated to Mizoram University.

SAMPLE:

For the present study, to study and compare environmental ethics and attitude, 900 students were selected as a representative sample. The final sample size comprised of 450 males and 450 females offering Arts, Science and Commerce of under-graduate students studying in Mizoram.

The samples were selected following Stratified Random Sampling technique. The name of colleges and sample distribution of the students is presented in the following Table no.1

Table no. 1

Name of Colleges and sample distribution of the students

Sl.No	Name of College	District	Number of Respondent		Total
			Male	Female	
1	Pachhunga University College	Aizawl	140	145	**285**
2	Govt. Aizawl College	Aizawl	20	22	**42**
3	Govt. Aizawl North College	Aizawl	10	12	**22**
4	Govt. Aizawl West College	Aizawl	20	19	**39**
5	Govt. Johnson College	Aizawl	20	22	**42**
6	Govt. Hrangbana College	Aizawl	21	23	**44**
7	Govt. J. Thankima College	Aizawl	15	13	**28**
8	Govt. T.Romana College	Aizawl	25	22	**47**
9	Govt. Zirtiri Residential College	Aizawl	42	38	**80**
10	Govt. Champhai College	Champhai	17	18	**35**

11	Govt. Khawzawl College	Khawzawl	8	10	**18**
12	Govt. Kolasib College	Kolasib	12	13	**25**
13	Govt. Kamalanagar College	Lawngtlai	15	12	**27**
14	Govt. Hnahthial College	Hnahthial	3	8	**11**
15	Govt. J. Buana College	Lunglei	20	25	**45**
16	HATIM	Lunglei	14	11	**25**
17	Lunglei Govt. College	Lunglei	11	6	**17**
18	Govt. Mamit College	Mamit	14	10	**24**
19	Govt. Saiha College	Siaha	9	8	**17**
20	Govt. Saitual College	Saitual	4	2	**6**
21	Govt. Serchhip College	Serchhip	10	11	**21**

Table no. 2

Gender, Stream and Locale Wise Distribution of Sample of Students

Gender				
Sl. No.	**Sample of students**	**No. of Male Students**	**No. of Female Students**	**Total**
1.	Male and Female	450	450	**900**
Streams				
	Stream of Study	**No. of Male Students**	**No. of Female Students**	**Total**
2.	Arts	200	200	400
3.	Science	150	150	300
4.	Commerce	100	100	200
TOTAL		**450**	**450**	**900**

Locale				
	Locale	**No. of Male Students**	**No. of Female Students**	**Total**
5.	Urban	225	225	450
6.	Rural	225	225	450
TOTAL		**450**	**450**	**900**

TOOLS USED FOR DATA COLLECTION:

The following tools were used for the present study:

1. Environmental Ethics Scale (EES) (2001) developed by Dr. (Mrs.) Haseen Taj; Professor, Department of Education, Bangalore University, Bengaluru.
2. Attitude Scale towards Environmental Protection (2021) developed by the investigator.

ADMINISTRATION OF TOOLS AND DATA COLLECTION:

In order to find out both the Environmental Ethics scale comprising of 45 statements and the Attitude towards Environmental Protection scale consisting of 38 statements was administered to all 900 students, Google form app was used to collect the data. The purposes of the study as well as instructions for marking 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.

ANALYSIS OF DATA:

Quantitative and qualitative analysis were done for the present research.

Quantitative analysis of data was done by making use of descriptive and inferential statistics like Mean, Standard Deviation, Pearson's Product Moment Correlation, ANOVA and t-test.

MAJOR FINDINGS AND DISCUSSIONS OF THE STUDY:

Findings of the study and conclusion, discussion of findings, recommendations for improvement of personal values in students and suggestions for further studies are presented. They are arranged and presented in the following order:

Objective No.1: Level of Environmental Ethics of Under-Graduate Students in Mizoram.

Findings and discussion regarding the level of Environmental Ethics of Under-Graduate Students in Mizoram.

Findings – The findings of the present study revealed that out of 900 under-graduate students in Mizoram, majority i.e. 576 (64%) of the under-graduate students have high level of environmental ethics, while 113 (12.6%) of the under-graduate students have average level of environmental ethics and 211 (23.4%) of the under-graduate students have low level of environmental ethics. The mean score and standard deviation of under-graduate students was found out to be 112.95 and 14.33 respectively. Therefore, it can conclude that majority of under-graduate students in Mizoram have a high level of environmental ethics.

Discussion - The present study found that the majority of under-graduate students in Mizoram have high level of environmental ethics. The similar findings were investigated by Raju (2007); Mathivanan & Pazhanivelu (2013) and Hmangaihzuali (2015) and they also found out that majority of the students have high level of environmental ethics. The topics on environmental studies is incorporated in the

schools and as a compulsory paper at 4th Semester in the college under Mizoram University. The study further elaborated that the probable reason why under-graduate students in Mizoram possessed high environmental ethics could be because the students were influenced by what they learnt in the schools and colleges.

Objective No.2: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their gender.

Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their gender.

Findings – The findings of the study showed that out of 900 under-graduate students in Mizoram, majority i.e., 254 (56.4%) of male under-graduate students have high level of environmental ethics, while 57 (12.7%) have average level of environmental ethics and 139 (30.9%) of male under-graduate students have low level of environmental ethics. Among the female under-graduate students, we can see that 322 (71.6%) have high level of environmental ethics, while 56 (12.4%) have average level of environmental ethics and 72 (16%) of female under-graduate students have low level of environmental ethics. The mean score of male under-graduate students was 109.88 and the mean score of female under-graduate students was 116.01. Standard deviation of male and female under-graduate students was 15.39 and 12.48 respectively. The 't' value for the significance of difference between male and female under-graduate students was 6.59 which show that there is a significant difference between male and female under-graduate students at both 0.01 and 0.05 levels.

Discussion – By looking at the present study, it was found that there is a significant difference between male and female under-graduate students in Mizoram and by comparing their mean scores, it shows that female under-graduate students have higher mean score than the male under-graduate students, therefore it can be concluded that female under-graduate students have a better ethics about the environment than their counterparts i.e., under-graduate males. The finding of the present study also concurred with the findings of Raju (2007); Sundara (2005) and Hmangaihzuali (2015) they also found that female students possess high level of environmental ethics.

Contrary to our findings, Mathivanan & Pazhanivelu (2013) and Mandhyan (2013) also found that there was no significant difference in the environmental ethics of male and female school students. Hence, the reasons why male under-graduate students have lower environmental ethics than the female under-graduate students are that male under-graduate 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 under-graduate students consider environmental ethics in terms of care and compassion, there is every reason why female under-graduate student should have higher environmental ethics than the male under-graduate students. Conceivably, female under-graduate 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 under-graduate students possessed higher environmental ethics compared to the male under-graduate students.

Objective No.3: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their locale.

Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their locale.

Findings – The findings of the present study indicated that majority 319 (70.9%) of the under-graduate students in Mizoram coming from urban areas have high level of environmental ethics, 57 (12.7%) have average level of environmental ethics and 74 (16.4%) under-graduate students have low level of environmental ethics, while 257 (57.2%) of the under-graduate students coming from rural areas have a high level of environmental ethics, while 56 (12.4%) have average level of environmental ethics and 137 (30.4%) have low level of environmental ethics. The mean score of urban under-graduate students was 115.39 and the mean score of rural under-graduate students was 110.5. Standard deviation of urban under-graduate students was 13.15 and rural under-graduate students was 15.04. The ‘t’ value for the significant of difference between under-graduate students coming from urban and rural areas was

5.20 which is more than the critical value at 0.05 and 0.01 which means that there is a significant difference between urban and rural under-graduate students. Both urban and rural areas have almost the same level of environmental ethics, urban under-graduate students have slightly higher level of environmental ethics.

Discussion – The present study found that there is a significant difference between urban and rural areas under-graduate students with respect to their environmental ethics. By comparing their mean scores, it shows that under-graduate students from urban area shows higher mean score than the rural area under-graduate students, therefore it can be concluded that urban area under-graduate students have higher level of environmental ethics than the rural area under-graduate students. The finding of the present study is in contradictory to the findings of Sundara (2005); Flower (2006); and Raju (2007) where they also found out that environmental ethics level was higher in the students from rural than urban region. This finding is coherent with the finding of Mathivanan & Pazhanivelu (2013) and found that the urban and rural higher secondary school students do not differ significantly in their environmental ethics. From this study, we can see and shows that more awareness about environmental concern should be done more in the urban and rural areas not only within the institution but also to a society as a whole.

Objective No.4: Comparison of Environmental Ethics of Under-Graduate Students in Mizoram with respect to their stream of study.

Findings and discussion regarding the comparison of Environmental Ethics of Under-Graduate Students in Mizoram with reference to their stream of study.

Findings – The results of the study revealed that among the three streams of study, Science under-graduate students in Mizoram have the best level of environmental ethics. 232 (77.3%) of them have high level of environmental ethics, 31 (10.4%) have average level of environmental ethics and only 37 (12.3%) have low level of environmental ethics. Among the Arts students, 206 (51.5%) have high level of environmental ethics, 58 (14.5%) have average level of environmental ethics while 136 (34%) of them have low level of environmental ethics. Commerce under-graduate

students have the least environmental ethics in comparison with the other two streams. We can see that 138 (69%) of the Commerce under-graduate students have high level of environmental ethics, 24 (12%) have average level of environmental ethics and 38 (19%) have low level of environmental ethics. Among the three streams of study, Science under-graduate students have the highest mean score and arts under-graduate students had the lowest mean score (Science = 117.71 > Commerce =114.99> Arts = 108.35). Standard deviation was lowest among the commerce under-graduate students. (Commerce = 11.66 < Science = 11.85 < Arts = 15.79). The calculated F value figure was 42.77 which is larger than the critical value of F i.e., 3.005 which means that there is significant difference between the three streams of study in their ethics towards environment.

Discussion - The findings indicated that among the three streams of study, not surprisingly, science under-graduate students have the highest level of environmental ethics compare to its counterparts i.e., under-graduate students from arts and commerce. The reason for this finding could be that science subject provides with a broad understanding of current environmental issues. The present study also revealed that there is a significant difference between the environmental ethics of Arts, Science and Commerce streams. The present finding was supported by the findings of Mandhyan (2013) and found that the environmental ethics of science students are high in comparison to arts students and the environmental ethics of commerce students are high in comparison to the art students and there is no significant difference between environmental ethics of science and commerce students.; Mathivanan & Pazhanivelu (2013) also found that there is significant difference among the higher secondary students belonging to different type of school management with respect to their environmental ethics. The finding is contradicting the finding of Raju (2007) found that the types of schools where they happened to study do not have any influence on their environmental ethics.

From this study, it is clear that similar environmental knowledge/awareness should be impart in Arts, Science and Commerce stream.

Objective No.5: Construct and Standardize of Attitude Scale towards Environmental Protection of Under-Graduate Students in Mizoram.

Findings and discussion regarding the objective - To construct and standardize an Attitude scale towards Environmental Protection of Under-Graduate Students in Mizoram.

Attitude Scale towards Environmental Protection (2021) was developed by the investigator which consists of 38 statements in a five-point Likert-type scale. Each item has five alternative responses- 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. In a positive item, the point for 'strongly agree' is 5, 'agree' is 4, 'undecided' is 3, 'disagree' is 2 and 'strongly disagree' is 1 and in a negative item 'strongly agree' is 1, 'agree' is 2, 'undecided' is 3, 'disagree' is 4 and 'strongly disagree' is 5 respectively. The negative items are given star-mark. The highest possible score on the test was (38 X 5) 190 and the lowest possible score is (38 X 1) 38. Thus, the range of the scale is 38 – 190.

Procedure for construction and standardization of Questionnaire:

In order to construct statements to assess the attitude towards environmental protection, the investigator examined questionnaire design, journals and literature review to determine how questionnaires should be framed. From the study of these questionnaire, journals and from literature review and came up with 70 statements. The first set of statements of attitude toward environmental protection was generated. After consulting and advised by the supervisor, in order to find out the content validity of the 70 statements, it was given to 7 subject matter experts within the University for editing as well as for validating the statements. On the basis of the opinions of the experts, 10 items were rejected and some items were modified. After this, the draft now contained 60 statements, expressing both positive and negative attitude scale. The instructions for the scale required subjects to respond to each item on a 5-point Likert-type scale, the response categories being 'strongly agree,' 'agree,' 'undecided,' 'disagree' and 'strongly disagree.'

Trying out of the scale:

After preparing the 60 items attitude scale, it was first tried out and was administered to hundred 5th Semester students selected from Pachhunga University College, Aizawl. In the beginning of the test, instructions were given, but no further instructions were required. After administering the test to hundred students, the scale was again collected within a time gap of 15 days and item analysis was done by finding out the discrimination value of each item

Item analysis:

After administration of the test to hundred 5th semester students, scoring was done using Likert scoring procedure. The scores were then arranged in descending order, and the upper 27% and lower 27% were set aside for item analysis and discrimination. Student's t-test and Discriminating Index were calculated. A t-test for each of the items was calculated from the upper 27% and lower 27%.

The mean and standard deviation were computed separately for the above-mentioned top and bottom groups. After this, those items having t-value above 2.68 i.e., statements which are significant at 0.01 level of confidence and t-value between 2.01 and 2.68 i.e., statements which are significant at 0.05 level of confidence were retained for the final scale and statements having t value less than 2.01 were rejected. Out of 60 statements, 22 statements were rejected/not significant and the significant items consists of 38 statements.

Reliability:

The investigator applied 'Test-Retest Method' for the establishment of reliability of the scale. For this, Test had been conducted with a time gap of 15 days on a sample of 100 5th semester college students. The co-efficient of reliability was computed between the two tests by using the "Product Moment Correlation". The co-efficient of reliability of the scale came out to be 0.90 which can be considered adequate for an attitude scale. The detailed information on reliability co-efficient are presented in the following table

Table no: 3

Reliability Indices for Attitude Scale towards Environmental Protection

RELIABILTIES		
Mean	**SD**	**Product-Moment Correlation**
N=100 (college students) after 15 days	N=100 (college students) after 15 days	N=100
185.17	16.90	0.90

Validity:

For the present scale, content validity was established by requesting seven (7) experts consisting of professionals and faculties from Mizoram University for validating the test items. To establish criterion-related validity, the investigator administered "Environmental Attitude Scale" by Dr. (Mrs.) Haseen Taj. The correlation coefficient between the two scales was found to be 0.95, which was considered highly adequate to study the attitudes of under-graduate students towards environmental protection.

The validity indices are shown in Table 4. A sample of the Attitude scale towards environmental protection is attached in APPENDIX – 2

Table no: 4

Validity Indices

VALIDITY		
Mean	**SD**	**Criterion Validity**
N=100 (College students)	N=100 (College students)	N=100
177.89	18.56	0.95

Scoring:

The scoring pattern for Attitude scale suggested by Likert was followed for the present attitude scale. Each item has five alternative responses - 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. For scoring purposes, the positive statements were given the scores 5, 4, 3, 2, 1 and the negative statements were given the scores 1, 2, 3, 4, 5. The negative items are given star-mark. The highest possible score on the test was (38 X 5) 190 and the lowest possible score is (38 X 1) 38. Since the total number of statements in the scale is 38. Thus, the range of the scale is 38-190. The item numbers for positive and negative statements are given in the following table

Table no: 5

Serial Number of Positive and Negative Statements

Type of statements	**Item Numbers**	**Total**
Positive	1, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33, 34, 36, 37, 38	28
Negative	2, 3, 4, 5, 8, 16, 20, 27, 30, 35	10
TOTAL		**38**

Standardization:

For the last step in standardization of the scale, the investigator administered a final try out on a sample of 900 under-graduate students randomly selected from all the colleges in Mizoram. The sampled students comprised of 2^{nd}, 4^{th} and 6^{th} semesters from Arts, Science and Commerce Stream, both male and female coming from rural and urban areas in Mizoram. The sample students are randomly selected in such a way that the scale was administered using online app (Google Form app). The link for the scale was obtained and was sent to Arts, Commerce and Science students studying in colleges of all the districts in Mizoram during the time the sample was taken.

Norms and Interpretation of Attitude Scale:

The newly constructed attitude scale was administered on 900 under-graduate students selected from all the colleges in Mizoram. For the purpose of establishing norms for interpretation of the scale, the investigator converted the raw score into z-score and then transform into the standard score.

The norm for interpretation of the score on attitude towards environmental protection is given in the following table

Table no: 6

Interpretation of Attitude towards Environmental Protection

Score Range	Interpretations
176 and above	High (1σ and above)
153 – 175	Average (-1σ to 1 σ)
108 – 152	Low (-1σ and below)

Objective No.6: Level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

Findings and discussion regarding the level of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

Findings – The findings of the present study revealed that out of all the 900 under-graduate students in Mizoram, it can be seen that majority i.e., 629 (69.9%) of under-graduate students have average level of attitude towards environmental protection. 144 (16%) of under-graduate students have high level of attitude towards environmental protection while 127 (14.1%) have low level of attitude towards environmental protection. The mean score and standard deviation of under-graduate students' attitudes towards environmental protection was 164.35 and 11.76 respectively.

Discussion - The present study found that the majority of the under-graduate students have average level of attitude towards environmental protection. There were a few under-graduate students who have a low level of attitude towards environmental

protection, while a large number of under-graduate students were found to have high attitude towards environmental protection. The similar finding investigated by Magulod (2018) also found out that the undergraduate students of Cagayan State University at Lasam have a high level of environmental attitude towards conserving the environment. This finding also adheres with the finding of Lalhmangaihzuali (2021) and found that majority of college students in Mizoram have above average environmental attitude. Therefore, the main reason why under-graduate students in Mizoram possessed high level of attitude towards environmental protection could be because the students were influenced by what they have learnt from schools, colleges, home and community.

Objective No.7: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their gender.

Findings and discussion regarding the comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their gender.

Findings - The findings indicates that out of 900 under-graduate students, majority i.e., 299 (66.5%) of male under-graduate students have average level of attitude towards environmental protection while 74 (16.4%) of male under-graduate students have high level of attitude towards environmental protection and 77 (17.1%) have low level of attitude towards environmental protection. It can also be seen that 70 (15.6%) of under-graduate female students have high level of attitude towards environmental protection, while 330 (73.3%) have average level of attitude towards environmental protection and 50 (11.1%) of female students have low level of attitude towards environmental protection. The mean score of male under-graduate students was 163.70 and the mean score of female under-graduate students was 165.01. Standard deviation of male and female under-graduate students was 12.59 and 10.85 respectively. The ‘t’ value for the significance of difference between male and female under-graduate students was 1.67. Since the calculated ‘t’ value is less than the criterion ‘t’ value at 0.05 and 0.01 level, it can be concluded that there is no significant difference between

male and female under-graduate students in Mizoram with respect to their attitude towards environmental protection.

Discussion - The present study found that there is no significant difference between male and female under-graduate students in Mizoram with respect to their attitude towards environmental protection. But by comparing their mean scores, it shows that female under-graduate students have higher mean score than the male under-graduate students, therefore it can be concluded that female under-graduate students have higher level of attitude towards environmental protection than the under-graduate males. The finding of the present study is similar to the finding of Kumar & Patil (2007) and found that there is no significant difference between male and female under-graduate students in their attitude towards environmental pollution and related issues. In contrary to our findings, Katoch (2017) found that there is significant difference in attitude towards environment of male and female students. On the other hand, the findings of Levine & Strube (2012) and Lalhmangaihzuali (2021) found that large section of male students were found to be more knowledgeable than female students.

Objective No.8: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their locale.

Findings and discussion regarding the comparison of the Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their locale.

Findings – The findings of the present study showed that out of 900 under-graduate students, majority i.e., 305 (67.8%) coming from urban areas have average level of attitude towards environmental protection, while 324 (72%) of under-graduate students coming from rural areas have average level of attitude towards environmental protection. However, 88 (19.6%) of under-graduate students coming from urban areas have high level of attitude towards environmental protection while 56 (12.4%) of under-graduate students coming from rural areas have high level of attitude towards environmental protection. It can also be seen that 57 (12.6%) of under-graduate

students coming from urban areas have low level of attitude towards environmental protection, 70 (15.6%) of under-graduate students coming from rural areas have low level of attitude towards environmental protection. The mean score of urban under-graduate students was 165.54 and the mean score of rural under-graduate students was 163.17. Standard deviation of urban students was 11.88 and rural students was 11.54. The calculated t-value for the significance of difference between students coming from rural and urban areas was 3.04 which is more than the critical value at 0.05 and 0.01 which means that there is a significant difference between urban and rural areas under-graduate students with respect to their attitude towards environmental protection.

Discussion - The present study found that there is a significant difference between urban and rural areas under-graduate students in Mizoram with respect to their attitude towards environmental protection. By comparing their mean scores, it shows that urban area under-graduate students show slightly higher mean score than the rural area under-graduate students, therefore it can be concluded that urban area under-graduate students have higher level of attitude towards environmental protection than the rural area under-graduate students. The finding of the present study by Lalhmangaihzuali (2021) and also found that urban students showed a slightly high mean score than the rural area students and found no significant difference between them. Contrary to our findings, Sarkar (2011) also found that students in rural areas had a slightly higher level of environmental attitude than that of the students in urban areas. The plausible reason behind this may be the difference in the stages of education or the difference in location.

Objective No.9: Comparison of Attitude of Under-Graduate Students in Mizoram towards Environmental Protection with respect to their stream of study

Findings and discussion regarding the comparison of Attitude towards Environmental Protection of Under-Graduate Students in Mizoram with reference to their stream of study.

Findings – The findings of the study revealed that among the three streams of study, 42 (10.5%) of arts students have high level of attitude towards environmental protection, majority of 288 (72%) of arts students have average level of attitude towards environmental protection, while 70 (17.5%) have low level of attitude towards environmental protection. Among the science students, 68 (22.7%) have high level of attitude towards environmental protection, 205 (68.3%) under-graduate students have average level of attitude towards environmental protection and 27 (9%) of them have low level of attitude towards environmental protection. 34 (17%) under-graduate students from commerce stream have high level of attitude towards environmental protection, 136 (68%) of the commerce under-graduate students have average level of attitude towards environmental protection and 30 (15%) under-graduate students have low level of attitude towards environmental protection. Science students have the highest mean score, arts students have the lowest mean score (Science=167.44> Commerce=164.49>Arts=161.97). The standard deviation was highest among commerce stream (Commerce=12.24<Arts=11.79<Science=10.66). The calculated F value was 19.32 which is larger than the critical value of F i.e., 3.005 which means that there is significant difference between the three streams of study in their attitude towards environmental protection.

Discussion - The findings indicate that among the three streams of study science under-graduate students in Mizoram have higher level of attitude towards environmental protection than students from arts and commerce. One possible explanation for this finding could be that science is primarily based on learning by doing principle, so there is a strong chance for students to have a deep understanding of the concept. The finding is similar to the finding of Sultana et.al. (2017) and found that the order of environmental knowledge and environmental attitude of the student's group was Science> Commerce> Arts. On adverse to our finding, Heyl et.al. (2013) found that no significant differences were observed between students enrolled in different levels.

Objective No.10: Relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

Findings and discussion regarding the relationship between Environmental Ethics and Attitude towards Environmental Protection of Under-Graduate Students in Mizoram.

The study shows that the relationship between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram is 0.98. Since the calculated r value is higher than the critical value of r, it may be concluded that there is a significantly positive correlation between environmental ethics and attitude towards environmental protection of under-graduate students in Mizoram. This implies that a student who have good ethics about the environment will also have good attitude towards environment protection. This finding signified with the findings of Padmanabhan (2008); Sahin et.al. (2013); Magulod (2018) and Lalhmangaihzuali (2021) also found that there is a significantly positive correlation between environmental knowledge, awareness, activities and attitude of the students. This finding is in clashed with the findings of Levine and Strube (2012) and the findings reveal that environmental knowledge of college students was not significantly related to their attitudes.

SUGGESTIONS FOR IMPROVING THE ENVIRONMENTAL ETHICS AND ATTITUDE TOWARDS ENVIRONMENTAL PROTECTION OF UNDER-GRADUATE STUDENTS IN MIZORAM.

Importance should be given to environmental ethics and attitude towards environmental protection 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 for further research:

1. Effective awareness programs about environmental issues to be implemented from the upper primary level to inculcate right attitude at the grassroot level.

2. Environmental education/Environmental studies shall be made an activity-based learning in order to enhance, invigorate and motivate the students to learn and bring new life thereby generating into their classroom experience rather than simple teaching through lecturing.
3. The government should take initiatives for all schools and institutions with necessary environmental resource management so as to enhance the learning through environmental ethics.
4. The government should provide necessary funding and other support to train teachers to incorporate environmental education into their everyday lesson plans and to develop students' reliance and skills through environmental awareness.
5. Every institution should offer different special activity related to environmental education such as reusing materials, plantation of trees, homemade resources, saving electricity, water harvesting.
6. Parents/ Family should be encouraged to foster concern for the protection of the environment and also parents should consign themselves doing outdoor activities with their children.
7. Mass media can be a productive source of information and to escalate environmental awareness so as to make the citizens acknowledge about the fragility of environment and the demand of its protection.
8. 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.
9. Parents should not hold that teaching and training their children to develop environment friendly behaviour is the only responsibility of the institution. As such they must be willing and should put all their efforts to develop environment friendly behaviour with their children.
10. Students should be encouraged to be inquisitive about the things and events around them.
11. 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.

12. Environmental education/issues should be linked with society for better learning and to develop understanding about the problems of the society simultaneously.
13. Projects and assignments relating to environmental crisis, environmental control and contents of environmental issues should be assigned to the students for developing interest and investigative attitude.
14. Volunteering with local charities and serving the community will positively impact a healthy environment.
15. Protect the environment by recycling, reusing, and composting; making better choices about transportation; reducing electricity usage; buying local; donating to conservation groups; and avoiding toxic chemicals.
16. Local environmental campaigns should be a part of the college's activities.
17. The Government should sanction more funds to the N.G.O's (such as Y.M.A, M.U.P, M.H.I.P) so that they can maintain cleanliness in their own locality and villages.
18. 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.
19. 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.
20. The Government should ensure that Environmental Education should be strictly enforced as a compulsory subject in the school syllabus.
21. Environment and Pollution Control Board under the Government in Mizoram should inculcate Environmental Education among the Mizo community.

EDUCATIONAL IMPLICATIONS:

Environmental ethics/knowledge and attitude towards environment are interrelated and these proves that everyone has the same responsibility to conserve, to protect and care for it. Educating children about the environment builds critical thinking and creative thinking skills, and it motivates them to take part in their communities more actively. If we don't teach ourselves from the beginning, we won't

know how to protect our environment and that we can make our surrounding uninhabitable. Knowledge and wisdom do not start only in education, we can all start from our own homes and things that surround us. Since education plays the most vital role in our lives and the most effective tool for social change, the educators, the administrators and the teachers play an extremely important role, students should be provided with the right knowledge of the need to conserve and protect the environment. Education elevates a holistic approach toward the protection and conservation of environment. Environment is the basic of life support and therefore deserves proper care and management. Environmental health hazards such as chemical substances, biological substances, human industrialization, disposal of waste, water quality, air quality etc. pose health risks and therefore methods on monitoring and control of the environmental hazards, safety precautions towards environmental hazards for healthier environment has to be carried out in school, home and community.

From the findings of the present study, it was found that majority of the undergraduate students have high environmental ethics and however, majority of the undergraduate students in Mizoram have average attitude towards environmental protection. Among the three streams of study i.e., arts, science and commerce, students from science stream show a much more ethics towards the environment and students from arts stream have a high attitude towards environment protection rather than the other two streams. In this way, students from different streams would have the same attitude towards the environment if teachers made the same effort to establish a positive attitude in students. The study also shows that environmental ethics and attitude towards environmental protection of undergraduate students in Mizoram have a significantly positive interrelationship between one another. This implies that students who have good ethics regarding the environment will also have good attitudes towards the environment. The probable reason might be that since environmental education has been introduced since elementary school, college students have developed a healthy attitude towards the environment, and only need a deeper understanding of it so they can apply it to their daily lives. Teachers play a crucial role in guiding students towards environmental knowledge, awareness, far more than

Government officials and administrators. By changing the attitude of every citizen towards environmental protection, a new generation needs new approaches and strategies.

SUGGESTIONS FOR FURTHER RESEARCH:

The following suggestions are proposed:

1. A study of environmental crisis covering north eastern region of India.
2. A study of environmental awareness/ethics and environmental conservation among different levels of education in Mizoram.
3. A critical study of environmental education of both non-governmental and governmental organizations.
4. Environmental ethics: A study of its problems and solutions in Mizoram.
5. Analysis of the moral orientation of student responses to environment dilemmas.
6. A comparative study of environmental education practices among the various states of the country.
7. A comparative study of under-graduate students' attitudes towards the environmental protection and conservation.
8. Mizo society and environmental protection: A case study.
9. Content analysis on the elementary/secondary/college and university level on environmental awareness/ethics and environmental conservation in Mizoram.
10. A cross-sectional study on Sensitization towards Eco-Spirituality and its impact on human health among the stakeholders, policy makers, administrators and public citizens.
11. A study on household waste management practices under Aizawl Municipal Corporation in Mizoram can be taken up for further study.
12. Empirical study on the key factors in environmental hazards and its ways of protection for safety environment can also be taken up for further research.

CONCLUSION:

Based on the findings of the present study, the following conclusions have been drawn. The present study can be concluded that the ethics of under-graduate students in Mizoram was in a positive direction. Majority of the students had high ethics, and these shows that in terms of understanding the environment, students have high grasp towards the environment. As a result, under-graduate students in Mizoram had high environmental ethics may be the result that environmental ethics is an integral part of environmental studies since it establishes human-environment relationships. Most of the students had an average attitude towards the environment protection, and shows that in terms of understanding the environment, students still have an average grasp of the subject. Developing the right attitude is more important since having average environmental protection is not enough to conserve the environment that is degrading. However, having average attitude towards environmental protection is not enough in order to conserve the degrading environment. Significant difference was found between male and female under-graduate students with respect to their environmental ethics. Male and female students did not show any difference in their attitude towards environmental protection and by comparing their mean scores, it shows that female students had higher mean score than the male students, therefore it can be concluded that female under-graduate students had a better ethics about the environment and attitude towards environmental protection than their counterparts i.e., under-graduate males. Urban and rural students differ a significant difference in the environmental ethics and attitude towards environmental protection. Urban students showed higher level of environmental ethics and attitude towards environmental protection than the rural students. Among the three streams of study, Arts, Science and Commerce students' environmental ethics and attitudes towards environmental protection were not far apart. Majority of the students from Arts, Science and Commerce streams students shows that they had high ethics towards the environment, Science students were better in comparison with the other two streams in environmental ethics and in their attitude towards environmental protection. However, there was a significant difference between the three streams of study.

Our environment should be adequately understood by imparting knowledge and training to solve various environmental problems in a systematic manner. Deeper attention about environmental education is needed for future generations as they must be more aware and keeping the state as the cleanest environment. Therefore, it is also essential to nurture in the home environment as well as inside the classroom. A deep understanding about the environmental issues should be implemented in institutions from the early stage. Environmental education/awareness should be accessed not only within the institutions, it should be enhanced within the society as a whole. A greater investment in this subject may result in greater results. An individual itself can also do a lot to protect the environment not only as a group. The indication about environmental knowledge, awareness and positive activities towards environment should be implemented more in the institution, and real action should be taken to protect the environment.

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