ENVIRONMENTAL KNOWLEDGE, ATTITUDE AND ACTIVITIES OF COLLEGE STUDENTS IN MIZORAM

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

LALHMANGAIHZUALI

MZU REGN.NO: 2389 of 2008-09

Ph. D REGN. NO: MZU/Ph.D./960 of 26.05.2017

DEPARTMENT OF EDUCATION

SCHOOL OF EDUCATION AND HUMANITIES

APRIL, 2022

Environmental Knowledge, Attitude and Activities of College Students in Mizoram

BY

Lalhmangaihzuali

Department of Education

Supervisor

Prof. Lynda Zohmingliani

Submitted

In partial fulfillment of the requirement of the Degree of Doctor of Philosophy in Education of Mizoram University, Aizawl.

MIZORAM UNIVERSITY

AIZAWL-796004, MIZORAM

Prof. Lynda Zohmingliani **Phone: 9436145408**

Department of Education **E-mail: Lynda.zohmingliani@gmail.com**

Dated Aizawl, the 8th April, 2022

CERTIFICATE

This is to certify that the thesis entitled **'Environmental Knowledge, Attitude and Activities of College Students in Mizoram'** submitted by Lalhmangaihzuali, Regn. No. MZU/Ph.D./960 of 26.05.2017 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.

(PROF. LYNDA ZOHMINGLIANI)

Supervisor

DECLARATION

MIZORAM UNIVERSITY

April, 2022

I, Lalhmangaihzuali, 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.

This is being submitted to Mizoram University for the degree of Doctor of Philosophy in Education.

(LALHMANGAIHZUALI)

Candidate

(PROF. H. MALSAWMI)

Head,

Department of Education

(PROF. LYNDA ZOHMINGLIANI)

Supervisor

Department of Education

ACKNOWLEDGEMENT

Foremost, I am profoundly thankful to the Almighty God for blessing me with knowledge, health and strength to complete my research.

I would like to express my sincere gratitude to my supervisor Prof. Lynda Zohmingliani for her valuable guidance, support, motivation, prayers and untiring help throughout my study, who supervised my research study with dedication. Her guidance and empathy kept me moving forward and without her guidance I would never have completed writing this thesis.

I am sincerely thankful to Prof. H. Malsawmi, Head, Department of Education, Prof. Lalhmasai Chuango and Prof. Lalbiakdiki Hnamte for providing me tremendous help whenever I required. I am also thankful to all the teachers and office staffs of the Department of Education, Mizoram University for continuous support and encouragement.

My sincere thanks also go to all the Principals, teachers, student leaders, and the students of colleges of Mizoram where I collected data for my study in the midst of pandemic.

I am indebted to my friends, V. Vanlalruati, Lalmuankimi, Christina Vanlalhmangaihzuali, Gloria Lalchhanhimi and C. Lalruatfela for lending me a helping hand and for providing deep understanding in my time of need during the study.

My deepest gratitude goes to my family for their prayer, support and understanding during my research work.

(LALHMANGAIHZUALI)

Candidate

CONTENTS

CHAPTER – I

INTRODUCTION

CHAPTER - I

INTRODUCTION

1.1.0 Environment

Environment is taken to mean all those which are physical, chemical, organic and non-organic components of the atmosphere, lithosphere and oceans. It is the aggregate of external conditions that influence the life of an individual or the population, specifically the life of man; environment ultimately determines the quality of survival of life.

Merriam-Webster Dictionary defines environment in two ways (Merriam Webster)-

The complex of physical, chemical, and biotic factors (such as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival

The aggregate of social and cultural conditions that influence the life of an individual or community

These two definitions seem to be different in its aspects but they are related to one another since they have a direct effect on human life.

One of the aims of education is to help individual gain knowledge of the environment and the basic part it plays in sustaining human life. Environmental issues concern the students as future citizens who should be prepared to deal with the complexity of environmental issues which could be done by familiarizing them with a number of concepts drawn from natural and social sciences. Studies on man-environment relations would enable pupils to understand that while some environment features or issues are generated by nature, others by human activity and many more by inter-action between nature and human activity.

Due to rapid development in industries, which leads to improvement in lifestyles and speeding up of resource utility, the natural resources has been massively exploited. The need of modern men keeps on increasing while the storehouse of nature is limited. This has led to a major environmental crisis that poses a great threat to humanity in every parts of the world. Manufacturing human

day-to-day needs has led to pollution of our environment. The irony lies in the fact that while trying to make our lives easy and better, we are plotting our own doom.

1.2.0 Environmental threats

Environmental crisis may be the greatest issue that humanity faces today. These crises may be the result of industrialization, urbanization, chemical reaction resulting from nuclear plants, population explosion etc.

1.2.1 Environmental pollution

Environmental pollution has been increasing in almost all countries due to development in industries and modern technologies. The different pollutions include the following-

1. Air Pollution: Air pollution consists of gases, liquids or solids present in the atmosphere in high enough levels to harm humans, other organisms or materials. Pollutants in the air may be in the form of solid particles or gases Air pollutants are often divided into two categories: primary and secondary. Primary air pollutants are emitted or discharged from the source directly into the atmosphere. Secondary air pollutants are the product of chemical reactions involving primary air pollutants. Some sources of man-made air pollution are vehicular emissions, industrial processes and the burning of fuels. (Chhokar et al. 2004:138). Thus the air becomes polluted when its natural composition is disturbed either by natural or man-made sources or activities or by both
2. Water Pollution: Water pollution may be defined as the introduction into a water body of substances of such character and in such quantity that the natural quality of water body is altered. This alteration impairs its usefulness, affects the health of living organisms or renders its offensive to the senses of sight, taste and smell. Water pollution includes surface water pollution like rivers lakes ponds and groundwater pollution and marine pollution. Some common water pollutants are disease causing agents, oxygen demanding wastes, inorganic chemicals, inorganic plant nutrients, heat and warm water, radioactive substances, organic compounds and sediment or suspended matter (*ibid.*:140-141).

3. Soil or Land Pollution**:** Arsenic, chromium and nickel are suspected to be increasing in quantity in the soil environment. Unrestricted use of fertilizers, pesticides and other chemicals add to the pollution. Effluents from fertilizers reduce both the quantity and quality of agricultural crops and the soil properties are also adversely affected. Consequently, many of the chemical (Ghanta & Rao 2003:30)
4. Noise pollution: Noise pollution refers to the state of discomfort and restlessness caused to humans by unwanted high intensity sound known as noise. Thus noise is the main pollutant of noise pollution which may be both natural and artificial. Natural noise pollution results from natural sources such as cloud thunder, high intensity rainfall, hailstorms, waterfalls etc. It may be widespread, sporadic, frequent or rare. On the other hand artificial noise pollution is caused by high intensity sound created by human activities and therefore artificial or simply called as noise pollution is increasing in high dimension and intensity with increasing urbanization and industrialization. Noise has instantaneous effects on nearby organisms. Unlike other pollutants, it cannot be carried far away and spread from its source area. Sounds beyond 80dB can be safely regarded as pollution for it harms our hearing ability. Beyond 100dB the sound becomes very uncomfortable and beyond 120 it is painful. Noise interferes with communication, causes loss of hearing, mental stress and increase in the rate of heart beat and sometimes damage brain and liver functioning (*ibid.*:32)
5. Radioactive Pollution: Radioactive pollution is the product of rapid development of science and technology, which have much more harmful than any other form of pollution. Radioactive substances are most toxic, as compared to organic poisons which have the harmful and injurious effects. Nuclear war materials, test explosions, great rush for power plants and radio-isotope use in medicines, industry and research are the main sources of radioactive pollution that could threaten or degrade the quality of environment (Sharma et al. (2015:76)

1.2.2 Global warming

Global Warming, also called the Greenhouse Effect or the carbon dioxide problem is a natural phenomenon that occurs as a result of the emission of various gases, Greenhouse Gases, which trap heat in the earth's lower atmosphere or troposphere. In this process, first described by the French mathematician J. Fourier, carbon dioxide is the most dominant factor.

The increase in Greenhouse gases since the pre-industrial era (1750-1800) has been tremendous. For instance, in 2007, as reported by the Inter-Governmental Panel on Climate Change (IPCC), between 1906 and 2005, the average surface temperature has risen by about $0.74^{o}C$ (Lahiri 2019:142). Global Warming is the result of the excessive burning of fossil fuels during the last several decades. The huge amounts of carbon dioxide generated from the burning of fossil fuels are not absorbed by the ocean. Deforestation too has added to the problem since forests consume large amounts of carbon dioxide and help in reduction of carbon dioxide in the atmosphere. The concentration of greenhouse gases in the atmosphere has continued to increase. Atmospheric concentrations of CO_2, CH_4 and N_2O have increased by 30 per cent, 145 percent and 15 percent respectively since pre-industrial times. CO_2 concentration increased from 280 ppmv (parts per million by volume in the 1750s to almost 360 ppmv in 2000. Scientists predict that earth's mean surface temperature will rise by between $1.5^{o}C$ and $4.5^{o}C$ by 2050 if inputs of greenhouse gases continue to rise at the present rate (Chhokar et al. 2004:220).

1.2.3 Depletion of resources

Ozone depletion: Ozone is a chemically active trace gas that is prevalent in the earth's atmosphere. Ozone layer is the outer covering of the atmosphere that protects the earth from ultraviolet rays of the sun. In other words, the amount of ozone accumulated in the upper atmosphere is called the ozone layer. Ozone molecules dispersed throughout the atmosphere absorb certain wavelengths of ultraviolet radiation (UV-B) that can damage and cause mutations in animal and plant cells and thereby prevent them from reaching the earth's surface. The largest concentrations of ozone exist in the stratosphere where it absorbs most of the ultraviolet radiation reaching the earth from the sun. As a result of the absorption of

ultraviolet radiation by the earth's atmospheric ozone layer, the earth's surface is shielded from most of the biologically harmful solar radiation.

Ozone is naturally destroyed and created constantly. But in 1970's, it was realized that manmade gases like chlorofluorocarbons (CFCs) and halogens cause significant depletion in the ozone layer. These gases, which have wide applications in air conditioning, refrigerator aerosols, electronic and metal cleaning, foam blowing, modern fire-fighting, pharmaceuticals etc. are being used increasingly. These gases deplete the ozone layer, resulting in enhanced levels of ultraviolet radiation that would reach the earth's surface and have potentially disastrous impact on human health and environment like skin cancer, millions of cases of eye cataract and blindness, suppression of human immune system, loses in food production and fisheries, damage to plastic and other materials and intensification of the greenhouse heat-trap effect. Currently global emissions of greenhouse gases that deplete the ozone layer, are estimated that 1.2 million tons per year.

Recognizing the disastrous effects of greenhouse gases on the environment and the resulting global warming, the United Nations held a convention, the United Nations Convention on Climate Change in New York on May 9, 1992. The United Nations Environmental Program (UNEP) sought a global approach to Ozone protection since 1977. After many rounds of negotiations at global and regional levels, in September 1987, the final round of negotiations adopted the Montreal Protocol on substances that deplete the ozone layer. The protocol came into effect on January 1, 1987. This protocol sought to reduce CFCs consumption and production to 50 percent of 1986 levels, by 1998. In June 1990, the parties to the Montreal Protocol agreed to comprehensively amend the protocol to meet the concerns of the developing countries like India. Subsequently, the Kyoto Pact on Global Warming was signed in 1997, to contain the greenhouse gas emissions.

With each passing decade, the magnitude of resource usage increases, this increase has also shown an exponential increase with each passing year. The forest, fresh water, petroleum and many other resources are on the verge of complete depletion. Many animals have become extinct over the years. Although extinction is a natural process, when it happens too fact, it can destroy the natural balance of ecosystems and thus lead to massive environmental disasters. The depleting

resources, with no alternative to them will ultimately herald the end of human life if not checked. All these are known to man, yet, till today, these destructive actions continue.

Besides the threats that have been mentioned in the previous paragraphs, the environment is also prone to other natural calamities like earthquakes, floods, droughts, typhoons, hurricanes etc. which have the potential to wreak massive damage. However, there is enough evidence now to show that many of these so called natural calamities are either direct or indirect repercussions of man-made activities.

1.3.0 Remedial measures taken

Although resources have been exploited in a large scale all over the world, remedy for the damage done has been carried along by the United Nations and various other organizations. Global concern regarding the steadily deteriorating state of the environment was first seriously manifested in the form of the United Nations Conference on Human Environment, held in Stockholm in 1972 (Gupta 2010:57). It focused attention on the dangers posed to the quality of human life, and to survival itself, by continuous degradation of ecological assets, and by pollution due to industrial effluents. It tried to find ways by which the precious environment could be preserved. The Conference highlighted the divergence in the viewpoints of the developed and developing nations.

This was followed by the International Workshop on Environmental Education held in Belgrade in 1975. The workshop formulated the guiding principles to achieve the objectives of the Stockholm Conference and add goals, objectives and guiding principles of environmental education programs. It defines an audience for environmental education which includes the general public.

In 1977, an inter-governmental conference on environmental education was held in Tbilisi, the capital of the Georgian Republic of USSR. This conference which was held under the joint auspices of the UNESCO and UNEP followed closely in the footsteps of the Belgrade was indeed the most significant landmark so far in

formulating the objectives of environmental education, especially at the university level.

Tbilisi Conference made the following recommendations to member states:

- To review the present potential of the universities for conducting research, especially fundamental research, concerning environmental education
- To encourage the acceptance of the fact that besides subject-oriented environmental education, interdisciplinary treatment of the basic problems of the relationships between people and their environment is necessary for students in all fields, not only natural and technical sciences but also social sciences and arts, because the relationships between nature, technology and society mark and determine the development of a society
- To develop different teaching aids and textbooks on the theoretical and bases of environmental protection for all special fields to be written by leading scientists as soon as possible
- To develop close cooperation between different university institutions (department, faculties, etc.) with specific objectives of training experts in environmental education
- Such cooperation might assume different forms in line with the structure of university education in each country but should combine contributions from physics, chemistry, biology, ecology, geography, socio-economic studies, ethics, educational sciences and aesthetic education etc.

The World Commission on Environment and Development (Bruntland Commission) was established in December 1983, and it presented, in 1987, a remarkable report *'Our Common Future' which 'tried to balance the arguments concerning North/South responsibilities and suggest ways forward'*. It included that *'If we continue to use up natural resources as we do at present, if we ignore the plight of the poor then we can (only) expect a decline in the quality of life.'* The Brundtland report (1987) suggested that the concept of sustainable development should become an acceptable principle of both national and international

development and policies; and that national governments should begin a systematic integration of economic and environmental considerations. It described sustainable development *as 'development that seeks to meet the needs and aspirations of the present generation without compromising the ability to meet these of future generations'.*

The Bruntland Report identifies two key concepts in sustainable development. These are:

- The concepts of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given;
- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

The very significant conclusions of the Bruntland Report were extensively discussed, and debate in the United Nation (1989) which led to the UN Conference on Environment and Development, better known as Earth Summit 92 at Rio de Janeiro, Brazil in June 1992 where representatives of over 159 countries met. At this Conference a comprehensive and far reaching, program for sustainable development was agreed upon in the form of Agenda 21 comprising of 38 chapters which covered a wide variety of conservation issues and management of resources for development so that the future needs for resources were taken care of. The Earth Summit forced the people worldwide to consider how their lives affect natural environment and resources and to confront anew what determines the surroundings in which they live. All countries are now apparently committed to the protection of the environment and to the principle of sustainable development (Chhokar et al. 2004:224)

1.3.1 Remedial Measures taken within India:

In India, conservation of environment took place as early as in 1700 AD in the form of Bishnoi Movement. This movement was started by sage Sombaji around 1700 AD against deforestation. After that Amrita Devi forwarded the movement. The 363 people from the Bishnoi community were killed in the protest. When the king of this region came to know the protest and killing then he rushed to the village and apologized, and declared the region as protected area. It is noteworthy that this legislation still exists today (Matthew 2020).

The famous Chipko Movement was launched from Gopeshwar in Chamoli district, Uttarakhand in 1973.The movement was to prevent illegal cutting of trees in the Himalayan region (Uttarakhand). Sunderlal Bahuguna and Chandi Prasad Bhatt were the leaders of this movement. The most notable characteristics of this movement were the involvement of women.

In 1983, on the lines of Chipko Movement, Pandurang Hegde launched a movement which is come to known as Appiko Movement in Karnataka. Its main objectives were afforestation as well as development, conservation and proper utilization of forests in the best manner. The meaning of “appiko” is to express one's affection for a tree by embracing it (ibid.)

Silent Valley is an area of tropical evergreen forests in Kerala. It is very rich in biodiversity. The environmentalists and the local people strongly objected to the hydel power project being set up here in 1973 and launched a movement called **Silent Valley Movement.** Under pressure, the government had to declare it the national reserve forests in 1985 (ClearIAS 2021: https://www.clearias.com/environmental-movements-in-india/).

The tribal community of Singhbhum district of Jharkhand (Previously, it was a district of India during the British Raj, part of the Chota Nagpur Division of the Bengal Presidency) agitated against the forest policy of the Government in 1982 in a movement called **Jungle Bachao Andola**. The Government wanted to replace the natural soil, forests with the high-priced teak. Many environmentalists refer to this movement as “Greed Game Political Populism”. (ibid.)

The environmentalists and the local people started protest against the building of Dams on the Narmada for the production of hydro-electricity since 1985 which was popularly known as Narmada Bachao Aandolan. Medha Patkar has been the leader of this aandolan who got support from the Arundhati Roy, Baba Amte and Aamir Khan (Matthew 2020).

The Tehri Dam Conflict movement was started by the local people around 1980s and 1990s because the dam project would constructed in the seismic sensitive region and people think that it causes submergence of forest areas along with Tehri town. Despite of protest, the construction of the dam is being carried out with police protection as Sunderlal Bahuguna is sitting on fast unto death. After assurance from the government to review the project, Bahuguna ended his fast but construction goes on, though at a slower pace (ibid.).

Hence, we can say, numerous grass root environmental movements were started in India against the developmental activities that have endangered the ecological balance that changes the public policy to become more inclined towards the environment.

1.3.2 Remedial Measures taken within the State of Mizoram

Mizoram is a late bloomer in terms of environmental protection. Since it is an agricultural state where majority of the population engaged in agricultural activities, shifting cultivation/jhumming has been practiced from time immemorial. Mizo farmers cut down and burn trees for cultivating crops. This practice happens almost every year especially in rural areas.

The earliest step taken for environmental protection in Mizoram is the practice of ‘Meilam Sial’. The burning of the forests sometimes led to chaotic forest fire. To avoid this, the Mizos practice ‘Meilam Sial’ which means clearance of jungle for a firebreak to prevent spreading of fire.

To avoid forest fire, the Mizoram government laid a rule i.e. The Mizoram (Prevention and Control of Fire in the Village Ram) Rules, 1983. This rule is then repealed by the Mizoram (prevention and control of fire in the village Ram, 2001 which give a detailed instructions for prevention and control of fire and prohibition concerning jhumming cultivation and burning of forests, It also lay penalty for offences of the rule. According to this rule, every year each Village Council shall, by orders, specify a period for cutting of jungle and for doing all preparatory activities for the purpose of jhum, during which all villagers having jhum must start and finish

the same.) Each Village Council shall specify, by order, a date for burning of jhum-land, which shall be made known to all villagers at least three days ahead of the fixed date, and on that fixed date the burning of jhum-land shall be done (THE MIZORAM (PREVENTION AND CONTROL OF FIRE IN THE VILLAGE RAM) RULES, 2001 https://lad.mizoram.gov.in/uploads/files/the-mizoram-prevention-and-control-of-fire-in-the-village-ram-rules-2001.pdf)

The Mizoram Government has also passed various Acts and Rules for the protection of environment of the State. Some of them are-

1. The Lushai Hills District (Forest) Act, 1953 (Lushai Hills Act No. VI of 1953)

2. The Mizoram (Forest) Act, 1955. (This Act repealed The Lushai Hills District (Forest) Act, 1953)

3. The Lushai Hills District (Jhumming) Regulation, 1954.

4. The Mizoram Village (Sanitation) Rules

The Govt. of Mizoram constituted **'*Green Aizawl Committee*'** on 27th May, 1998 to restore the greenery and improve the aesthetic beauty of the city for making Aizawl a better place to live. Pu Lalthanhawla, former Chief Minister was the Chairman and Pu Lalbiakzuala, the then Minister, E&F was Vice Chairman. Pu C. Ramhluna, Conservator of Forests, Northern Circle was Member Secretary and twenty seven (27) members were appointed therein. The Environment & Forests Department was the Nodal Department. In its year of constitution, the Green Aizawl Committee, as its first drive, planted 94,063 seedlings within the city and displayed 100 signboards to create public awareness of the importance of maintaining green cover. Besides, the Committee conducted ring painting, labeling and naming of 4000 trees in Aizawl city.

Deeply concerned over the continued depletion of tree cover in the state resulting from excessive biotic pressure like illicit felling, forest fires, clearing of private and government lands for human habitation and other developmental activities, the government considered it necessary to launch a massive project for

resuscitation and afforestation of barren lands in the State for converting such areas into green cover thereby creating a better environment. With this in view on 6th May, 1999 '*State Level Committee on Green Mizoram'* was constituted under the Chairmanship of the then Hon'ble Chief Minister of Minister of Mizoram, Pu Zoramthanga. Pu Rualchhina the then Minister of Environment & Forests was appointed as the Convener of the Committee.

Government of Mizoram constituted Green Mizoram Committee in three tires such as State Level Committee, Sub-Committee to look the implementation decision taken by State Level Committee and District Committee (Envis Centre: Mizoram, 2017: 2nd Paragraph)

Observation of Green Mizoram Day

Each year, a particular day during the first or second week of June is observed as Green Mizoram Day, dedicated for planting of trees and for maintenance of the trees planted in the previous years. Since its constitution in 1999, planting of trees have been carried out by the Government Departments, Semi Government Departments, NGOs, Educational Institutions and public on identified locations which includes Government lands, roadsides, private lands etc. During celebration of Green Mizoram Day 'Fire Prevention Awards' are distributed each year at district and village levels in respect of their outstanding and exemplary performances in fire prevention during the year.

The Mizoram Government has a department called Department of Environment, Forests & Climate Change. The vision of this department is to achieve well-stocked high-quality forests with rich bio-diversity for maintaining ecological balance and ensuring environmental stability while meeting the forest-based needs of the local people with a mission to increase the area under forest cover and enhance the quality of existing forests thereby creating healthy environment for the people through the

(1) application of the principles of sustainable management,

(2) adoption of effective silvicultural practices, and

(3) involvement of the local people actively in our efforts of planning, implementation, and monitoring of schemes for conservation of the forests and the wildlife.

The various duties and responsibilities of this department include:

1. Protection and enhancement of the existing forest cover as well as restoration of the degraded eco-systems.

2. Preparation of Working Plans as per the National Working Plan Code for facilitating scientific management of the forests in Mizoram.

3. Preservation of existing Wildlife by creating and supporting healthy habitats for their sustenance through the implementation of approved Management/ Master Plans.

4. Implementation of various schemes (under State Plan as well as centrally sponsored) for afforestation and protection of forests such as "Green Mizoram Program", "National Afforestation Program", "Intensification of Forest Management", "13th Finance Commission Grants", "Green India Mission" etc.

5. Enhancing socio-economic status of the local people by promoting increased regeneration/cultivation and scientific harvesting of Non-Timber Forest Products (NTFPs) such as bamboo, broom grass, cane etc.

6. Inviting active participation of the local people in the management of forest resources by strengthening the Joint Forest Management Committees (JFMCs) and the Village Forest Development Committees (VFDCs).

7. Substantially, arranging the forest-based needs of the local people like timber through departmental timber operation i.e. by extracting timber on sustained yield basis, their transportation, and disposal at various Government Timber Depots.

8. Promoting the scientific management of private forests / plantations by providing technical inputs whenever required.

9. Providing casual/seasonal employment to the local people while implementing various schemes.

10. Addressing key concerns related to climate change through effective adaptation and mitigation efforts.

The Stakeholders in the activities undertaken by the Department are:

1. The Indian citizens living in Mizoram including the indigenous people.

2. The State Government

3. The Government of India

4. The forest officials working in the State

5. Non-Government Organizations (NGOs)

6. Private tree/ bamboo growers (SoER, Mizoram, 2016 https://forest.mizoram.gov.in/page/soer-mizoram-2016)

Save Chite Lui Movement

Chite Lui is located at 23^{o} 38'27" N-23^{o} 45'17" latitudes and 92^{o}43'11"E-92^{o}47'26E Longitudes as provided by Mizoram Remote Sensing Application Centre. The stream flow almost the entire length of eastern part of Aizawl. The stream originates from Bawngkawn locality and is joined by many small streams along its length. It is approximately17 kilometers and it ultimately joins Tuirial river.

The Chite Lui is a river that has many sentiments and memories attached to it. Songs and poems have been written about it by Mizo poets. But the present condition of the river is nowhere near the romanticism involved with it. The river has now been reduced to a stream with growing urbanization. It is becoming narrower day-by-day and losing its identity because of the waste thrown in it and rampant encroachments. Most of Aizawl city waste is carried to the dumping ground outside the city while the rest slides into the river. In his study conducted in 2017, Fanchun stated that the major pollutants of Chite River includes-

1. Discharge of untreated or partially treated waste
2. Cleaning of vehicles and doing laundry in the river
3. Dumping of Municipal solid waste
4. Surface runoff carrying silt

5. Construction of buildings at the site of the river
6. Road construction
7. Effluent of pesticides, insecticides and agricultural waste
8. Effluent of Tuibur factories (liquid form of tobacco)

(Fanchun, 2017:60)

The Save Chite Lui Movement was started on 2.2.2017. It was inaugurated by the then Aizawl District Commissioner, Shri. Kannan Gopinathan who took a keen interest in saving the river. Initially, a month long baseline survey of the river was done to gather information about the vulnerable spots where unearthed soil and waste were being dumped, including the measurement of the areas of localities where the river passes through and other inputs. On June 2, 2017, the Save Chite Lui Coordination Committee (SCLCC) was constituted by the state government with the state governor as its patron member. Subsequently, the Save Chite Lui Action Plan (SCALP) came into force whose main objective was to create awareness among the people regarding the river by undertaking various awareness campaigns and also to build check dams and other techniques to prevent the waste from flowing into the river

In October 2017, scientists and scholars from University of Minnesota and Mississippi Watershed Management Organization (MWMO) conducted a survey of Chite Lui. They did a comprehensive study of the river and provided suggestions and guidance for the conservation and restoration of the river.

Dr. Joe Webner Professional Hydrologist from University of Minnesota and Dr. Udai B. Singh, director of Mississippi Water Management Agency said that the river has completely lost its profile and stressed upon the importance of a detailed river survey on river flow data, water quality data in order to have a sustainable and scientific river restoration plan.

The state government, fully aware of the sentiments attached to the river passed the Chite Lui (Prevention and Control of Water Pollution) Act, 2018 that prohibited the dumping of animal carcasses, bio-medical waste or any garbage and made the violation of offence as cognizable and non-bailable offence (Singh, 2018)

1.4.0 Environmental Education

Any curriculum should be based on well-thought out and clearly defined concepts that one wishes the learner to acquire. Some important concepts of environmental education have interdisciplinary significance such as environmental pollution, carrying capacity, ecosystems, ecology, and conservation etc.

According to United States Environmental Protection Agency *Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions.*

Environmental education is concerned with those aspects of human behavior which are more directly related to man's interaction with bio-physical environment and his ability to understand this interaction.

UNESCO has highlighted the following aims of environmental education:
The aim of environmental education is clearly to show the economic, social, political and ecological interdependence of the modern world, in which decisions and actions by different countries can have international repercussions. Environmental education should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.

The main aim of environmental education at the grass root level is to succeed in making individuals and communities understand the complex nature of the natural and the built environments. Further, to acquire the knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in anticipating and solving social problems, and in the management of the quality of the environment.

1.5.0 Environmental Education in Undergraduate course

The University Grants Commission decided to address the issue of Environmental Studies by introducing a basic course on Environment at the undergraduate level. The decision of the Hon'ble Supreme Court of India made such an approach mandatory. 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. This Committee was headed by Dr. Erach Bharucha, a well-known Environmental Scientist of Bharati Vidyapeeth, Pune. The committee member includes Prof. C Manoharachary, Prof. S. Thayumanavan, Prof. D. C. Goswami, Shri R. Mehta and Doctor N. K. Jain. The committee had come out with a very comprehensive and useful document on this multi-disciplinary subject. The material is well presented in an integrated manner and in very simple language with a large number of examples.

1.5.1 Environmental Education in Bachelor of Education

In Mizoram Institute of Advance Study in Education (AISE) established in 1975 used to be the main institute offering the course of Bachelor of Education. Recently, Bachelor of Education (B.Ed.) course was introduced in Mizoram University in 2018. However, nowhere in the syllabus are found the subject of environmental science. The contemporary subjects like physics, chemistry and mathematics can opt for mathematics in Pedagogy-I as well as physical science in Pedagogy-II. Likewise, chemistry, botany and zoology can opt for biological science in Pedagogy-I as well as physical science in Pedagogy-II under science/engineering/computer science/ agriculture. Like-wise, English/Mizo/Hindi and social science can opt for either English/Mizo/Hindi/ mathematics in Pedagogy-I and either social science or geography in Pedagogy-II under arts and commerce.

1.6.0 Vision of Members of the Curriculum Development Committee of Environmental Studies in Undergraduate Course

The importance of Environmental Studies cannot be disputed. The need for sustainable development is a key to the future of mankind. The degradation of environment is linked to continuing problems of pollution, loss of forests, solid waste disposal, issues related to economic productivity and national as well as ecological security. The increasing levels of global warming, the depletion of ozone layer and a serious loss of bio-diversity have also made everyone aware of the growing environmental concerns. The United Nations Conference on Environment and Development held in Rio de Janeirio in 1992, and the World Summit on Sustainable

Development at Zoharbex in 2002, has drawn the attention of people around the globe to the changing 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.

Human beings have been interested in ecology since the beginning of civilization. Even our ancient Scriptures have included practices and values related to environmental conservations. It is now even more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practices.

India is rich in bio-diversity, which provides various resources for people; it is also the basis for biotechnological development. Thus far, only about 8.1 Million living organisms have been described and named globally; still many more remain to be identified and described. Attempts are being made to conserve them, both in ex-situ and in-situ conditions. Intellectual Property Rights, (IPRs) have become important in a biodiversity-rich country like India to protect microbes, plants and animals that have useful genetic properties. The destruction of habitats, overuse of energy resources and environmental pollution has been responsible for the loss of a large number of life forms. It is feared that a large proportion of life on earth may get wiped out in the near future.

Despite the deteriorating status of the environment, the formal study of environment has so far not achieved adequate attention in our academic domain. Recognizing this, the Hon'ble Supreme Court directed the UGC to introduce a basic course on environment for every student. Accordingly, the matter was considered by the UGC and it was decided that a six-month compulsory Core module course in environmental studies may be prepared and compulsorily implemented in all the Universities or colleges in India

The Expert Committee appointed by the UGC had looked into all the pertinent questions, issues and other relevant matters. This was followed by the framing of the Core Module Syllabus for Environmental Studies for undergraduate courses of all branches of higher education. The committee is deeply conscious that

there are bounds to be gaps between what is considered ideal and the present syllabus. The Committee has attempted to minimize these gaps by intellectual and material inputs. The success of this course will, however, depend on the initiative and drive of the teachers and their students.

Mizoram colleges also implemented the UGC curriculum. A separate Department of Environmental Science was established along with the Department of Biotechnology in Pachhunga University College, a constituent college of Mizoram University in 2013.

1.7.0 Rationale of the study

Our environment is facing dire threats due to the activities of man. Awareness has been given in certain forms throughout the world but the efforts taken are still not enough to curb the process of the deteriorating environment. The work of some people in certain areas is not enough to heal our degrading earth. Although it is the duty of every human being to conserve our environment for the betterment of ourselves and for the future generation, college students have an even more important role to play because most of them will enter the world of work after this stage is over. Therefore, their awareness, attitude and the activities they like to take up which concerns the environment is likely to have deep impacts on the environment. In today's world, apart from the threat of global warming and depletion of ozone layer, we are living in a state where humanity as a whole is endangered to be doomed in a moment by nuclear war. The deed of people in certain areas within the globe has had adverse effect to other people in different parts. A very good example is the pandemic that we are facing today. We first heard of it in Wuhan which is in the heart of China but the next time we heard about the pandemic, it happened on the other side of the globe. And from then on, it has been spreading far and wide even to a remote isolated state in the north-east part of India like Mizoram. This is a good example of how nature does not recognize environmental barriers. The same is true for environmental pollution. One state may not be taking part in many kinds of industrial activities causing air pollution. But if other states or the neighboring state are taking part in such activities, it will also suffer from air pollution because even air pollution does not recognize borders. So even if our state

is not industrially inclined, we still have to know about it and take care ourselves environmentally and be ecologically conscious.

Environmental degradation is a very big issue that we, as human beings, face in our everyday life. It is therefore imperative for each and every human being to stand up for conservation of our environment. At college level, in view of the fact that environmental education has been a part of our formal education system for so long, students are expected to have some knowledge, attitude and be able to take some environmentally sound activities. Therefore, the investigator thinks it would be a worthwhile endeavor to find out the amount of knowledge that students have regarding environment and to what extent environmental education influences students' attitude and their activities towards environment at college level. Moreover, it was considered imperative to find out if any correlation exists between environmental awareness, knowledge as well as activities of college students. The present study was undertaken to give a picture of the present situation regarding the efficiency of environmental education in our educational system and certain steps based on the findings of the study may be suggested to improve environmental consciousness. Attempt was also made to find out the opinion that college teachers teaching this subject towards this subject have. Their opinion shall enable the researcher to understand more about what needs to be incorporated in environmental education so that it can have a deeper impact on our everyday lives.

1.8.0 Statement of the Problem

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

"Environmental Knowledge, Attitude and Activities of College Students in Mizoram"

1.9.0 Research Questions

Now that the main focus of the proposed study has been declared, the following questions come to mind, demanding the most reliable answers:

1. What is the level of environmental knowledge of college students in Mizoram?
2. Is there any significant difference in the environmental knowledge of college students of Mizoram with reference to their gender and stream of study?
3. What attitude do college students in Mizoram have towards the environment?
4. Is there any significant difference in the attitude of college students in Mizoram towards the environment with reference to their gender and stream of study?
5. Do college students in Mizoram act positively towards the environment?
6. Is there any significant difference in the behavior of college students in Mizoram towards environment with reference to their gender and stream of study?
7. Is there any interrelationship between environmental knowledge, attitudes and activities of college students of Mizoram?
8. What is the opinion of college teachers teaching subject of environmental studies towards this subject?

1.10.0 Objectives of the Study

In view of the questions raised, the following objectives have been framed so as to enable the investigator to provide answers to the research questions:

1. To find out the environmental knowledge of college students in Mizoram.
2. To compare the environmental knowledge of college students in Mizoram with reference to their gender.
3. To compare the environmental knowledge of college students in Mizoram with reference to their stream of study.
4. To compare the environmental knowledge of college students in Mizoram with reference to their locale.
5. To assess the environmental attitude of college students in Mizoram.
6. To compare the environmental attitude of college students in Mizoram with reference to their gender.

7. To compare the environmental attitude of college students in Mizoram with reference to their stream of study.
8. To compare the environmental attitude of college students in Mizoram with reference to their locale.
9. To standardize a scale to measure the environmental activities of students in Mizoram.
10. To study the environmental activities of college students in Mizoram.
11. To compare the environmental activities of college students in Mizoram with reference to their gender.
12. To compare the environmental activities of college students in Mizoram with reference to their stream of study.
13. To compare the environmental activities of college students in Mizoram with reference to their locale.
14. To find out the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram.
15. To study the opinion of college teachers teaching environmental studies towards this subject.

1.11.0 Hypotheses

The following hypotheses have been stated as to realize the above objectives:

1. There is a significant difference in the knowledge of male and female college students in Mizoram towards the environment.
2. There is a significant difference in the knowledge of Arts, Science and Commerce college students in Mizoram towards the environment.
3. There is a significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment.
4. There is a significant difference in the attitude of male and female college students in Mizoram towards the environment.
5. There is a significant difference in the attitude of Arts, Science and Commerce college students in Mizoram towards the environment.
6. There is a significant difference in the attitude of students coming from rural and urban areas in colleges of Mizoram towards the environment.

7. There is a significant difference in the activities of male and female college students in Mizoram towards the environment.
8. There is a significant difference in the activities of Arts, Science and Commerce college students in Mizoram towards the environment.
9. There is a significant difference in the activities of students coming from rural and urban areas in colleges of Mizoram towards the environment.

1.12.0 Operational Definitions of the Key terms used

Knowledge: Knowledge in the present study means college students' awareness about the environment in Mizoram.

Attitude: Attitude in the present study means college students' feelings towards the environment in Mizoram.

Activities: Activities in the present study mean the everyday practices of college students of Mizoram with regards to the environment.

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)

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

EVS: Environmental Studies Subject (A compulsory subject in the undergraduate course under Mizoram University)

References:

Best, J.W. & Kahn. J. V. (2000). *Research in Education* (7th Ed). New Delhi: Prentice-Hall of India Private Limited

Chhokar, B., Pandya, M. & Raghunathan, M. (2004). *Understanding Environment*. Sage Publications India Pvt Ltd B-42, Panchsheel Enclave New Delhi 110 017

Erach Bharucha. (2005). *Textbook of Environmental Studies for Undergraduate Courses.* Universities Press (India) Private Limited. 3-5-819 Hyderguda, Hyderabad 500 029 (A. P.), India.

Ghanta, R. & Rao, D. B. (2003). Environmental Education Problems and Prospects. Discovery Publishing House 4831/24, Daryaganj, New Delhi-110 002

Krishnamacharyulu, V., & Reddy, G. S. (Ed.). (2007). *Environmental Education.* Neelkamal Publications Pvt. Ltd: Sultan Bazar, Hyderabad- 500 095

Lahiri, S. (2019). *Environmental Education*. Studera Press 1586/113. FF, Tri Nagar, Delhi – 110 035

Lushai Hills Regulation No. II 1954 The Lushai Hills District (Jhumming) Regulation, (1954). Retrieved from https://lad.mizoram.gov.in/uploads/files/the-lushai-hills-district-jhumming-regulation-1954.pdf

Matthew, A. A. (2020). 5 most powerful Environmental Movements in India's History. Retrieved from https://yourstory.com/socialstory/2020/07/powerful-environmental-movements-india-chipko-narmada/amp

Merriam-Webster. (n.d.). Environment. In *Merriam-Webster.com dictionary*. Retrieved March 16, 2021, from https://www.merriam-webster.com/dictionary/environment

Pandey, V. C. (2003). *Environmental Education.* Discovery Publ ishing House: New Delhi-1100 02

Rao, V. K. & Reddy, R. S. (2012). *Environmental Education.* Commonwealth Publishers: New Delhi- 110002

Sethi, Purnima., & Kulkarni, V. S. (2011). *Environmental Education.* Alfa Publication: New Delhi-110 002

Sharma, R. A., Maisnam, P. & Lenka S. K. (2015). Environmental Education. Vinay Rakheja C/o R. Lall Book Depot Meerut 250 001

Sharma, Sajay Prakash. (2006). *Environmental Education.* Vista International Publishing House: Delhi-110053

Shrivasta, K. K. (2007). *Environmental Education- Principles, Concepts and Management.* Kanishka Publishers, Distributors: New Delhi-110 002.

Singh, G. (2018). *Sentimental value alone can't save Mizoram's dying rivers*. Retrieved from https://india.mongabay.com/2018/11/sentimental-value-alone-cant-save-mizorams-dying-river/

The Mizoram (Forest) Act (1955). Retrieved from https://lad.mizoram.gov.in/uploads/files/the-mizoram-forest-act-1955.pdf)

The Mizoram (Prevention and Control of Fire in the Village Ram) Rules (2001) https://lad.mizoram.gov.in/uploads/files/the-mizoram-prevention-and-control-of-fire-in-the-village-ram-rules-2001.pdf

The Mizoram Gazette (2017) Vol XLVI, Issue No. 371. Rerieved from https://lad.mizoram.gov.in/uploads/files/the-mizoram-village-sanitation-rules-2017.pdf

Fanchun, H. (2017). Environmental Impacts of Chite River and its Tributaries Aizawl. An unpublished M. Sc Dissertation in Environmental Science. Department of Environmental Science, Mizoram University, Aizawl, Mizoram.

CHAPTER – II

REVIEW OF RELATED STUDIES

CHAPTER – 2

REVIEW OF RELATED LITERATURE:

Research takes advantage of the knowledge which has accumulated in the past as a result of constant human endeavor. It can never be undertaken in Isolation of the work that has already been done on the problem which directly or indirectly related to a study proposed by a researcher. A careful review of the research journal, books, dissertation, theses and other sources of information on the problem to be investigated is one of the important steps in the planning of any research study. A review of the related literature must precede any well planned research study

This chapter deals with the reviews of different research studies related to environmental knowledge, attitude and activities of students in different level of education. The reviews are arranged widely into three sections- Studies done abroad, studies done within India and studies done within the State of Mizoram

A gestalt view of the span of years and studies covered from abroad, within the country and inside the state of Mizoram may be made with the help of the following table:

Table 2.1: Details of related studies reviewed

Sl. No.	Location of Studies	Span of Years	Total
1.	Outside India	1996 - 2020	25
2.	Within India (outside Mizoram)	2006 - 2020	30
3.	Within Mizoram	2014 - 2019	3
		Total	58

As seen from Table 2.1, total number of 58 research studies were reviewed and studied. The earliest was in 1996 and the latest were in 2020, thus covering a span of 25 years. The finding of each reviewed study may be broadly summarized as follows:-

2.1.0 Studies done abroad:

Chan (1996) conducted a study on “Environmental attitudes and behavior of secondary school students in Hong Kong” where she conducted postal survey on 992 secondary students in Hong Kong to investigate environmental attitudes, using Weigel and Weigel's (1978) environmental concern scale and readiness to engage in various pro-environmental behaviors including paper recycling at school and at home, using less tissues and less plastic bags. Results indicated that students' expressed great concern about the environment and exhibited strong willingness to participate in various pro-environmental behaviors. However, students' over-optimism toward technological development and perceived importance of benefits of modern consumer goods were the two major factors that contradicted concern for the environment. Environmental attitudes demonstrated a high predictive power of willingness to participate in pro-environmental behaviors. Pearson correlation coefficient between environmental concern scale and comprehensive behavioral intention was high and positive (0.52). 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 behaviors.
3. Factor analysis indicated that the environmental concern scale was composed of two factors, named 'personal sacrifice' and 'optimism/issue'.

Rider (2005) has conducted a research entitled “Education, Environmental Attitudes and the Design Professions: A master’s thesis” in the United States in which the main focus of the study is to look at the influence of undergraduate education on designers’ interest in sustainable design. Additional interest was in environmental attitudes and the impact of interpersonal relations on those attitudes. Self-proclaimed practitioners in the green building industry were surveyed through a specified email list of the United States Green Building Council. The Survey was

web-based and addressed issues including environmental attitudes, undergraduate education and professional training. 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.

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. A purposeful sample of students attending the Lebanese American University was asked to fill out a questionnaire that assesses four major domains related to attitudes towards the environment: concern, knowledge, willingness to act, present and past behaviour, and a minor domain, experience with nature. 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.

Michelle (2009) conducted a study on "All Education is Environmental Education" to explore how secondary school students construct meanings for environmentalism. The study participants consisted of grade twelve students from a rural eastern Ontario Secondary School. The survey was used to explore the general knowledge base and attitudes of these students towards environmentalism. Results were analyzed 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), in his study- "Environmental Education at Secondary School System in Lithuania", analyzed environmental education from two perspectives: practical and institutional. He 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.

Sarkar (2011) prepared a paper on "Secondary students' environmental attitudes: The case of environmental education in Bangladesh" in which he examined secondary students' environmental attitudes in Bangladesh by employing a standardized environmental attitude scale. The scale consisted of 15 questions rated on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). 400

secondary students, with equal number of boys and girls from both the urban and rural schools participated in this study. 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 favorable environmental attitudes with girls having a significantly higher level of favorable 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.

This paper discussed the scope for further research to identify the gap and relationship between environmental attitudes and environmental behaviors of Bangladeshi adolescents.

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 sample consisted of 447 individuals which afforded a confidence level of 95% of the population of youth attending postsecondary institutions in Malta. Stratified sampling was used within the studied colleges and schools to ensure that youth studying languages, sciences, business and humanities were represented according to the actual percentages at the school level. Data collection occurred through a class administered questionnaire survey distributed to students in the post-secondary age range. 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.

Levine and Strube (2012) conducted a study on "Environmental Attitudes, Knowledge, Intentions and Behaviors among College Students" in which college students reported their pro-environment behaviors as well as their pro-environment intentions, their explicit and implicit attitudes about the environment, and their knowledge about environmental issues. 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.

This research suggests that knowledge about the environment and explicit attitudes influence behavior through different pathways, which may have implications for interventions seeking to increase environmentally friendly behavior.

Sahin et al. (2013) analysed the "environmental knowledge and attitudes of university students" in their study. For the purpose of data collection, a survey was conducted on 162 students from the 3rd and the 4th grade studying in the Department of Family and Consumer Sciences Education at the Industrial Arts Education Faculty, Gazi University. For the conduct of the research, descriptive statistics (such as arithmetic mean, standard deviation etc.), the t test and variance analysis were used for the comparison of the groups; and correlation and regression analysis and

structural equation modelling (SEM) were used for determining the relations between quantitative variables. 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)

Hanneman (2013), in her study "The Effectiveness of Experiential Environmental Education: O'Neill Sea Odyssey Program Case Study" provided an analysis of the effectiveness of the O'Neill Sea Odyssey (OSO) education program in fostering a long term awareness of personal responsibility about ocean pollution among student participants. A survey administered to 261 students from the greater san Francisco Bay Area in California was used to explore 7^{th} through 10^{th} grade students' conception about the connection between ocean pollution and stewardship behaviors. The study revealed that-

1. 75% of 86 former OSO participants retained a high level of awareness of the connection between non-point source pollution and personal behaviors two to five years after the program, regardless of differences in sex, language, grade level, and community setting.
2. OSO participants retained a long-term conceptual awareness about environmental stewardship behaviors taught during OSO program.

Heyl et al. (2013) conducted a study on "Environmental attitudes and behaviors of college students: a case study conducted at a Chilean university" to

identify whether there are significant differences between college students depending on their diploma of specialization, related to the environment or not, the year in which they are studying and gender. The sample consisted of 383 engineering students of Chilean University in first, third and sixth year, with two instruments designed to measure environmental attitudes and behaviors.

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.

Grimmette (2014) prepared an article on "The Impact of Environmental Education on Youth and their Environmental Awareness." in which she attempted to identify the effects of environmental education programs on youth, including creating environmental awareness, building a connection to the environment, and changing the perceptions youth has on the environment. The study examines environmental education program, Science Camp Explore, hosted at the Cedar Point Biological Station and Lake McConaughy Water Interpretive Centre in Ogallala, Nebraska. The camp emphasized two main themes- soil and water. In order to measure the awareness of the pre and post programming, camp themes were integrated into both the questionnaires and cognitive mapping. Results showed a significant positive effect in the three areas associated with camp curriculum: Human's effect on the water cycle, the importance of animals to humans, spending time to fix problems in nature.

Sadik and Sadik (2014) investigated the Knowledge and Attitudes of Teacher Candidates in Social Sciences, Education and Science and Technology Education Department towards Environment in their study entitled "A study on environmental knowledge and attitudes of teacher candidates". The population of the study was

teacher candidates from the University of Cukurova, the Faculty of Education, Social Sciences Education and Science and Technology Education Department. As the population was easily accessible, no sampling was done. 323 teacher candidates as 171 female and 152 male participated in the study. The study finds out that-

1. 43 % of participants find the Internet and television more effective in environmental awareness. They think shortening of natural resources is the biggest problem of the world while urbanization is the biggest issue of Turkey.
2. Teacher candidates have a moderate level environmental knowledge; have more positive attitude in terms of environment but low level environmental behaviors.

Naquin et al. (2016) did a 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. Quantitative and qualitative questions were completed through an online survey. The children's written responses to the survey questions revealed varying degrees of knowledge, attitudes and practices concerning various environmental health issues. 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.

Jie He (2016) conducted a study on Study of College Students' Environmental Awareness Cultivation Under the View of Ecological Civilization in which the present situation of environmental education and environmental awareness cultivation in both China and the world, expounded the importance of college students' environmental awareness cultivation and presented the method to cultivate college students' environmental awareness under the view of ecological civilization was analysed

Koprivnik et al. (2016) conducted a study on "Primary School Teachers' Opinions on Teaching the Environmental Studies Subject Outside of the Classroom" in the Republic of Slovenia. From their study they discovered that –

1. Educators, when teaching the subject of Environmental Studies outside the classroom, most often used an area located in direct vicinity of the school
2. The largest percentage of participants very often taught the subject of Environmental Studies outside the classroom once per month.
3. Analyses showed certain statistically significant differences regarding the location of the school and the educator's years of employment. The results showed that educators, when teaching the subject of Environmental Studies outside the classroom, most often used the method of direct observation, while the least used methods were work with texts and learning resources.
4. Predominantly, educators dedicate up to 30% of total planned hours of the subject of Environmental Studies to conducting class outside the classroom.
5. The study showed that educators want to obtain additional information, knowledge, and competence for teaching Environmental Studies outside the classroom primarily by examples of good practices

Yimam (2016) conducted a study on "Teachers' Attitude towards Environmental Education and their roles in the school and nearby Community: The Case of Secondary Schools of South Wollo Zone, Amhara Regional State, Ethiopia". The study investigated on teachers' attitudes towards environmental education and their roles in the school and nearby community in the selected secondary schools. It also discussed Environmental Education (EE) as a key to creating environmental awareness, empowerment and participation in decision-making regarding some of the world's vital environmental issues and challenges at secondary school level. Purposive sampling technique was adopted to select four secondary schools from thirty six and all geography and biology teachers including school directors were considered in the study. Relevant data were collected using Likert-type scale questionnaire, observation, check-list and semi-structured interview.

The result showed that teachers' attitudes towards EE were found favorable while their attitudes towards the teaching-learning process and their roles in the

schools and nearby community were not encouraging. Based on these findings, some specific recommendations were made for implementation. Teachers' should improve their roles in the school and nearby community, through organizing environmental conservation clubs which could serve as a model for the school and surrounding community. So, teachers' can reach out to the community through their students' environmental message. This will increase awareness and will influence attitude and activities towards their environment.

Zachariou et al. (2017) conducted a study on "Teachers' Attitudes towards the Environment and Environmental Education: An Empirical Study". The aim of this study is to explore teachers' attitudes towards Environmental Education (EE), and the relation of these attitudes with other socio-demographic factors, such as area of residence and local environmental conditions. 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.

Amérigo et al. (2017) did a research work on "Analysis of Environmental Attitudes and Behaviors: An exploratory study with a sample of Brazilian University Students" which explores a model of environmental concern composed of four attitudinal dimensions (apathy, anthropocentrism, connectivity and emotional affinity), analysing their relationships with pro-environmental behaviours. The sample was made up of 250 Brazilian university students from Sao Paulo city that represents the most popular strata of the population, being people more susceptible to financial problems and more easily affected by adverse economic situations. The results obtained with Partial Least Square (PLS) show the validity and reliability of the proposed model, and reveal 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. Three hundred students of class nine and ten grade were randomly selected from 10 different private and government schools. The data were collected using questionnaire survey method. 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 students 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.

Ningrum and Herdiansyah (2018) conducted a study on "Environmental Awareness and Behaviour of College Students in regards to the Environment in Urban Area" in which they analysed the environmental awareness of college students, report their environmental behaviour, and analyse the correlation of some factors towards environmental awareness and behaviour in a sample of 150 college students in one university in Jakarta. Quantitative methods were used for this research. For this purpose, a research instrument in the form of questionnaire were designed and tested on college students. Data was processed by Spearman test with the help of SPSS. 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

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. Data were collected using campus sustainability questionnaire. Students from a university in the south-eastern part of Texas in the United States were selected and asked to participate in the study voluntarily by answering a self-report questionnaire. 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 e-waste 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.

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

Türkoglu (2019) conducted a qualitative study to determine "Opinions of Preschool Teachers and Pre-Service Teachers on Environmental Education and Environmental Awareness for Sustainable Development in the Preschool Period". The phenomenology approach, which focuses on individuals' own experiences and the meaning of a phenomenon, was used in this direction. The study group of the research consisted of 68 preschool teachers and 72 pre-service preschool teachers in Turkey. In the study, a semi-structured interview form consisting of open-ended questions was used as a data collection tool. The content analysis technique was used in the analysis of the data obtained from the interview form.

According to the research results, it can be said that-

1. Pre-service teachers have more theoretical knowledge than teachers and teachers have more practical knowledge than pre-service teachers. This can be explained by the fact that the knowledge that pre-service teachers obtain at university is quite new, they spend more limited time with children within the scope of applied courses, teachers communicate much more with children every day and they are more distant from theoretical knowledge.
2. Teachers and pre-service teachers are sensitive towards environmental problems, interested in environmental education, willing and open to development.

Shafiei and Maleksaedi (2020) in their study "Pro-environmental behaviour of University Students: Application of protection Motivation Theory" examined the pro-environmentally related behaviour in which they used the protection motivation theory as a framework for explaining pro-environmental behaviour of a sample of 310 Iranian students. Analysis indicated that the protection motivation theory constructs along with environmental attitude are able for explaining a significant portion of the variance in pro-environmental behaviour. 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.

2.2.0 Studies done within India:

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". She used a self-constructed questionnaire and observation and informal talks to gather data for her study. Findings reveal that though the attitude was favorable 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.

Sengupta et al. (2009) conducted a study on "Effect of Sight and Gender on Environmental Awareness and Pro-Environmental behavior amongst School Students" based on quasi-experimental approach seeking to make a comparative analysis of environmental awareness and pro-environmental behavior between sighted and visually impaired students belonging to secondary stage of education in the state of West Bengal, India. A self-constructed standardized Likert type questionnaire was used. Statistical analysis found that two groups did not differ in respect of environmental awareness and pro environmental behavior.

Kaur and Kaur (2009) in their paper "Environmental Awareness of Secondary and Senior Secondary Students" done a survey of 600 secondary and senior secondary school students in the city center and villages of Patiala district in which they found that 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.

Mondal et al. (2009) in their study "Achievement in Environmental Education in relation to Attitude, Cognitive style and Ethics" analyzed the achievement of class VIII students in Environmental Education in relation to attitude, cognitive style and ethics. They developed a questionnaire to test the achievement level in environmental education. 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.

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 behavior among adolescents. The data were collected from a sample of 150 IX and X grade adolescents by using environmental responsibility assessment inventory and consciousness about pollution scale, developed by Dr.Sandhya Gihar, Kukreti & Shah. Thirty students were selected as sub sample for intervention. The study has revealed that-

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

Bareh (2010) conducted a study on the "Environmental awareness amongst 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.

Mehra and Kaur (2010) conducted a study on "Participatory Learning and Action for Environmental Education" to compare the effect of experiential learning strategy and traditional learning method on enhancement of environmental awareness of 120 fourth graders with internal and external locus of control. The obtained data was analysed with the help of three-way analysis of variance. The major findings of the study were:

1. Students when exposed to experiential learning strategy yielded better mean gain on environmental awareness scores as compared to the traditional learning method.
2. Students with internal locus of control yielded better mean gain on environmental awareness scores than the students with external locus of control.
3. The students performed better at comprehension level of objectives than at knowledge level of objectives with regard to mean gain on environmental awareness scores.

Bajwa and Goyal (2011) studied the "Responsible Environmental Behavior 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 Behavior and Locus of Control. Further it was found that Internal Locus of Control group students have better responsible environmental behavior and developed more civic action, educational action, financial action,

legal action, physical action, and persuasive action as compared to External Locus of Control group students.

2. It was also found that there exists significant relationship between Responsible Environmental Behavior and Achievement Motivation.
3. It was found that High Achievement Motivation group students have better Responsible Environmental Behavior and developed more Civic action, Educational action, financial action, Legal action, Physical action, 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" to understand the level of awareness, knowledge and attitude of student teachers towards climate change. Descriptive survey method was used to carry out the research study by taking sample from B.Ed. colleges of Mumbai and Navi-Mumbai region. 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.

Astalin (2011) has conducted a study on "A Study of Environmental Awareness among Higher Secondary Students and Some Educational Factors Affecting it" to find the environmental awareness among higher secondary students and some educational factors affecting it. Total 608 students were selected from different board by cluster random sampling technique having 280 male and 328

female students. For collecting data the tool "Paryavaran Jagrukata Prashnavali" constructed by investigator was used. Post Hoc Tests, F-test and t- ratio test had been used for analysis of data. Main findings of this study are-

1. The students of 11^{th} and 12^{th} 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

Alexander (2012) had conducted an action research on "Environmental Education for Sustainable Development in Selected Schools of Puducherry and Cuddalore regions, India" covering Puducherry and Cuddalore regions to foster the acquisition and transfer of knowledge, skills and attributes concerning the environment and sustainable development at the local level through the implementation of the specially prepared EESD (Environmental Education for Sustainable Development) modules to monitor their efficacy in selected schools. Statistical analysis of the pre-test/post-test results have shown that there was a significant increase in students' knowledge, skills, attitudes and behaviors concerning environment and sustainable development after employing active EESD teaching-learning approach.

Mehra and Kaur (2012) in their study "Participatory Learning and Action for Environmental Education" studied the effect of outdoor environmental education program for enhancing responsible environmental behavior among fifth grade students of high, average and low intelligence among one hundred twenty fifth grade

students belonged to two schools of Gurdaspur. The data were analyzed with the help of 2-way Analysis of Variance. The major findings of the study were-

1. Students taught environmental education by the outdoor environmental education program exhibited better mean gains on responsible environmental behavior and its dimensions as compared to students of control group who were taught environmental education by traditional method of instruction.
2. Students with high, average and low intelligence exhibited comparable mean gains on responsible environmental behavior and its dimensions, locus of control, environmental attitude, beliefs and values related to the environment, environmental sensitivity, personal responsibility, environmental action strategies, and intention to act.
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.

Sudhir (2013) conducted a study entitled “Participatory Learning and Action for Environmental Education” to enhance participatory learning and action for Environmental Education taking sample of 500 students from 30 secondary schools; and 200 secondary school teachers among 30 secondary schools of Dindigul district of Tamil Nadu. Participatory learning and action approach is followed and an Environmental Awareness Scale was developed and standardized by the investigator himself. An environment survey has also been conducted for the purpose of the study. The result of the study reveals that-

1. Schools in Dindigul district of Tamil Nadu were not found environmentally safe. Participatory intervention program like tree plantation, constructing soak-pits for waste water management, cleanliness drive have been taken up very rarely in secondary schools.
2. Massive tree plantation program has been carried out in schools occasionally, but the continuous nurturing of the plants has not been taken up.
3. The study revealed that 96.8 per cent of the students consider environment as the surroundings of human beings including natural resources.

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

Das (2013) conducted a research entitled “A Study on the Environmental Awareness of Primary School Students of Palasbari Town” where a comparison of the level of environmental awareness among primary school girls and boys and among male and female primary schools teachers of Palasbari town was made. In this study, normative- Survey method was used. A self-developed questionnaire was used 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.

Sivamoorthy et al. (2013) have conducted a study on "Environmental Awareness and Practices among College Students" to measure the level of environmental awareness and habitual practices towards environment among the under graduate regular students with special reference to Arts and Science colleges in Dingidul district, Tamil Nadu. The study describes the environmental awareness and environmental practices among the college student. It also provides brief description of the various material practices among the students towards environment. The researchers started their research work to find out answers for questions whether the college students are aware of environmental issues or not. Eventually the researchers came up with answers with support of primary data collected from the respondents. It 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.

Sampath and Sundaramoorthy (2014) in their paper "Knowledge of Teachers and Students on Environmental Concerns from Elementary Eco-schools in Cuddalore District of Tamil Nadu State" studied the Knowledge of 110 elementary teachers and 156 students on environmental concerns from 30 elementary Eco schools in Cuddalore district of Tamil Nadu State from August 2006 to July 2007. A test was developed separately for teachers and students with questions under five dimensions namely biology, ecology, water resources, pollution and health & hygiene. The grand mean knowledge score of teachers recorded before interventions was 37.74 per cent

and it increased considerably to 72.43 per cent after interventions. The overall mean score of teachers registered in the said five dimensions before interventions was 60.23 per cent, 63.5 per cent, 58.78 per cent, 65.70 per cent and 64.89 per cent, respectively. After interventions, the overall mean scores registered correspondingly for the said dimensions were 92.18 per cent, 89.14 per cent, 84.31 per cent, 87.12 per cent and 86.83 per cent. The grand mean knowledge score of students before interventions was 37.74 and, after interventions, it increased to 72.43 per cent. The overall mean score of the students for the said five dimensions before interventions, respectively was 37.11 per cent, 44.79 per cent, 33.20 per cent, 27.84 per cent and 39.77 per cent and the overall mean scores after interventions were 74.35 per cent, 77.28 per cent, 70.79 per cent, 66.58 per cent and 72.43 per cent. The considerable increase in the knowledge of both the teachers and students on environmental concerns was because of the introduction of the concept eco-school and by implementing various interventions in the eco-schools.

Sahu et al. (2015) did a study on "Environmental awareness among undergraduate students in rural area" to know about the attitude and awareness of college going undergraduate students towards the environment. The study was conducted at Govt. colleges of rural areas. Three colleges, Govt. College, Utai, Govt. College, Dondy Lohara and Govt. College, Dondy from Chattisgarh state were selected for the study. Govt. College, Utai is situated just in the vicinity of Durg city. Students studying in the college mostly belong to nearby small villages. Govt. College, Dondy Lohara and Govt. College, Dondy are situated in quite interior region much away from the city influence. 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 a research on "Attitude of degree and B. Ed. College Students towards Environmental Pollution" to see attitude of degree and B. Ed.

college students towards environmental pollution. Her sample consisted of 120 students of Abohar Tehsil (Punjab) Environment pollution scale by Dr. M. Rajamanickam was used to collect data. Mean, SD. SED and t ratio were used as statistical techniques. 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.

Sharma (2016) studied the "Environmental education at school level: Issues at glance" in India. Her study covers the environmental education background, status at different stages of school education and issues.

From her study she 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.

Hooda (2016) in his study titled, "A Study of Attitude and Awareness of College Students towards Environmental Pollution" carried a pilot study selecting 120 students studying in government and private colleges in Faridabad. "Environment pollution attitude scale by Dr. M. Rajamanickam and "Environmental

Awareness Ability Measures (EAAM) developed by Praveen Jha were used for the collection of data. 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.

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 study involved a sample of four hundred college students randomly selected from different colleges of Kashmir valley. Data was primarily collected using well designed questionnaire. Analysis of the data was done by first coding them then using appropriate statistical tools in SPSS version 20. The level of global environmental challenges is now beyond serious scientific dispute. 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" attempted to analyse the environmental accounting and reporting practices followed by the major industrial units of Assam. The study is mainly based on primary data collected from the selected companies under the major industry groups with help of a schedule. 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.

Qasim (2016) conducted a study on "Primary School Teachers' Attitude towards the Environment". The sample in the study consisted of 200 primary school teachers of private and government schools of rural and urban area of Allahabad district. For this study a self-constructed and validated Environmental Attitude scale has been used. There are 50 items related to 4 areas (Wild life and Forest; Health and Hygiene; Pollution and Environmental Concern) of Environment. The finding of the study revealed that-

1. Teachers teaching in primary schools have favorable 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.

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". This study provides a detailed description of the teacher's attitude towards environmental education and sustainable development. A total of 100 teachers from 30 different secondary schools were selected and administered an attitude scale consisting of 30 items having both positive and negative statements. The sample consisted of high school teachers of Kupwara district of Jammu and Kashmir State, India and after analysis of the data, 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 sample consists of 640 college students from B.A. and B.Sc. final year. The sample of 640 colleges' students was selected through random sampling technique from the eight college of Kurukshetra University Kurukshetra. To assess environmental ethics and environmental attitude, the investigator used Environmental Ethics Scale (EES) and Environmental Attitude Scale (EAS) developed by Haseen Taj (2001). The data was analyzed by using Karl Pearson's coefficient of correlation. 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 sample consisted of 200 college students of Central Kashmir. The investigator has used Environmental Awareness Ability Measures (EAAM) Scale, developed by Dr. Praveen Kumar Jha to estimate Environmental Awareness among undergraduate students. The tool comprised of fifty one items with the five components viz a) Cause of Pollution; b) Conservation of Soil, Forest, Air etc.; c) Energy conservation; d) Conservation of Human Health; e) Conservation of Wild life & Animal Husbandry. The data collected was processed for statistical analysis through Mean, Median & t-test by applying SPSS (version 20). The results of the study revealed that in the Districts Budgam and Srinagar, 66% were found to be high level,33% were found to be average level and only 1% were found to be at low level of Environmental Awareness. 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.

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". They employed descriptive correlational research design. The participants of the study were the 180 undergraduate students randomly sampled from the three college departments of CSU-Lasam. Descriptive statistics such as mean and percentage were used while inferential statistics such as independent sample t-test, one way ANOVA and Pearson r were used to analyze the data gathered from the respondents using two sets of standard survey questionnaire. 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

Gina et al. (2020) did a study on "A study of Awareness and Attitude of College Students towards Environmental Pollution" in which they investigated the environmental awareness of 200 graduate and postgraduate students of various colleges around Kothamangalam, a town in Ernakulam District, Kerala, India in order to evaluate their attitudes and behaviors related to environmental concerns. The survey had 22 questions that tested their knowledge, awareness, behavior and attitude of college students on environmental pollution. The data was statistically analyzed by IBM SPSS 20. The study enabled the students to analyze, evaluate and draw inference about issues related to environment. 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.

2.3.0 Study done within the State of Mizoram:

Lalremruati (2014) did a research in which she analyzed the environmental education in Elementary schools in Mizoram. She obtained primary data and secondary data using Environmental Awareness Scale by Dr. Haseen Taj and Observation-cum-interview schedule developed by the investigator. She 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.

Hmangaihzuali (2015) conducted a study on Environmental Ethics among secondary school students in Aizawl City, Mizoram. She used Environmental Ethics Scale developed by Dr. Haseen Taj (2001) and an opinionnaire on issues related to environmental ethics developed by investigator herself. She 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.

Lalremruati (2019) in her 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. She 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.

2.4.0 Relevance of the Present Study in Relation to Studies Reviewed

A review of these studies shows that numerous studies and researches have been done in the field of environmental knowledge or awareness, attitude and activities, behavior and practice of students. However, there was a huge gap in research as there was no study on the relationship between attitude, activities and knowledge in a single study. Yet, it is common knowledge that knowledge affects the attitude of a person and attitude in turn affects the activities of an individual. Therefore, for the purpose of finding out the relationship between these three individuals towards the environment and to fill the research gap, the present study is of paramount importance. Another glaring evidence of lack of research interest within the state of Mizoram was the time of the research study done within the state. When compared with other states within India and outside the country, it is clear that Mizoram made a very late entry.

Therefore, the present study has been conducted so as to find out the relationship between environmental knowledge, attitude and activities among college students of Mizoram. The expected outcome is a better understating of college students in the area of environmental consciousness and to suggest measures for improving the awareness, attitude and activities of college students in Mizoram if possible. There is also high expectation that the results shall yield some much needed data in the field on environmental education for further studies and also arouse the interest for further studies on this important topic.

References:

Alexander, R. (2012). *Environmental Education for Sustainable Development in Selected Schools of Puducherry and Cuddalore regions, India*. Retrieved from http://www.ncert.nic.in/departments/nie/der/publication/pdf/RAlexander.pdf

Amérigo, M, García, A & Côrtes, L. (2017). *Analysis of Environmental Attitudes and Behaviors: An exploratory study with a sample of Brazilian University Students.* Retrieved from ANALYSIS OF ENVIRONMENTAL ATTITUDES AND BEHAVIORS: AN EXPLORATORY STUDY WITH A SAMPLE OF BRAZILIAN UNIVERSITY STUDENTS (scielo.br)

Astalin, P. K. (2011). *A Study of Environmental Awareness among Higher Secondary Students and Some Educational Factors Affecting it.* Retrieved from http://zenithresearch.org.in/images/stories/pdf/2011/Nov/7_vol-1issue-7%20_%20%20%20P%20K%20ASTALIN%20Paper%20for%20ZENITH.pdf

Bajwa, S. & Goyal, S. (2011). *Responsible Environmental Behaviour of Secondary School Students in Relation to their Locus of Control and Achievement Motivation.* Indian Educational Review, Vol. 49, No.2, pp 99-116.

Bareh, W. (2010). *Environmental Awareness amongst the Class X Students at Secondary Level in Jowai Town*. M.Ed Dissertation, Department of Education, NEHU Shillong – 793022

Bhat, B. A., *et al.* (2016). *Environmental Awareness among College Students of Kashmir Valley in the State of Jammu and Kashmir and their Attitude towards Environmental Education.* International Journal of Innovative Research and Review. 2016 Vol. 4 (2) April-June, pp.20-25

Budvytyte, A. (2011) *Environmental Education at Secondary School System in Lithuania.* Retrieved from http:lup.lub.lu.se/student-papers/record/1961765/file/1961769.pdf.

Chan, K. (1996). *Environmental attitudes and behaviour of secondary school students in Hong Kong.* Retrieved from (PDF) Environmental attitudes and behaviour of secondary school students in Hong Kong (researchgate.net)

Danilo V, Rogayan, Eveyen E. D. & Nebrida. (2019). *Environmental Awareness and Practices of Science Students: Input for Ecological Management Plan.* International Electronic Journal of Environmental Education Vol.9, Issue 2, 2019, pp. 106-119

Das, H. (2013). *A Study on the Environmental Awareness of Primary School Students of Palasbari Town.* Unpublished M. Ed Dissertation. Department of Education, Gauhati University, Goinath Bordoloi Nagar, Guwahati-781014

Deka, A. (2006). *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.* Unpublished M. Ed Dissertation. Department of Education, Gauhati University, Guwahati.

Dey, B & Dey, N. (2016). *Environmental Accounting and Reporting Practices of Major Industrial Units in Assam.* Mizoram University Journal of Humanities & Social Sciences. Vol II Issue 1: pp. 145-151.

Grimmette, K. A. (2014). *The Impact of Environmental Education on Youth and their Environmental Awareness*. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1134&context=envstudtheses .

Hanneman, L. E. (2013). *The Effectiveness of Experiential Environmental Education: O'Neill Sea Odyssey Program Case Study*. Retrieved from http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=7823&context=etd_theses.

He, J. (2016). *Study of College Students' Environmental Awareness Cultivation Under the View of Ecological Civilization*. Retrieved from https://www.researchgate.net/publication/305632334_Study_of_College_Students'_Environmental_Awareness_Cultivation_Under_the_View_of_Ecological_Civilization

Heyl, M. et al. (2013). *Environmental attitudes and behaviors of college students: a case study conducted at a Chilean University*. Retrieved from Environmental attitudes and behaviors of college students: a case study conducted at a chilean university (scielo.org.co)

Hmangaihzuali, V. L. (2015). *Environmental Ethics Among Secondary School Students in Aizawl City*. An unpublished M. Phil dissertation. Department of Education, Mizoram University

Hooda, S. (2016). *A Study of Attitude and Awareness of College Students towards Environmental Pollution*. Retrieved from http://epratrust.com/articles/upload/11.Dr.%20Sehdev%20Hooda.pdf?

https://www.ripublication.com/ijeisv1n1/ijeisv5n1_08.pdf.

Kaur, R. & Kaur, M. (2009). *Environmental Awareness of Secondary and Senior Secondary Students.* Journal of All India Association for Educational Research, Vol. 21 Number 1: pp. 83-86

Kumari, C. & Awasthi, S. (2009). *Developing Environment Friendly Behaviour among Adolescents- Role of Intervention.* Indian Educational Review, Vol. 45, No.1, January 2009, pp 108-117

Lalremruati, P.C. (2014). *Environmental Education in Elementary Schools in Mizoram: An Analytical Study.* An unpublished M. Phil dissertation. Department of Education, Mizoram University

Lalremruati, P.C. (2019). *Environmental Education in Colleges of Mizoram: An analytical study.* An unpublished Ph. D thesis. Department of Education, Mizoram University

Levine, D. S. & Strube, M. J. (2012). *Environmental Attitudes, Knowledge, Intentions and Behaviors Among College Students.* Retrieved from Environmental Attitudes, Knowledge, Intentions and Behaviors Among College Students: The Journal of Social Psychology: Vol 152, No 3 (tandfonline.com)

Magulod, G. C. (2018). *Climate change awareness and environmental attitude of College students in one campus of a State University in the Philippines.* Retrieved from http://www.innspub.net/wp-content/uploads/2018/03/JBES-Vol-12-No-2-p-211-220.pdf

Mahanta, R. P. (2013). *A Study on Environmental Awareness and Environmental Concern among Gauhati University Students.* Unpublished M. Ed Dissertation. Department of Education, Gauhati University, Gauhati-14.

Mehra, V & Kaur, M.(2012). *Effectiveness of Outdoor Environmental Education Programme for Enhancing Responsible Environmental Behaviour among Fifth Grade Students.* Indian Educational Review, Vol. 50, No.1, January 2012

Mehra, V. & Kaur, J. (2010). *Participatory Learning and Action for Environmental Education.* Indian Educational Review, Vol. 47, No.2, July 2010, pp 30-44.

Mifsud, M. C. (2011). *An Investigation on the Environmental Knowledge, Attitudes and Behavior of Maltese Youth.* Retrieved from https://files.eric.ed.gov/fulltext/ED524899.pdf

Mondal, N. et al. (2009). *Achievement in Environmental Education in relation to Attitude, Cognitive style and Ethics.* School Science- A Quarterly Journal of Science Education, Vol. 47 No. 2: pp. 70-73.

Msengi, I. et al. (2019). Assessment of knowledge and awareness of "sustainability" initiatives among college students. Retrieved from https://www.rees-journal.org/articles/rees/pdf/2019/01/rees180008.pdf

Naquin, M., Cole, D., Bowers, A. & Walkwitz, E. (2016). *Environmental Health Knowledge, Attitudes and Practices of Students in Grades Four through Eight*. Retrieved from https://files.eric.ed.gov/fulltext/EJ954496.pdf

Nayak, J. (2011). *An Investigation into the Awareness, Knowledge and Attitude of Student Teachers towards Climate Change*. Indian Educational Review, Vol. 49, No.2, July 2011, pp 54-63

Ningrum, Z. B. & Herdiansyah, H. (2018). *Environmental awareness and behavior of college students in regards to the environment in urban area.* Retrieved from https://www.e3s-conferences.org/articles/e3sconf/pdf/2018/49/e3sconf_icsolca2018_10004.pdf

Oweini, A. & Houri, A. (2007). *Factors Affecting Environmental Knowledge and Attitudes among Lebanese College Students.* Retrieved from https://www.tandfonline.com/doi/full/10.1080/15330150600648945?scroll=top&needAccess=true

Rani, A & Singh,J. (2018). *A Correlational Study of Environmental Ethics and Environmental Attitude among College Students.* Retrieved from Melisew Shibabaw et al., International Journal of Research in Engineering, IT and Social Sciences, ISSN 2250-0588,Impact Factor: 6.452, Volume 08 Issue 2, February 2018, Page 20- (indusedu.org)

Rashid, S. (2018). *A Study on Environmental Awareness among College Students with special reference to Male-Female and Rural-Urban Dichotomy*. AGU International Journal of Research in Social Sciences & Humanities. 2018, Vol. No. 6, Jan-Jun, pp 643-649.

Rider, T. R. (2005). *Education, Environmental Attitudes and the Design Professions: A Master's Thesis.* An unpublished thesis presented to the Faculty of the Graduate School of Cornell University In Partial Fulfillment of the Requirements for the Degree of Master of Science. Retrieved from https://ecommons.cornell.edu/bitstream/handle/1813/2118/Rider_Thesis2.pdf;sequence=1.

Sadik, F. & Sadik. S. (2014). *A study on environmental knowledge and attitudes of teacher candidates.* Retrieved from https://pdf.sciencedirectassets.com/277811/1-s2.0-S1877042814X00108/1-s2.0-S1877042814005941/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEMn%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJIMEYCIQDYLlJFXO%2F5hlNeeAZZJf67O5geirqQVpaWPmOJmIElKwIhAPVEG43PqQHSz6bKo74C7W5rTZvDIzUj2kiczo6K0ZbNKr0DCML%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEQAxoMMDU5MDAzNTQ2ODY1IgzeAKwUAUo%2F6s16nLcqkQP1XjXN%2BJ7DclVSmAwFdbawhUGAA3aQEZR9DU98bWjFOk80ng270s3hon53vkWsU2CLvB4POwauX6nu7fkM%2BT4Ma4KqVJxpy87QqzjUDvB5x6kAPjVqC3a6RMjRkThKmyJgpi%2F60w4WcM42gVx0PvJPxaGYFGHSGo4iLFJ%2B1WNuoPIRm4kFhAXkOAVrn7yg%2FNtB%2FubM2X0FUiLCqyWXZ0E3tP5w6ERYliDJ09GGRej9ur57l6rDHxB1J4%2BzjbVPL10VlNc9bZ6WRRSYU0IEWTOkNGER449H%2FrEayyF9GPyqpB53FehRyF4KS7lxXuFMleyDrYG2G4Bcca%2FK95q6TfYrCJkVh1yBahM4BlPLX2a5aDQsaHmCiO0s0Tk%2Bu1yHOah%2FeqipZ5IJUOURhzsTRVo%2FjGyZbkNI7fmshn7ZaKpZ9IutqvtVG3%2BJlxFDVFcJ%2FyyHC9PXHQw1RtZxGedQMYOJbp84JLKRsm4jZYPuS0N17xgSIMa2B9QTJDb05Dd9UOFk5bo7kQYhDUVkVMccW%2BwboTDwtZWBBjrqAUz%2Bltus7Mr72rZk5X37XkPCHzJeC5GYy5MlMCxMYTZVnCTqWJNmnsv46rdGn9%2Fh%2BHso5qk3WV0t3IJzDWTTKxrYzrGNBGoIsx5E2SOZr9RrcJeqNJHAFQw88%2FU5t7a%2FNyJxPJlqSLdduTSXN1mKQa6HS5%2BacS7FQ16qs1zTnTPYc1aBimxYUNzUDfYsRFTTBHIFohMl0VFQNI54oIGkaPpKw%2Fhb13pt

9NgXCFwq%2B%2B%2FzoTREvWmzuOh0g%2Fi%2FYS0iq0iQtp8NeVIJR Wpgb8I804YrTeu%2BMdUmEtC5WudqMg1rrMROfjv7C5jnXA%3D%3D&X -Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20210211T174001Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYZGW5JDHA%2F20210211%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=28d0fd99e8fe2411fd058355f008d16a72e67aef81082af00d47e9e3369818e7&hash=368c1110eb48ee1df27553850808bc4f4088969794ef0e237df28beb99b05c2f&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S1877042814005941&tid=spdf-cc022d78-130e-4288-89be-96cbabca2391&sid=9630029e2e0c014b9868f4a-845c5e874acagxrqb&type=client

Sahin, H. , Kilic, I. & Erkal, S. (2013). *An Analysis of the Environmental Knowledge and Attitudes of University Students.* Retrieved from https://www.researchgate.net/publication/288212763_An_Analysis_of_the_Environmental_Knowledge_and_Attitudes_of_University_Students

Sahu, U., Roy, M., Monika & Rajkiran (2015). *Environmental awareness among undergraduate students in rural area.* IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT). Volume. 1 Issue. 4, pp 27-32

Sampath, K. & Sundaramoorthy, T. (2014). *Knowledge of Teachers and Students on Environmental Concerns from Elementary Eco-schools in Cuddalore District of Tamilnadu State*. Journal of Indian Education, Vol. No. XXXIX, Number 4, February 2014, pp 117-128.

Sarkar, M. (2011). *Secondary students' environmental attitudes: The case of environmental education in Bangladesh.* Retrieved from https://www.researchgate.net/publication/324029150_Secondary_students%27_environmental_attitudes_The_case_of_environmental_education_in_Bangladesh

Sengupta, M. et al. (2009). *Effect of Sight and Gender on Environmental Awareness and Pro-Environmental behaviour amongst School Students.* Journal of All India Association for Educational Research, Vol. 21 Number 1: pp. 60-63

Sethi, U. (2015). *Attitude of degree and B. Ed. College Students towards Environmental Pollution.* Retrieved from

Shafiei, A & Maleksaedi, H. (2020). *Pro-environmental behavior of university students: Application of protection motivation theory.* Retrieved from Pro-environmental behavior of university students: Application of protection motivation theory - ScienceDirect

Shair, B. & Akhtar, R. (2012). *Comparative Study of Environmental Education in Adolescents and Higher Education Students*. Journal of Indian Education, Vol. No. XXXVIII, Number 2, August 2012, pp 113-120

Sharma, K. (2009). *Environmental Education at School Level: Issues at glance.* Journal of Indian Education, Volume XXXV Number 3: pp. 111-119

Sivamoorthy, M., Nalini, R. & Kumar, C. S. (2013) *Environmental Awareness and Practices among College Students.* International Journal of Humanities and Social Science Invention. Volume 2 Issue 8 August. 2013, pp 11-15

Sudhir, M. A. (2013). *Participatory Learning and Action for Environmental Education.* Indian Educational Review, Vol. 51, No.1, January 2013, pp 120-123.

Sultana, N., Hossen, M. S. & Khatun, R. (2017). *Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh.* Retrieved from https://www.arcjournals.org/pdfs/ijres/v3-i2/5.pdf

Thomas G. L., George, G., Hassan, A. P., & Gangadharan, A. (2020). *A study of Awareness and Attitude of College Students towards Environmental Pollution.* Retrieved from http://www.plantarchives.org/SPL%20ISSUE%2020-2/363__2167-2171_.pdf

Young, J. (2009). *All Education is Environmental Education.* Retrieved from http://www.collectionscanada.gc.ca/obj/thesescanada/vol2/OKQ/TC-OKQ-1680.pdf

Ajaz Ahmad Naikoo, A. A. (2017). *Teachers Attitude towards Environmental Education and Sustainable Development: A case study of Secondary School Teachers of Kupwara District of Jammu and Kashmir State, India.* International Education & Research Journal Vol. 3 Issue 4 Apr 2017. Retrieved from http://ierj.in/journal/index.php/ierj/article/view/799

Türkoglu, B. (2019). *Opinions of Preschool Teachers and Pre-Service Teachers on Environmental Education and Environmental Awareness for Sustainable Development in the Preschool Period*. Retrieved from https://www.mdpi.com/2071-1050/11/18/4925/pdf

Zachariou, F., Eleni Tsami, E., Chalkias, C & Bersimis, S. (2017). *Teachers' Attitudes towards the Environment and Environmental Education: An Empirical Study*. International Journal of Environmental & Science Education 2017, Vol. 12, No. 7, pp. 1567-1593. Retrieved from http://www.ijese.net/makale_indir/IJESE_1924_article_59b63fb40e81e.pdf

Qasim, S. H. (2016). *Primary School Teachers' Attitude towards the Environment.* Asian Journal of Educational Research and Technology Vol 6 (4), Oct 2016, pp. 56-61. Retrieved from https://www.researchgate.net/publication/333203748_Primary_school_teachers'_attitude_towards_environment_An_empirical_study

Koprivnik, M., Maja Korban-Crnjavic, M. & Hus, V. (2016). *Primary School Teachers' Opinions on Teaching the Environmental Studies Subject Outside of the Classroom.* Retrieved from https://www.researchgate.net/publication/322454094_Primary_School_Teachers'_Opinions_on_Teaching_the_Environmental_Studies_Subject_Outside_of_the_Classroom

Yimam, A.(2016). *Teachers' Attitude towards Environmental Education and their roles in the school and nearby Community: The Case of Secondary Schools of South Wollo Zone, Amhara Regional State, Ethiopia.* International Journal of Advanced Research (2016), Volume 4, Issue 7, pp. 580-587. Retrieved from https://www.journalijar.com/uploads/687_IJAR-11003.pdf

CHAPTER – III

METHODOLOGY OF THE STUDY

CHAPTER - III

METHODOLOGY OF THE STUDY

This chapter deals with the method of the study, description of the population and sample, tools, development of tool and mode of data collection.

3.1.0 Method of Study

The present study is descriptive in nature. A mixed approach has been adopted as the method of data analysis is both qualitative and quantitative.

3.2.0 Population

The population of the study consisted of all the college students of Mizoram.

For analysing the opinion of college teachers teaching environmental studies, the population included all the college teachers of Mizoram teaching EVS subject

3.3.0 Sample

The present research study comprised of two kinds of samples so as to realize different objectives.

To study and compare environmental knowledge, attitude and activities, a sample of 629 college students studying in colleges of Mizoram affiliated to Mizoram University offering Arts and/or Commerce and/or Science were taken on the basis of Random Sampling technique. Survey Monkey app was used to collect data.

Table No 3.1

Details of Samples

1.	Number of colleges covered	27
2.	Number of male respondents	308
3.	Number of female respondents	321
	TOTAL	**629**
4.	Number of respondents from Arts stream	350
5.	Number of respondents from Science stream	153
6.	Number of respondents from Commerce stream	126
	TOTAL	**629**
7.	Number of respondents from Rural areas	303
8.	Number of respondents from Urban areas	326
	TOTAL	**629**

To study the opinion of college teachers teaching the subject of environmental studies, the researcher prepared an opinionnaire using google form. The link was sent to EVS teachers in all the colleges of Mizoram having affiliation to Mizoram University offering Arts and/or Commerce and/or Science subjects. The total number of responses received from college teachers who teach EVS in colleges of Mizoram is 49. The investigator felt that the sample college teachers would suffice the need for this present study since these 49 teachers represented all the non-professional colleges of Mizoram offering Arts and/or Commerce and/or Science subjects during the time this study was undertaken.

3.4.0 Tools and Techniques Used

For collecting primary data, the investigator used three standardized scales-

1. Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha, Professor P. G. Dept. of Psychology T. P. College, Madhipura (B. N. Mandal University, Madipura) Bihar.
2. Environmental Attitude Scale (EAS-TH) (2016) (revised) developed by Dr. (Mrs.) Haseen Taj, Professor, Department of Education, Bangalore University Bengaluru
3. Environmental Activity Scale (EAcS) (2021) developed by the investigator.
4. Opinionnaire developed by the investigator to find out the opinion of college teachers teaching EVS towards the subject.

3.4.1 Environmental Awareness Ability Measure (EAAM-J)

Environmental Awareness Ability Measure was developed by Dr. Praveen Kumar Jha in 2010. There are 51 items in the scale based on the following dimensions:

a. Causes of pollution
b. Conservation of soil forest, air etc.
c. Energy conservation
d. Conservation of human health
e. Conservation of wild-life and animal husbandry

Each agreed item carries the value of 1 mark and each disagree item of zero mark. The negative items are scored inversely. The range of the score is between 0 – 51. Three indices of reliability were determined- Split-half, K-R method and test-retest method. Two test-retest reliabilities were determined, one after an interval of three months and the other of 6 months. The details of reliabilities were shown in the following table:

Table 3.2

Reliabilities Co-efficient for EAAM-J

Reliabilities			
K-R Method	**Test-retest Method**		**Split-half Method**
N=100	Time gap of 3 months N = 50	Time gap of 6 months N = 50	N = 50
.84	.74	.71	.61

Since ten years has already passed since the publication of EAAM-J, the investigator felt the need to re-establish the reliability for the present college students of Mizoram. She therefore administered the test to 100 6th semester college students from Aizawl using a test-retest method. Pearson's Product Moment Correlation was employed and the reliability was found to be 0.51 which is average correlation.

3.4.2 Environmental Attitude Scale (EAS-TH)

Environmental Attitude Scale was developed by Dr. (Mrs.) Haseen Taj in 2001. She revised the scale in 2016 and made necessary modifications. Following the Likert's method of summated rating procedure, EAS was developed with 61 items consisting of 6 areas. The areas dealt within the scale are Attitudes towards:

I. Population explosion
II. Health and hygiene
III. Polluters
IV. Wild life
V. Forests
VI. Environmental concerns

The scale is a four-point alternative scale and has both positive and negative items. The scoring system is presented in Table 3.3

Table 3.3

Scoring System for EAS-TH

Sr. No	Type of items	Strongly Agree	Agree	Disagree	Strongly Disagree
I	Positive	4	3	2	1
II	Negative	1	2	3	4

The minimum and maximum possible score range is 61 to 244. Negative items are marked by a dot. Content validity and concurrent validity was established. Reliability of the scale was estimated by test-retest reliability co-efficient with a time gap of one month on a sample of 150. The details of reliability co-efficient are presented in Table 3.4

Table 3.4

Methods, Reliability Co-efficient and Index of Reliability

Method	**N**	**Reliability**	**Index of Reliability**	**Level of Significance**
Test-retest (30 Days)	**150**	**0.6**	**0.77**	**0.01**

Since four years has already passed since the publication of EAAM-J, the investigator felt the need to re-establish the reliability for the present college students of Mizoram. She therefore administered the test to 100 6th semester college students from Aizawl using a test-retest method. Pearson's Product Moment Correlation was employed and the reliability was found to be 0.7 which is above average correlation.

3.4.3 Environmental Activity Scale (EAcS)

Environmental Activity Scale was developed by the investigator which consists of 31 questions in a three point Likert-type scale under three dimensions- Family Activities, Institutional Activities and Social Activities. Each item has three

alternative responses- ‘always’, ‘sometimes’ and ‘never’. In a positive item, the point for ‘always’ is 2, ‘sometimes’ is 1, ‘never’ is 0 and vice versa in a negative item. The negative items are given star-mark. The maximum possible score is 62 and minimum possible score is 0. Thus the range of the scale is 0 – 62.

Content and item validity was established and reliability of the scale was established using test retest method with a time gap of 14 days on a sample of 50 college students and 26 secondary school students. Cronbach’s Alpha was also employed to test the internal consistency of the scale on a sample of 100 college students. The reliability indices is shown in Table 3.5

Table 3.5

Reliability Indices for EAcS

RELIABILITIES		
Test-Retest	Test-Retest	Cronbach’s Alpha
N=50 (college students)	N=26 (secondary school students)	N=100
0.60	0.70	0.75

3.4.4 Opinionnaire for teachers teaching EVS in colleges of Mizoram

Opinionnaire was developed by the investigator for analyzing the opinions of college teachers teaching EVS subject in colleges of Mizoram. The opinionnaire consists of 22 statements which were divided into three dimensions i.e., opinions regarding- students, syllabus and teaching methods. Each statement has three alternative responses which are ‘agree’, ‘undecided’ and ‘disagree’. Content validity of the opinionnaire was established by 5 subject matter experts within the University.

3.5.0 Statistical Techniques used

Analysis of data was done by making use of descriptive and inferential statistics like Mean, Standard Deviation, Pearson’s Product Moment Correlation, Partial Correlation, ANOVA, t-test, Cronbach’s alpha and Discriminating Index given by Gronlund and Linn (1990). Analysis was done manually and by using Microsoft Excel 2010.

References:

Garrett, H. E. (2009). *Statistics in Psychology and Education.* Paragon International Publishers. %, Ansari Road, Daryaganj, New Delhi – 110 002

Jain, T. (2012). *Educational Measurement and Evaluation*. S. B. Nangia, APH Publishing Corporation 4435-36/7, Ansari Road, Darya Ganj New Delhi-110 002

Jha, P. (2010). *Environmental Awareness Ability Measure (EAAM-J).* National Psychlogical Corporation. 4/230 Kacheri Ghat, Agra – 282 004.

Taj, H. (2016). *Environmental Attitude Scale (EAS-TH).* H. P. Bhargava Book House. LG-1 & 2, Nirmal Heights, Agra-282 007

CHAPTER – IV

ANALYSIS AND INTERPRETATION OF DATA

CHAPTER-IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of data. The data were collected using Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha, Environmental Attitude Scale (EAS-TH) (2016) (revised) developed by Dr. (Mrs.) Haseen Taj, Environmental Activity Measuring Scale (EAMS) (2021) developed by the investigator and an opinionnaire developed by the investigator.

The findings of the study are presented in this chapter in accordance with the objectives stated in chapter 1 as follows:

Objective No. 1: To find out the environmental knowledge of college students in Mizoram.

In order to find out the environmental knowledge of college students in Mizoram, the investigator made use of Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha. Norms were already established by the author as shown in table No. 4.1

Table No. 4.1

Norms for level of environmental awareness

Level of Environmental Awareness	Range of Scores
High	37 - 51
Average	16 - 36
Low	0 - 15

Table No. 4.2

Level of environmental knowledge of college students in Mizoram

N	Mean	SD	High Environmental Knowledge	Average Environmental Knowledge	Low Environmental Knowledge
629	42.99	4.87	588 (94.48%)	37 (5.88%)	4 (0.64%)

Looking at Table No. 4.2, majority (94.48%) of college students of Mizoram had high environmental knowledge. It can be seen that 5.88% of college students fall under average category and only 0.64% of the students have low environmental knowledge. The Mean score of college students is 42.99 and Standard Deviation is 4.87. This table clearly shows that the college students of Mizoram, overall, had a high environmental knowledge.

Objective No. 2: To compare the environmental knowledge of college students in Mizoram with reference to their gender

Table No. 4.3

Comparison of environmental knowledge of college students in Mizoram with reference to their gender

Gender	N	High Environmental Knowledge	Average Environmental Knowledge	Low Environmental Knowledge
Male	308	287 (93.18%)	19 (6.17%)	2 (0.65%)
Female	321	298 (92.83%)	21 (6.54%)	2 (0.62%)

Table no. 4.3 clearly shows that both female and male college students had a high environmental knowledge during the time this study was undertaken. Among the male students, only a negligible percentage i.e., 0.65% had low environmental knowledge, 6.17 % of them had average environmental knowledge and the remaining majority, i.e. 93.18% had a high environmental knowledge. Among the female students, only negligible percentage i.e., 0.62% had low environmental knowledge, 6.54 % of them had average environmental knowledge and the remaining majority, i.e. 92.83 % had a high environmental knowledge.

Since description in terms of percentages was not considered sufficient, the researcher decided to check the statistical significance of the difference between male and female college students regarding their knowledge about the environment. For this, t-test had to be applied and a null hypothesis was stated against the hypothesis number 1 in Chapter 1 as under-

> "There is no significant difference in the knowledge of male and female college students in Mizoram towards the environment".

The calculation of t-test is shown is Table no. 4.3 (a)

Table No. 4.3 (a)

Difference in the environmental knowledge of college students in Mizoram with reference to their gender

Gender	**N**	**Mean Value**	**df**	**SD**	**Calculated t-value**	**Critical Value**		**Significance**
						0.05	**0.01**	
Male	308	43.09	627	4.61	0.46	1.96	2.59	Not Significant
Female	321	42.91		5.17				At both 0.05 and 0.01 levels of significance

Table no. 4.3 (a) shows that the t-value for the significance of difference in the knowledge of male and female college students in Mizoram towards the environment is 0.46. Since the calculated t-value is less than the critical value at both 0.05 and 0.01, it is not significant and the null hypothesis stating "There is no significant difference in the knowledge of male and female college students in

Mizoram towards the environment" has to be accepted. Although the Mean scores of male and female slightly differ, it is not statistically significant and can thus be concluded that there is no significant difference in the knowledge of male and female college students in Mizoram towards the environment.

Objective No. 3: To compare the environmental knowledge of college students in Mizoram with reference to their stream of study

Table No. 4.4

Comparison of environmental knowledge of college students in Mizoram with reference to their stream of study

Stream of Study	**N**	**High Environmental Knowledge**	**Average Environmental Knowledge**	**Low Environmental Knowledge**
Arts	350	324 (92.57 %)	24 (6.86%)	2 (0.57 %)
Science	153	147 (96.08%)	5 (3.27 %)	1 (0.65 %)
Commerce	126	109 (86.51 %)	16 (12.70 %)	1 (0.79 %)

Looking at table no. 4.4, it can be seen that among the three streams of study, Science students had the best environmental knowledge. 96.08 % of them had high environmental knowledge, 3.27 % had average environmental knowledge and only 0.65 % low environmental knowledge. Among the Arts students, 92.57 % had high environmental knowledge, 6.86 % had average environmental knowledge while only 0.57 % of them had low environmental knowledge. Commerce students had the least environmental knowledge in comparison with the other two streams. We can see that

86.51% of the Commerce students had high environmental knowledge, 12.70 % had average environmental knowledge and 0.79 % had low environmental knowledge.

In order to test the statistical significance, a null hypothesis was stated against the hypothesis number 2 in Chapter 1 as under-

"There is no significant difference in the knowledge of Arts, Science and Commerce college students in Mizoram towards the environment".

To test this null hypothesis, ANOVA was employed and the results are shown in table no. 4.4 (a):

Table No. 4.4 (a)

Difference in the environmental knowledge of college students in Mizoram with reference to their stream of study

Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	515.66	2	257.83	10.95	0.00002	3.01
Within Groups	14742.56	626	23.55			
Total	15258.22	628				

Looking at table no. 4.4 (a) 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 knowledge 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.

In order to compare arts and science students with regards to their environmental knowledge, a null hypothesis "There is no significant difference in the knowledge of Arts and Science students of colleges of Mizoram towards the environment" was stated. The results of the t-tests are reflected in table no. 4.4(b):

Table No. 4.4 (b)

Difference in the knowledge of Arts and Science students of colleges of Mizoram towards environment

Stream	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Arts	350	42.14	501	4.56	4.63	1.96	2.59	Significant at both 0.05 and 0.01 levels of significance
Science	153	44.26		4.79				

Table No. 4.4 (b) 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 knowledge of Arts and Science students of colleges of Mizoram towards environment. Therefore, the null hypothesis stating "There is no significant difference in the knowledge of Arts and Science students of colleges of Mizoram towards the environment" has to be rejected. A look at the Mean value of Arts and Science students show that Science students showed a higher Mean value at 44.26 when compared with Arts students who had a Mean value of 42.14. Therefore it can be concluded that Science students had a better knowledge of the environment 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 knowledge, a null hypothesis "There is no significant difference in the knowledge of Arts and Commerce students of colleges of Mizoram towards the environment" was stated. To test the null hypothesis, a t-test was performed and the results are shown in table no.4.4 (c)

Table No. 4.4 (c)

Difference in the knowledge of Arts and Commerce students of colleges of Mizoram towards environment

Stream	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Arts	350	42.14	474	4.56	0.05	1.96	2.59	Not Significant at both 0.05 and 0.01 levels of significance
Commerce	126	42.17		5.65				

Table No. 4.4 (c) shows that the calculated t-value for the significance of difference between Arts and Commerce students is 0.05 which is very much less than the critical value at 0.05 and 0.01 levels of significance. This means that it is not significant and the null hypothesis stating "There is no significant in the knowledge of Arts and Commerce students of colleges of Mizoram towards the environment" cannot be rejected. Looking at the Mean value of both Arts and Commerce students, which is 42.14 and 42.17 respectively, the difference is only 0.03 which is statistically not significant. It can thus be concluded that there is no significant difference in the knowledge of Arts and Commerce students of colleges of Mizoram towards the environment.

In order to compare Science and Commerce students with regards to their environmental knowledge, a null hypothesis "There is no significant in the knowledge of Science and Commerce students of colleges of Mizoram towards the environment" was stated. To test the null hypothesis, a t-test was performed and the results are shown in table no.4.4 (d).

Table No. 4.4 (d)

Difference in the knowledge of Science and Commerce students of colleges of Mizoram towards environment

Stream	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Science	153	44.26	277	4.79	3.29	1.97	2.59	Significant at both 0.05 and 0.01 levels of significance
Commerce	126	42.17		5.65				

Table No. 4.4 (d) shows that the calculated t-value for the significance of difference between Science and Commerce students is 3.29 which is more than the critical values at both 0.05 and 0.01 levels. This means that it is significant and the null hypothesis stating “There is no significant difference in the knowledge of Science and Commerce students of colleges of Mizoram towards the environment” cannot be accepted. A look at the Mean value of both Science and Commerce students shows that Science students showed a higher Mean value of 44.26 in comparison with Commerce students who had a Mean value of 42.17. It can thus be concluded that there is significant difference in the knowledge of Science and Commerce students of colleges of Mizoram towards environment where Science students had better environmental knowledge in comparison with Commerce students.

Objective No. 4: To compare the environmental knowledge of college students in Mizoram with reference to their locale

Table No. 4.5

Comparison of environmental knowledge of college students in Mizoram with reference to their locale

Locale	N	High Environmental Knowledge	Average Environmental Knowledge	Low Environmental Knowledge
Rural	303	283 (93.40 %)	18 (5.94 %)	2 (0.66 %)
Urban	326	306 (93.87 %)	19 (5.83 %)	1 (0.31 %)

Looking at table no. 4.5, while students coming from urban and rural areas had almost the same level of environmental knowledge, it can be seen that the level of environmental knowledge of urban students is slightly higher. We can see that 93.87 % of the students coming from urban areas had high environmental knowledge, 5.83 % had average environmental knowledge and only 0.31 % had low environmental knowledge while 93.40 % of students coming from rural areas had high environmental knowledge, 5.94 % had average environmental knowledge and only 0.66 % had low environmental knowledge.

In order to compare college students coming from rural and urban areas with regards to their environmental knowledge, a null hypothesis “There is no significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment” was stated against the hypothesis number 3 in Chapter 1. To test the null hypothesis, a t-test was performed and the results are shown in table no 4.5 (a).

Table No. 4.5 (a)

t-test for difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment

Locale	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Rural	303	42.87	627	4.88	1	1.96	2.59	Not significant at both 0.05 and 0.01 levels of significance
Urban	326	43.24		4.45				

Table No. 4.5 (a) shows that the calculated t-value for the significance of difference between students coming from Rural and Urban areas is 1 which is less than the critical value at 0.05 and 0.01. This means that it is not significant and the null hypothesis stating "There is no significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment" cannot be rejected. This means that although there is a difference of 0.37 between the Mean scores of students coming from Rural and Urban areas, it is not statistically significant and can thus be concluded that there is no significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment.

Objective No. 5: To assess the environmental attitude of college students in Mizoram.

In order to find out the environmental attitude of college students, the investigator made use of Environmental Attitude Scale (EAS-TH) (2016) developed by Dr. (Mrs.)Haseen Taj. Norms had already been prepared by the author and is shown in table no. 4.6, table no. 4.7 and table no. 4.8.

Table No. 4.6

(Educational status) Ranges of Raw Scores for Stanine Grades

Stanine Grades	**Undergraduate courses Students**
IX	200 – 217
VIII	182 – 199
VII	164 – 181
VI	146 – 163
V	128 – 145
IV	110 – 127
III	92 – 109
II	74 – 91
I	61 - 73

Table no. 4.6 shows the ranges of scores for stanine grades for undergraduate students. The range of scores for Stanine Grade I to IX is 61-217.

Table No. 4.7

(Male and Female) Ranges of Raw Scores for Stanine Grades

Stanine Grade	**Male**	**Female**
IX	202 – 219	211 – 228
VIII	184 – 201	193 – 210
VII	166 – 183	175 – 192
VI	148 – 165	157 – 174
V	130 – 147	139 – 156
IV	112 – 129	121 – 138

III	94 – 111	103 – 120
II	76 – 93	85 – 102
1	61 – 75	61 – 84

Table no. 4.7 shows that the ranges of scores for male and female. While the range of male scores for the nine stanine grades is 61-219, the range of scores for female is 61-228.

Table No. 4.8

Interpretation of the Level of Environmental Attitude

Sr. No.	**Stanine Grade Range**	**Grade**	**Level of Environmental Attitude**
1.	**IX**	**A**	**Extremely High**
2.	VIII	B	High
3.	VII	C	Above Average
4.	**IV, V, VI**	**D**	**Average**
5.	III	E	Below Average
6.	II	F	Low
7.	**I**	**G**	**Extremely Low**

Table no. 4.8 shows the interpretation of the stanine grades. The nine stanines had been divided into 7 grades-A, B, C, D, E, F and G. These grades are interpreted as extremely high, high, above average, average, below average, low and extremely low respectively.

Table No. 4.9

Level of environmental Attitude of College Students in Mizoram

Range of Scores for Undergraduate students	**No. of students (N=629)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	60	9.54 %	IX	**Extremely High**
182 – 199	196	31.16%	VIII	High
164 – 181	275	43.72%	VII	Above Average
127 – 163	91	14.47%	IV, V, VI	**Average**
92 – 109	2	0.32%	III	Below Average
74 – 91	0	0	II	Low
61 - 73	5	0.79	I	**Extremely Low**

By combining the norms and stanine grades given in table no. 4.6 and table no. 4.8, we have table no. 4.9. This table shows the level of environmental attitude of college students in Mizoram. We can see that a highest percentage i.e. 43.72% of the students had above average environmental attitude 31.16% had high environmental attitude, 14.47% had average environmental attitude, 9.54% had extremely high environmental attitude; 0.79% had extremely low environmental attitude and 0.30% had below average environmental attitude. This table clearly shows that college students in Mizoram had sound attitude towards the environment in general. The Mean Score of college students in their attitude towards environment is 177.95 and Standard Deviation is 20.85.

Objective No. 6: To compare the environmental attitude of college students in Mizoram with reference to their gender.

In order to compare the environmental attitude of college students in Mizoram with reference to their gender, the norms and stanine grades given in table no. 4.7 and table no. 4.8 were referred to and the following tables were constructed-

Table No. 4.10

Environmental attitude of male college students in Mizoram

Range of Scores for male	**No. of students (N= 308)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
202 – 219	25	8.12%	IX	**Extremely High**
184 – 201	79	25.65%	VIII	High
166 – 183	137	44.48%	VII	Above Average
112 – 165	64	20.78%	IV, V, VI	**Average**
94 – 111	1	0.32%	III	Below Average
76 – 93	0	0%	II	Low
61 – 75	2	0.65%	I	**Extremely Low**

Looking at table 4.10, it can be seen that a greater percentage of male college students, i.e. 44.48% had above average environmental attitude, 25.65% had high environmental attitude, 20.78% had average environmental attitude and 8.12% of them had extremely high environmental attitude. It can also be seen that 0.32% of male college students had below average environmental attitude and 0.65% had extremely low environmental attitude.

Table No. 4.10 (a)

Environmental attitude of female college students in Mizoram

Range of Scores for female	**No. of students (N=321)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
211 – 228	7	2.18%	IX	**Extremely High**
193 – 210	50	15.58%	VIII	High
175 – 192	132	41.12%	VII	Above Average
121 – 174	128	39.88%	IV, V, VI	**Average**

103 – 120	0	0%	III	Below Average
85 – 102	1	0.31%	II	Low
61 – 84	3	0.93%	I	**Extremely Low**

Table no. 4.10 (a) shows that majority of female college students i.e. 41.12% had above average environmental attitude, 39.88% had average environmental attitude, 15.58% had high environmental attitude and 2.18% had extremely high environmental attitude. It can also be seen that 0.93% of female students had extremely low environmental attitude and 0.31% had low environmental attitude during the time this research was undertaken.

Table No. 4.10 (b)

Comparison of the environmental attitude of college students in Mizoram with reference to their gender

Percentage of male students	**Percentage of female students**	**Stanine**	**Level of Environmental Attitude**
8.12%	2.18%	IX	**Extremely High**
25.65%	15.58%	VIII	High
44.48%	41.12%	VII	Above Average
20.78%	39.88%	IV, V, VI	**Average**
0.32%	0%	III	Below Average
0%	0.31%	II	Low
0.65%	0.93%	I	**Extremely Low**

Looking at table no. 4.10 (b), we can see that male students had better attitude towards the environment in comparison with the female students. While 8.12% of male students had extremely high environmental attitude, 2.18% of female students

had extremely high environmental attitude. It can be seen that 25.65% of male students had high environmental attitude while 15.58% of female students had high environmental attitude. A larger section of both the genders, i.e. 44.48% male and 41.12% female students had above average level of environmental attitude. Another 39.88% of female students had average level of environmental attitude while 20.78% of male students had average level of environmental attitude. While 0.32% of male students had below average environmental attitude, no female students were under this category and while 0.31% of female students had low environmental attitude, no male students were under this category. The remaining 0.65% of male students and 0.93% of female students had extremely low environmental attitude. This table shows that although both the genders had sound environmental attitude, male students were better in terms of environmental attitude than female students.

Since description in terms of percentages was not considered sufficient, the researcher decided to check the statistical significance of the difference between male and female college students regarding their attitude about the environment. For this, t-test had to be applied and a null hypothesis was stated against the hypothesis number 4 in Chapter 1 as under-

"There is no significant difference in the attitude of male and female college students in Mizoram towards the environment".

The calculation of t-test for the stated null hypothesis is shown in table no. 4.10 (c)

Table No. 4.10 (c)

Difference in the environmental attitude of college students in Mizoram with reference to their gender

Gender	**N**	**Mean Value**	**df**	**SD**	**Calculated t-value**	**Critical Value**		**Significance**
						0.05	**0.01**	
Male	308	177.54	627	20.76	0.41	1.96	2.59	Not Significant at both 0.05 and 0.01 levels of significance
Female	321	178.22		21.03				

Table no. 4.10 (c) shows that the t-value for the significance of difference in the attitude of male and female college students in Mizoram towards the environment is 0.41. Since the calculated t-value is less than the critical value at both 0.05 and 0.01 levels of significance, it is not significant and the null hypothesis stating "There is no significant difference in the attitude of male and female college students in Mizoram towards the environment" cannot be rejected. A look at the Mean value of male and female students shows that female students had slightly better environmental attitude however the difference is not statistically significant and can thus be concluded that there is no significant difference in the attitude of male and female college students in Mizoram towards the environment.

Objective No. 7: To compare the environmental attitude of college students in Mizoram with reference to their stream of study

In order to compare the environmental attitude of college students in Mizoram with reference to their stream of study, the norms and stanine grades given in table no. 4.6 and table no. 4.8 were referred to and the following tables were constructed.

Table No. 4.11

Environmental attitude of college students from Arts stream in Mizoram

Range of Scores for Arts students	**No. of students (N=350)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	26	7.43%	IX	**Extremely High**
182 – 199	87	24.86%	VIII	High
164 – 181	174	49.71%	VII	Above Average
127 – 163	61	17.43%	IV, V, VI	**Average**
92 – 109	0	0	III	Below Average
74 – 91	0	0	II	Low
61 - 73	2	0.57%	I	**Extremely Low**

Table No. 4.11 shows that 49.71% of Arts students had above average environmental attitude; 24.86% had high environmental attitude; 17.43% had average environmental attitude; 7.43% had extremely high environmental attitude while 0.57% of them had extremely low environmental attitude during the time this research was undertaken.

Table No. 4.11 (a)

Environmental attitude of college students from Science stream in Mizoram

Range of Scores for Science students	**No. of students (N=153)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	19	12.42%	IX	**Extremely High**
182 – 199	63	41.18%	VIII	High
164 – 181	61	39.87%	VII	Above Average
127 – 163	7	4.58%	IV, V, VI	**Average**
92 – 109	1	0.65%	III	Below Average
74 – 91	0	0	II	Low
61 - 73	2	1.31%	I	**Extremely Low**

Table No. 4.11 (a) reveals that a large section of Science college students, i.e., 41.18% had high environmental attitude; 39.87% had above average environmental attitude; 12.42% had extremely high environmental attitude; 4,58% had average environmental attitude and the remaining 0.65% and 1.31%of the college students had below average and extremely low environmental attitude respectively.

Table No. 4.11 (b)

Environmental attitude of college students from Commerce stream in Mizoram

Range of Scores for Commerce students	**No. of students (N=126)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	10	7.94%	IX	**Extremely High**
182 – 199	51	40.48%	VIII	High
164 – 181	47	37.30%	VII	Above Average
127 – 163	18	14.29%	IV, V, VI	**Average**
92 – 109	0	0%	III	Below Average
74 – 91	0	0%	II	Low
61 - 73	0	0%	I	**Extremely Low**

Table No. 4.11 (b) shows that 40.48% of Commerce students had high environmental attitude, 37.30% had above average environmental attitude, 14.29% had average environmental attitude while 7.49% had extremely high environmental attitude. There were no students whose score had to be classified as below average, low or extremely low environmental attitude during the time this research was undertaken. This fact in itself already indicates that college students of Mizoram had a healthy attitude towards the environment.

Table No. 4.11 (c)

Comparison of the environmental attitude of college students in Mizoram with reference to their stream of study

Percentage of Arts students	**Percentage of Science students**	**Percentage of Commerce students**	**Stanine**	**Level of Environmental Attitude**
7.43%	12.42%	7.94%	IX	**Extremely High**
24.86%	41.18%	40.48%	VIII	High
49.71%	39.87%	37.30%	VII	Above Average

17.43%	4.58%	14.29%	IV, V, VI	**Average**
0	0.65%	0%	III	Below Average
0	0	0%	II	Low
0.57%	1.31%	0%	I	**Extremely Low**

Table No 4.11 (c) shows that Science students had the best attitude towards environment in comparison with Arts and Commerce students. It can be seen that 12.42% of Science students had extremely high environmental attitude while 7.43% of Arts students and 7.94% of Commerce students had extremely high environmental attitude. While 24.86% of Arts students had high environmental attitude, 41.18% of science students and 40.48% of Commerce students had high environmental attitude. Majority of Arts students i.e. 49.71% had above average environmental attitude while 39.87% of Science Students and 37.30% of Commerce students had above average environmental attitude. While 17.43% of Arts students had average environmental attitude, 14.29% of Commerce students and 4.58% of Science students had average environmental attitude. Among the Science students, 0.65% of them had below average environmental attitude while there were no arts students whose score had to be classified under below average environmental attitude. The remaining 1.31% of Science students and 0.57% of Arts students had extremely low environmental attitude. There were no Commerce students whose score had to be classified under the categories of 'below average', 'low' and 'extremely low'.

In order to test the statistical significance, a null hypothesis was stated against the hypothesis number 5 in Chapter 1 as under-

"There is no significant difference in the attitude of Arts, Science and Commerce college students in Mizoram towards the environment".

To test this null hypothesis, ANOVA was employed and the results are shown in table no. 4.11 (d)

Table No. 4.11 (d)

Difference in the environmental attitude of college students in Mizoram with reference to their stream of study

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2916.27	2	1458.14	3.97	0.02	3.01
Within Groups	230159.13	626	367.67			
Total	233075.41	628				

Table no 4.11 (d) shows the analysis of variance with regards to the environmental attitude of the three streams of study. Since the calculated F value is more than the critical F value, there is significant difference between the three streams of study. Therefore a further statistical analysis is required to find out where the difference is. Each variable has to be compared with another variable again using t-test.

To find out the difference between Arts and Science students, a null hypothesis "There is no significant difference in the attitude of Arts and Science college students in Mizoram towards the environment" was stated. The results of the t-test are reflected in table no. 4.11 (e)

Table No. 4.11 (e)

Difference in the attitude of Arts and Science college students in Mizoram towards environment

Stream	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Arts	350	176.38	501	19.16	2.21	1.96	2.59	Significant at 0.05 Not Significant at 0.01
Science	153	180.85		21.59				

Table no. 4.11 (e) shows that the t-value of Arts and Science college students of Mizoram is 2.21 which is more than the critical value at 0.05. This means that there is a significant difference in the attitude of Arts and Science students of Mizoram towards the environment at 0.05 level.

The calculated t-value was not significant at 0.01 level and upon checking at 0.05 level it was found to be significant. Thus, the null hypothesis stating "There is no significant difference in the attitude of Arts and Science college students in Mizoram towards the environment" was rejected. Science students had better environmental attitude with a Mean score of 180.85 in comparison with Commerce students who had a Mean score of 176.38. It can be concluded that there is a significant difference in the attitude of Arts and Science college students in Mizoram towards the environment.

In order to compare Arts and Commerce students with regards to their environmental knowledge, a null hypothesis "There is no significant in the attitude of Arts and Commerce students of colleges of Mizoram towards the environment" was stated. To test the null hypothesis, a t-test was performed and the results are shown in table no.4.11 (f)

Table No. 4.11 (f)

Difference in the attitude of Arts and Commerce college students in Mizoram towards environment

Stream	**N**	**Mean Value**	**df**	**SD**	**Calculated t-value**	**Critical Value**		**Significance**
						0.05	**0.01**	
Arts	350	176.38	474	19.16	2.39	1.96	2.59	Significant at 0.05
Commerce	126	180.53		15.78				Not Significant at 0.01

Table no. 4.11 (f) shows that the t-value of Arts and Commerce college students of Mizoram is 2.39. The calculated t-value is not significant at 0.01 level. However, upon further checking at 0.05 level, it is significant which means 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 and therefore the null hypothesis stating "There is no significant difference in the attitude of Arts and Commerce college students in Mizoram towards the environment" is rejected. A look at the Mean value of Arts and Commerce students show that Commerce students showed a higher Mean value at 180.53 when compared with Arts students who had a Mean value of 176.38. Therefore it can be concluded that Commerce students had a better attitude towards environment when compared with Arts students during the time this research was undertaken.

In order to compare Science and Commerce students with regards to their environmental knowledge, a null hypothesis "There is no significant in the attitude of Science and Commerce students of colleges of Mizoram towards the environment" was stated. To test the null hypothesis, a t-test was performed and the results are shown in table no. 4.11 (g).

Table No. 4.11 (g)

Difference in the attitude of Science and Commerce college students in Mizoram towards environment

Stream	**N**	**Mean Value**	**df**	**SD**	**Calculated t-value**	**Critical Value**		**Significance**
						0.05	**0.01**	
Science	153	180.85	277	21.59	0.14	1.97	2.59	Not Significant at both 0.05 and 0.01 levels of significance
Commerce	126	180.53		15.78				

Table no. 4.11 (g) shows that the t-value of Arts and Commerce college students of Mizoram is 0.14 which is less than the critical value at 0.05 and 0.01 level. This means that it is not significant at both 0.05 and 0.01 levels. Therefore the null hypothesis stating "There is no significant difference in the attitude of Science and Commerce college students in Mizoram towards the environment" cannot be rejected. The Mean score of Science students is 180.85 which is only 0.32 higher than the Mean score of Commerce students which is 180.53. It can be concluded that

the difference is statistically not significant and thus there is no significant difference in the attitude of Science and Commerce college students in Mizoram towards the environment.

Objective No. 8: To compare the environmental attitude of college students in Mizoram with reference to their locale.

In order to compare the environmental attitude of college students in Mizoram with reference to their locale, the norms and stanine grades given in table no. 4.6 and table no. 4.8 were referred to and the following tables were constructed.

Table No. 4.12

Environmental attitude of college students coming from rural areas in Mizoram

Range of Scores for Rural students	**No. of students (N=303)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	24	7.92%	IX	**Extremely High**
182 – 199	86	28.38%	VIII	High
164 – 181	142	46.86%	VII	Above Average
127 – 163	49	16.17%	IV, V, VI	**Average**
92 – 109	1	0.33%	III	Below Average
74 – 91	0	0%	II	Low
61 - 73	1	0.33%	I	**Extremely Low**

Looking at table no. 4.12, 46.86% of college students coming from rural areas had above average environmental attitude; 28.38% had high environmental attitude; 16.17% had average environmental attitude; 7.92% had extremely high environmental attitude and 0.33% had below average and still another 0.33% had extremely low environmental attitude

Table No. 4.12 (a)

Environmental attitude of college students coming from urban areas in Mizoram

Range of Scores for Urban students	**No. of students (N=326)**	**Percentage of students**	**Stanine**	**Level of Environmental Attitude**
200 – 217	36	11.04%	IX	**Extremely High**
182 – 199	112	34.36%	VIII	High
164 – 181	132	40.49%	VII	Above Average
127 – 163	42	12.88%	IV, V, VI	**Average**
92 – 109	1	0.31%	III	Below Average
74 – 91	1	0.31%	II	Low
61 - 73	2	0.61%	I	**Extremely Low**

Table No. 4.12 (a) shows that 40.49% of college students coming from urban areas had above average environmental attitude: 34.36% had high environmental attitude; 12.88% had average environmental attitude; 11.04% had extremely high environmental attitude; 0.31% had below average environmental attitude and another 0.31% had low environmental attitude. The remaining 0.61% had extremely low environmental attitude.

Table No. 4.12 (b)

Comparison of the environmental attitude of college students in Mizoram with reference to their locale

Percentage of Rural students	**Percentage of Urban students**	**Stanine**	**Level of Environmental Attitude**
7.92%	11.04%	IX	**Extremely High**
28.38%	34.36%	VIII	High
46.86%	40.49%	VII	Above Average

16.17%	12.88%	IV, V, VI	**Average**
0.33%	0.31%	III	Below Average
0%	0.31%	II	Low
0.33%	0.61%	I	**Extremely Low**

From table no. 4.12 (b), we can see that a large section of college students coming from both rural and urban areas, i.e. 46.86% of students from rural areas and 40.49% of students from urban areas had above average environmental attitude. While 11.04% of students of urban areas had extremely high environmental attitude, 7.92% of students from rural areas had extremely high environmental attitude. The table also shows that 34.36% of students from urban areas and 28.38% of students from rural areas had high environmental attitude. While 16.17% of students from rural areas had average environmental attitude, 12.88% of students from urban areas had average environmental attitude. Under below average level, there were 0.33% of students from rural areas and 0.31% of students from urban areas. While no students from rural areas scored under low category, 0.31% of students from urban areas had low environmental attitude. The remaining 0.61% of students coming from urban areas and 0.33% of students coming from rural areas had extremely low environmental attitude.

In order to compare college students coming from rural and urban areas, a null hypothesis “There is no significant difference in the attitude of students coming from rural and urban areas in colleges of Mizoram towards the environment” is stated for this objective against the hypothesis number 6 stated in Chapter 1. To test the null hypothesis, a t-test was performed and the results are shown in table no 4.12 (c)

Table No. 4.12 (c)

Difference in the attitude of students coming from rural and urban areas in colleges of Mizoram towards environment

Locale	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Rural	303	176.99	627	19.40	1.58	1.96	2.59	Not Significant at both 0.05 and 0.01 levels of significance
Urban	326	179.48		20.002				

Looking at table no. 4.12 (c), it can be seen that the calculated t-value is 1.58 which is less than the critical value at both 0.05 and 0.01 levels. Hence it is not significant which means that the null hypothesis has to be accepted. Although the Mean score of students coming from rural areas which is 176.99 and the Mean score of students coming from urban areas which is 179.48 differ, the difference is not statistically significant and can thus be concluded that there is no significant difference in the attitude of students coming from rural and urban areas in colleges of Mizoram towards the environment.

Objective No. 9: To standardize a scale to measure the environmental activities of students in Mizoram.

In order to find out the environmental activities of college students of Mizoram, the investigator developed and standardized a scale since ready-made standardized tool was not available. The developed scale consists of 31 questions in a three point Likert-type scale.

Table No. 4.13

Dimensions and Type of item Distribution

S. No.	Dimensions	Nature of Items	Item numbers	Total no of items	Total
1.	Family Activities	Positive	1, 2, 3, 4, 5, 6, 7, 10, 11	9	11
		Negative	8, 9,	2	
2.	Institutional Activities	Positive	12, 14, 15, 16, 17, 18, 19, 21, 22	9	11
		Negative	13, 20	2	
3.	Social Activities	Positive	23, 24, 25, 26, 30, 31	6	9
		Negative	27, 28, 29	3	
Positive items = 24 Negative items = 7				**TOTAL**	**31**

Table No. 4.14

Demographic Variables

S. No	Variables
1	Sex
2	Age
3	Stream of Study (Arts, Science, Commerce)
4	Locale (Rural and Urban)

Procedure for construction and standardization of Questionnaire:

In order to frame questions to measure the environmental activities of college students, the investigator looked into questionnaire framing pattern and consulted relevant literatures and came up with 91 items. Initially the items were framed in the form of a statement. After consulting the supervisor, the items were re-arranged into three dimensions i.e., Home Activities, College Activities and Social Activities and 31 items were rejected as advised by the supervisor. To find out the content validity of the remaining 60 items, it was given to 5 subject matter experts within the University for content analysis. On the basis of the opinions of the experts, the statements were changed to questions, the dimensions were renamed as Family activities, Institutional Activities and Social Activities, 19 items were rejected and 4 items were reframed. After that the first scale having 41 items was drafted and was translated to Mizo language by the investigator. The translated version was proof-read by expert from Mizo Department, Mizoram University. The items were displayed in both English and Mizo in the scale for the convenience Mizo students.

Item analysis:

The drafted questionnaire consisting of 41 items was administered to hundred 6th semester college students. The scores of these students were arranged in descending order and the top 27% and the bottom 27 % were taken for item analysis. 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%.

Table No. 4.15

t-test of upper 27% and lower 27 % of 41 items

Item no	**SD of upper 27%**	**Mean of upper 27 %**	**SD of lower 27%**	**Mean of lower 27 %**	**p value**	**df**	**Critical value at 0.05**	**Critical value at 0.01**	**t-value**
Item no 1	0.00	2.00	0.51	0.56	0.10	52	2.01	2.68	14.82

Item no 2	0.00	2.00	0.49	0.63	0.09				14.47
Item no 3	0.00	2.00	0.42	0.78	0.08				14.99
Item no 4	0.32	1.11	0.45	0.26	0.11				8.05
Item no 5	0.00	2.00	0.27	0.93	0.05				20.91
Item no 6	0.00	2.00	0.49	0.63	0.09				14.47
Item no 7	0.00	2.00	0.49	0.63	0.09				14.47
Item no 8	0.47	1.30	0.00	0.00	0.09				14.48
Item no 9	0.00	2.00	0.32	0.89	0.06				18.03
Item no 10	0.49	1.63	0.51	0.48	0.14				8.43
Item no 11	0.00	2.00	0.50	0.59	0.10				14.61
Item no 12	0.00	2.00	0.42	0.78	0.08				14.99
Item no 13	0.42	1.78	0.51	0.52	0.13				9.88
Item no 14	0.00	2.00	0.48	0.67	0.09				14.42
Item no 15	0.45	1.26	0.00	0.00	0.09				14.65
Item no 16	0.00	2.00	0.66	1.26	0.13				5.87
Item no 17	0.00	2.00	0.53	0.85	0.10				11.18
Item no 18	0.75	0.41	0.00	0.00	0.14				2.83
Item no 19	0.00	2.00	0.49	0.63	0.09				14.47
Item no 20	0.42	1.78	0.00	0.00	0.08				21.80
Item no 21	0.00	2.00	0.50	0.41	0.10				16.53
Item no 22	0.19	1.96	0.47	0.70	0.10				12.99
Item no 23	0.19	1.96	0.51	0.44	0.10				14.57
Item no 24	0.00	2.00	0.27	0.93	0.05				20.91
Item no 25	0.00	2.00	0.40	0.81	0.08				15.56
Item no 26	0.00	2.00	0.45	0.74	0.09				14.65
Item no 27	0.19	1.96	0.45	0.74	0.09				13.06
Item no 28	0.27	1.93	0.47	0.70	0.10				11.84

Item no 29	0.51	1.56	0.27	0.07	0.11				13.45
Item no 30	0.42	1.22	0.00	0.00	0.08				14.99
Item no 31	0.00	2.00	0.40	0.81	0.08				15.41
Item no 32	0.51	1.44	0.00	0.00	0.10				14.82
Item no 33	0.50	1.59	0.42	0.22	0.13				10.86
Item no 34	0.00	2.00	0.44	0.96	0.08				12.33
Item no 35	0.00	2.00	0.42	0.78	0.08				14.99
Item no 36	0.00	2.00	0.82	0.85	0.16				7.29
Item no 37	0.47	1.70	0.40	0.81	0.12				7.56
Item no 38	0.00	2.00	0.49	0.63	0.09				14.47
Item no 39	0.00	2.00	0.48	0.67	0.09				14.42
Item no 40	0.00	2.00	0.72	1.15	0.14				6.16
Item no 41	0.00	2.00	0.49	0.63	0.09				14.47

Table No. 4.15 shows the calculation of t-value using the formula of t-test for independent group. The table reveals that there are statistically significant differences between the scores of students in the upper 27% and lower 27 % at both 0.05 and 0.01 level of significance. This means that the scores of students in the upper and lower 27% significantly differ from one another and that they can all be retained.

However, it was felt by the investigator that a further analysis would ensure the accuracy/sensitivity of the scale. (For the present research three separate scales were used, and a minimized number of items would mean lesser items for sample students to respond to, thus lightening their burden. However, if so desired, the total of 41 items would suffice since the t-test clearly showed a clear significance for each item). For this purpose, each item was again checked for its discriminating ability. The Discriminating Index given by Gronlund and Linn (1990) was applied.

Discrimination Index describes the ability of an item to distinguish between high and low scores. The range is from 0.0 to 1.00. The higher the value is, the more discriminating the item. A highly discriminating item indicates that the students who

had high test scores got the item correct whereas students who had low test scores got the item incorrect. Item with discriminating values near or less than zero should be removed from the test since this indicates that students who had a poor overall performance/score did better on that item than students who had an overall good performance/score. The item, in some way, may be confusing for better scoring students.

Discriminating Index is calculated from the upper and lower 27% of the hundred students who answered the questions in a positive manner a scored the maximum possible score in each item, i.e. 2, after arranging their obtained score in descending order

Table No. 4.16

Discrimination Index table

0.40 – higher	Very good discrimination
0.30 – 0.39	Reasonably good discrimination but possibly subject to improve
0.20 – 0.29	Marginal/Acceptable discrimination (subject to improve)
0.00-0.19	Poor discrimination (to be rejected or improved by revision)
Negative DI	To be rejected

Formula for Discrimination Index is-

$DI = R_U - R_L / \frac{1}{2}T$ (Gronlund & Linn 1990)

Where, $R_{U=}$ the number of students in the upper group who answered the item in a positive manner

$R_{L=}$ the number of students in the lower group who answered the item in a positive manner.

T= total number of students who tried the item

The Discriminating Index of the items was calculated using the formula given by Gronlund and Linn as follows:

Table No. 4.17

Discriminating index for the 41 items

Items	Positive response from Upper 27%	Positive response from lower 27%	Difference in response	Discriminating Index	Decision
item 1	17	7	10	0.37	2
item 2	19	8	11	0.41	1
item 3	20	8	12	0.44	1
item 4	0	1	-1	-0.04	5
item 5	24	15	9	0.33	2
item 6	16	11	5	0.19	4
item 7	11	8	3	0.11	4
item 8	2	1	1	0.04	4
item 9	22	8	14	0.52	1
item 10	8	1	7	0.26	3
item 11	21	15	6	0.22	3
item 12	22	13	9	0.33	2
item 13	11	4	7	0.26	3
item 14	19	8	11	0.41	1
item 15	4	0	4	0.15	4
item 16	26	15	11	0.41	1
item 17	22	17	5	0.19	4
item 18	2	0	2	0.07	4
item 19	16	2	14	0.52	1
item 20	8	1	7	0.26	3
item 21	16	5	11	0.41	1
item 22	13	2	11	0.41	1
item 23	9	4	5	0.19	4
item 24	26	8	18	0.67	1
item 25	25	14	11	0.41	1
item 26	20	4	16	0.59	1
item 27	14	5	9	0.33	2
item 28	13	3	10	0.37	2
item 29	11	0	11	0.41	1
item 30	6	2	4	0.15	4
item 31	21	11	10	0.37	2
item 32	9	1	8	0.30	3

item 33	6	2	4	0.15	4
item 34	24	17	7	0.26	3
item 35	25	16	9	0.33	2
item 36	22	21	1	0.04	4
item 37	5	6	-1	-0.04	5
item 38	15	13	2	0.07	4
item 39	10	5	5	0.19	4
item 40	26	15	11	0.41	1
Item 41	19	8	11	0.41	1

Interpretation of Decision-

1= Very good discrimination

2= Reasonably good discrimination but possibly subject to improve

3= Marginal/Acceptable discrimination (subject to improve)

4= Poor discrimination (to be rejected or improved by revision)

5= To be rejected

Looking at table No. 4.17, it can be seen that item no 4 and 37 had a very low discrimination and had to be rejected. Item no 6, 7, 8, 15, 17, 18, 23, 30, 33, 36, 38 and 39 needed to be rejected or improved by revision.

Item no 4 and 37 were straightly rejected. After carefully revising item no 6, 7, 8, 15, 17, 18, 23, 30, 33, 36, 38 and 39, item number 7, 8, 15, 18, 30, 33, 36, 38 have also been rejected but item number 6, 17, 23 and 39 had 0.19 discriminating index which was only 0.01 away from being acceptable. These items had been reframed so as to make the sentence more comprehensible and were retained in the Scale.

Thus, the Environmental Activity Scale having 31 items was finalized.

Establishment of reliability:

To measure the stability of the scale, test-retest method was employed. The scale was administered to fifty (50) sixth semester college students in Aizawl, Mizoram. There was an interval of 14 days between the first-test and the second test. Pearson Product Moment Correlation Coefficient was used. The Correlation was found to be **0.60** 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 scale was again administered to twenty six (26) secondary school students in Aizawl, Mizoram. There was an interval of 14 days between the first-test and the second test. Pearson Product Moment Correlation Coefficient was used. The Correlation was found to be **0.70** 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.

In order to measure the internal consistency of the scale, it was administered to 100 sixth semester college students. Cronbach's Alpha was employed. The value of Cronbach Alpha was found to be **0.75**. Looking at the interpretation below it can be seen that the reliability was 'acceptable'.

Interpretation of Cronbach's Alpha-

0.90 and above = Excellent

0.80 - 0.89 = good

0.70 - 0.79 = Acceptable

0.60-0.69= Questionable

0.50-0.59 = poor

Below 0.50 = unacceptable

Table No. 4.18

Reliability Indices

RELIABILITIES		
Test-Retest (College Students)	Test-Retest (Secondary School Students	Cronbach's Alpha
N=50	N=26	N=100
0.60	0.70	0.75

Validity:

The scale possesses face validity and content validity since each item was judged by experts.

Scoring:

The scale consists of 31 items. Each item has three alternative responses- 'always', 'sometimes' and 'never'. In positive items, the point for 'always' is 2, 'sometimes' is 1, 'never' is 0 and vice versa in negative items. The negative items are given star-mark. The maximum possible score is 62 and minimum possible score is 0. Thus the range of the scale is 0 – 62.

Standardization:

For the last step in standardizing the scale, a final try out was done on a sample of 700 college students randomly selected from all the colleges of Mizoram. The sampled students comprised of 1st, 3rd and 5th 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 (Survey Monkey). 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. The first 700 responses received by the investigator were selected for this purpose.

Norms:

The Norm for EAcS have been prepared as under-

Low **(-1σ and Below)**	**Average** **(-1σ to 1 σ)**	**High** **(1σ and Above)**
37 and Below	**38 - 49**	**50 and Above**

Objective No. 10: To study the environmental activities of college students in Mizoram.

In order to study the environmental activities of college students in Mizoram, the investigator made use of the Environmental Activities Scale prepared by the investigator herself.

Table No. 4.19

Level of environmental activities of college students in Mizoram

N	Mean	SD	Low Environmental Activities	Average Environmental Activities	High Environmental Activities
629	43.66	5.63	79 (12.56%)	466 (74.09%)	84 (13.35%)

Looking at table no. 4.19, it can be seen that majority i.e. 74.09% of college students of Mizoram had average environmental activities. The table also shows that 12.56% of college students in Mizoram had low environmental activities while 13.35% had high environmental activities. The Mean score of college students on environmental activities was 43.66 and Standard Deviation was 5.63.

Objective No. 11: To compare the environmental activities of college students in Mizoram with reference to their gender.

Table No. 4.20

Comparison of environmental activities of college students in Mizoram with reference to their gender

Gender	N	Low Environmental Activities	Average Environmental Activities	High Environmental Activities
Male	308	57 (18.51%)	206 (66.88%)	45 (14.61%)
Female	321	33 (10.28%)	244 (76.01%)	44 (13.71%)

Table No. 4.20 shows that 76.01% of female students had average environmental activities while 66. 88 % of male students had average environmental activities. While 14.61 % of male students had high environmental activities, 13.71% of female students had high environmental activities. It can also be seen that 18.51% of male students and 10.28% of female students had low environmental activities.

Since description in terms of percentages was not considered sufficient, the researcher decided to check the statistical significance of the difference between male and female college students regarding their activities about the environment. For this, t-test had to be applied and a null hypothesis was stated against the hypothesis number 7 in Chapter 1 as under-

> "There is no significant difference in the activities of male and female college students in Mizoram towards the environment".

The calculation of t-test is shown in table 4.20 (a)

Table No. 4.20 (a)

Difference in the environmental activities of college students in Mizoram with reference to their gender

Gender	N	Mean Value	df	SD	Calculated t-value	Critical Value		Significance
						0.05	0.01	
Male	308	43.25	627	6.07	1.04	1.96	2.59	Not Significant at both 0.05 and 0.01 levels of significance
Female	321	43.74		5.54				

Table no. 4.20 (a) shows that the t-value for the significance of difference in the activities of male and female college students in Mizoram towards the environment is 1.04. Since the calculated t-value is less than the critical value at both 0.05 and 0.01 levels of significance, the difference is not significant and the null hypothesis stating "There is no significant difference in the activities of male and female college students in Mizoram towards the environment" cannot be rejected. The difference in the Mean scores of male and female is not statistically significant. Therefore, it can be concluded that there is no significant difference in the attitude of male and female college students in Mizoram towards the environment.

Objective No. 12: To compare the environmental activities of college students in Mizoram with reference to their streams of study.

Table No. 4.21

Comparison of environmental activities of college students in Mizoram with reference to their streams of study

Stream of Study	N	Low Environmental Activities	Average Environmental Activities	High Environmental Activities
Arts	350	39 (11.14%)	262 (74.86%)	49 (14%)

Science	153	24 (15.69%)	103 (67.32%)	26 (16.99%)
Commerce		23 (18.25%)	92 (73.02%)	11 (8.73%)

Table no. 4.21 shows that, among the three streams of study, 74.86% of Arts students of Mizoram colleges had average environmental activities while 73.02% of Commerce students and 67.32% of Science students of Mizoram colleges had average environmental activities. At the same time, 16.99% of Science students of Mizoram colleges had high environmental activities while 14 % of Arts students and 8.73% of Commerce students of Mizoram colleges had high environmental activities. This table also shows that 18.25% of Commerce students of Mizoram colleges had low environmental activities while 15.69% of Science and 11.14% of Arts students of Mizoram colleges had low environmental activities.

In order to test the statistical significance, a null hypothesis was stated against the hypothesis number 8 in Chapter 1 as under-

"There is no significant difference in the environmental activities of Arts, Science and Commerce college students of Mizoram".

To test this null hypothesis, ANOVA was employed and the results are shown in table no. 4.21 (a)

Table No. 4.21 (a)

Difference in the environmental activities of college students in Mizoram with reference to their stream of study

Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	163.83	2	81.92	2.52	0.08	3.01
Within Groups	20348.60	626	32.51			

Total	20512.4293	628				

Since the analysis of variance in table no 4.21 (a) shows that the F value is less than the F critical value, it means that there is no significant difference between the three streams of study. Thus, the null hypothesis had to be accepted which means that there is no significant difference in the environmental activities of Arts, Science and Commerce college students of Mizoram. Although significant difference was not found between the environmental activities among the three streams of study, a comparison of their Mean scores reveal that Science students had the best environmental activity with a Mean score of 44.02 with 5.88 Standard Deviation. Arts students had a Mean score of 43.78 with 5.52 Standard Deviation and Commerce students had the lowest Mean score i.e. 42.60 with 5.97 Standard Deviation.

Objective No. 13: To compare the environmental activities of college students in Mizoram with reference to their locale.

Table No. 4.22

Comparison of environmental activities of college students in Mizoram with reference to their locale

Locale	**N**	**Low Environmental Activities**	**Average Environmental Activities**	**High Environmental Activities**
Rural	303	42 (13.86%)	217 (71.62%)	44 (14.52%)
Urban	326	31 (9.51%)	255 (78.22%)	40 (12.27%)

From table no. 4.22, it can be seen that 78.22% of Mizoram college students coming from urban areas had average environmental activities while 71.62% of Mizoram college students coming from rural areas had average environmental activities. However, 13.86% of Mizoram college students coming from rural areas had high environmental activities while 9.51% of Mizoram college students coming from rural areas had high environmental activities. It can also be seen that while 14.52% of Mizoram college students coming from rural areas had low environmental activities, 12.27% of Mizoram college students coming from urban areas had low environmental activities.

In order to compare college students coming from rural and urban areas with regards to their environmental knowledge, a null hypothesis "There is no significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment" was stated against the hypothesis number 9 in chapter 1. To test the null hypothesis, a t-test was performed and the results are shown in table no 4.22 (a)

Table No. 4.22 (a)

Difference in the activities of students coming from rural and urban areas in colleges of Mizoram towards environment

Locale	**N**	**Mean Value**	**df**	**SD**	**Calculated t-value**	**Critical Value**		**Significance**
						0.05	**0.01**	
Rural	303	43.64	627	5.77	0.57	1.96	2.59	Not significant at both 0.05 and 0.01levels of significance
Urban	326	43.90		5.62				

Looking at table no. 4.22 (a), it can be seen that the calculated t-value is 0.57 which is less than the critical value at both 0.05 and 0.01 levels of significance. Hence it is not significant which means that the null hypothesis stating "There is no significant difference in the knowledge of students coming from rural and urban areas in colleges of Mizoram towards the environment" cannot be rejected. A look at the Mean value of both students coming from rural and urban areas, urban students had slightly better Mean scores however it is statistically not significant and it can

thus be concluded that there is no significant difference in the activities of students coming from rural and urban areas in colleges of Mizoram towards the environment.

Objective No. 14: To find out the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram.

In order to find out the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram, Pearson product moment correlation and partial correlation were employed.

Table No. 4.23

Relationship between environmental knowledge and attitude of college students in Mizoram (N=629)

Variables	**Critical r value**		**Calculated r**	**Significance**
Knowledge	At 0.05 level of significance	.062	0.91	Significant
Attitude	At 0.01 level of significance	.081		

Table No. 4.23 shows that the correlation between the environmental knowledge and environmental attitude of college students in Mizoram (r_{12}) is 0.94 which is high or above average correlation. A look at the critical table reveals that the r value at 0.05 and 0.01 levels of significance are .062 and .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 knowledge and environmental attitude of college students in Mizoram. This implies that when knowledge value goes up, the value of attitude will also go up.

Table No. 4.23 (a)

Relationship between environmental knowledge and activities of college students in Mizoram (N=629)

Variables	**Critical r value**		**Calculated r**	**Significance**
Knowledge	At 0.05 level of significance	.062	0.90	Significant
Activities	At 0.01 level of significance	.081		

Table No. 4.23 (a) indicates that the correlation between the environmental knowledge and environmental activities of college students in Mizoram (r_{13}) is 0.90 which is high or above average correlation. A look at the critical table reveals that the r value at 0.05 and 0.01 levels of significance are .062 and .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 knowledge and environmental activities of college students in Mizoram. This implies that with greater knowledge about environment, activities towards environment will also increase.

Table No. 4.23 (b)

Relationship between environmental attitude and activities of college students in Mizoram (N=629)

Variables	**Critical r value**		**Calculated r**	**Significance**
Attitude	At 0.05 level of significance	.062	0.92	Significant
Activities	At 0.01 level of significance	.081		

Table No. 4.23 (b) shows that the correlation between the environmental attitude and environmental activities of college students in Mizoram (r_{23}) is 0.90 which is high or above average correlation. A look at the critical table reveals that the r value at 0.05 and 0.01 levels of significance are .062 and .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 attitude and environmental activities of college students in Mizoram. This implies that with more favourable attitude about environment, activities towards environment will also increase.

In order to find the net correlation between *knowledge* and *attitude* without the interference of *activities*, partial correlation was employed. The correlation between knowledge of college students in Mizoram towards environment and the attitude of college students in Mizoram towards environment (r_{12}) was found to be 0.94. However after controlling the effect of *activities*, the relationship between *knowledge* and *attitude* ($r_{12.3}$) was reduced to 0.66. This means that the third variable, i.e., activities of college students in Mizoram towards environment was positively contributing to the relationship between the knowledge and attitude of college students in Mizoram towards environment.

In order to find the net correlation between *knowledge* and *activities* without the interference of *attitude*, partial correlation was employed. The correlation between knowledge of college students in Mizoram towards environment and the activities of college students in Mizoram towards environment (r_{13}) was found to be 0.90. However after partialling out the effect of *attitude*, the relationship between *knowledge* and *activities* ($r_{13.2}$) was reduced to 0.26. This means that the third variable, i.e., attitude of college students in Mizoram towards environment was positively contributing to the relationship between the knowledge and activities of college students in Mizoram towards environment.

In order to find the net correlation between *attitude* and *activities* without the interference of *knowledge*, partial correlation was again employed. The correlation between attitude of college students in Mizoram towards environment and the activities of college students in Mizoram towards environment (r_{23}) was found to be

0.92. However after partialling out the effect of *knowledge*, the relationship between *attitude* and *activities* ($r_{23.1}$) was reduced to 0.50. This means that the third variable, i.e., knowledge of college students in Mizoram towards environment was positively contributing to the relationship between the attitude and activities of college students in Mizoram towards environment.

Therefore, there is sufficient evidence to conclude that there is a significant linear relationship between environmental knowledge, attitude and activities of college students in Mizoram because the correlation coefficient among each variables are significantly different from zero and the partial correlation shows that each variable positively contributed to the relationship between the other two variables. This signifies that the knowledge, attitude and activities of college students in Mizoram towards the environment were positively related to one another which indicate that if a student has a high environmental knowledge, his attitude and activities towards the environment will also be high.

Objective No. 15: To study the opinion of college teachers teaching environmental studies towards this subject.

In order to study the opinion of college teachers teaching environmental studies towards EVS subject, an opinionnaire was developed by the investigator. The opinionnaire was divided into three dimensions- syllabus, students and teaching methods. There are 8 items under the dimension of 'syllabus', 8 items under the dimension of 'students' and 6 items under the dimension 'teaching methods'. Google Forms was used for administering the opinionnaire and the link was sent to college teachers in Mizoram teaching Environmental Studies subject. It was realized from an informal interview that except for Pachhunga University College and Govt. Zirtiri Residential Science College, teachers from different departments in colleges took turns to teach EVS subject. During the time the opinionnaire was administered, some colleges did not yet made arrangement of which department will teach the EVS subject. Therefore the exact population of EVS teachers in Mizoram cannot be made clear during the time this study was undertaken.

Table No. 4.24

List of respondents

S. No	Name of College	Number of Respondent
1.	Aizawl City College	2
2.	Divine Mercy College	1
3.	Govt. Aizawl College	1
4.	Govt. Aizawl North College	1
5.	Govt. Aizawl West College	1
6.	Govt. Champhai College	1
7.	Govt. Hnahthial College	2
8.	Govt. Hrangbana College	1
9.	Govt. J. Buana College	2
10.	Govt. J. Thankima College	2
11.	Govt. Johnson College	3
12.	Govt. Kamalanagar College	3
13.	Govt. Khawzawl College	1
14.	Govt. Kolasib College	1
15.	Govt. Lawngtlai College	3
16.	Govt. Mamit College	2
17.	Govt. Saiha College	2
18.	Govt. Saitual College	1
19.	Govt. Serchhip College	2
20.	Govt. T. Romana College	1

21.	Govt. Zawlnuam College	3
22.	Govt. Zirtiri Residential Science College	4
23.	HATIM	3
24.	Helen Lowry College	1
25.	Lunglei Govt. College	3
26.	Pachhunga University College	1
27.	St. Xavier's College	1
	TOTAL	49

Table No. 4.24 shows the list of respondents from colleges of Mizoram teaching Environmental Studies subject. The total number of responses received from college teachers who teach EVS in colleges of Mizoram is 49. The investigator felt that the sample college teachers would suffice the need for this present study since these 49 teachers represent all the non-professional colleges of Mizoram offering Arts and/or Commerce and/or Science subjects during the time this study was undertaken.

Table No. 4.25

Educational qualification of respondents

S. No	Educational qualification	Number of respondents
1.	M.A.	26.53%
2.	M.Sc.	12.24%
3.	M.Com.	2.04%
4.	M.C.A.	2.04%

5.	M.S.W.	4.08%
6.	M.Sc., M.A. with B. Ed	2.04%
7.	M. Phil	26.53%
8.	M. Phil with M. Ed	2.04%
9.	Ph. D	22.45%

Table No. 4.25 shows the educational qualification of sample college teachers teaching EVS. Among the respondents, 26.53% of them had Master degrees in Arts; 12.24% had Master degrees in Science; 2.04% has Master degree in Commerce; 2.04% had Master degree in Computer Application and 4.08% had Master degree in Social Work; 2.04% of the respondents had two master degrees, i.e., M. Sc. and M.A with B. Ed. There are 26.53% of respondents who had M. Phil degree and 2.04% with M. Phil with M. Ed degree. There are 22.45% of respondents having Ph. D degrees, one of them having Ph. D in Environmental Science.

From an informal interview with the teachers, it was realized that there was no specific regulation laid as to whom the subject has to be undertaken. Therefore, teachers from different departments in colleges took turns to teach EVS subject except for Pachhunga University College and Govt. Zirtiri Residential Science College.

Table No. 4.26

Teaching experience of respondents on Environmental Studies subject

S. No.	**Teaching Experience**	**Number of respondents**
1.	Less than 1 year	16.33%
2.	1 year	32.65%
3.	2 years	16.33%
4.	3 years	4.08%

5.	4 years	6.12%
6.	5 years	4.08%
7.	6 years	4.08%
8.	7 years	2.04%
9.	8 years	4.08%
10.	10 years	4.08%
11.	12 years	2.04%
12.	20 years	4.08%

Table No. 4.26 shows the teaching experience of college teachers on environmental studies subject. It can be seen from the table that there are 16.33% of the respondents who had less than one year teaching experience of EVS subject, 32.65% of them had one year experience, 16.33% of them had two years teaching experience, 4.08% of them had three years teaching experience, 6.12% of them had four years teaching experience, 4.08% of them had five years teaching experience, 4.08% of them had six years teaching experience, 2.04% had seven years teaching experience, 4.08% of them had eight years teaching experience, 4.08% of them had ten years teaching experience, 2.04% had twelve years teaching experience and 4.08% of them had twenty years teaching experience of environmental studies subject.

Table No. 4.27

No. of trained and untrained teacher for teaching EVS subject

Trained	**Untrained**	**Total**
8 (16.3%)	41 (83.7%)	49

It can be seen from table No. 4.27 that majority of the respondents i.e., 83.7% did not go through training for teaching environmental studies subject while only 16.3% were trained for teaching the subject.

Table No. 4.28

Responses regarding the first dimension (syllabus)

Item No.	Statements	Agree	Undecided	Disagree
1.	The current syllabus of EVS is good enough for inculcating positive attitude in the learner towards environmental protection and conservation	37 (75.5%)	10 (20.45%	2 (4.1%)
2.	The current syllabus of EVS is effective in developing right habits in the learner for environmental protection and conservation	37 (75.5%)	11 (22.4%)	1 (2%)
3.	The current syllabus of EVS is good for building the knowledge of the learner in environmental protection and conservation	43 (87.8%)	6 (12.2%)	0
4.	The EVS syllabus cater to the needs of the State of Mizoram in the context of environmental conservation and protection	21 (42.9%)	22 (44.9%)	6 (12.2%)
5.	The EVS syllabus is suitable for learners	37 (75.5%)	9 (18.4%)	3 (6.1%)
6.	The current syllabus needs to be changed or modified	18 (36.7%)	24 (49%)	7 (14.3%)
7.	The present syllabus is difficult for UG students	4 (8.2%)	9 (18.4%)	36 (73.5%)
8.	The present syllabus is vast and some topics which are not necessary should be removed	19 (38.8%)	12 (24.5%)	18 (36.7%)

Looking at table No. 4.28, it can be seen that majority of the respondents (75.5%) agreed that the current syllabus of EVS is good enough for inculcating positive attitude in the learner towards environmental protection and conservation while 20.4% were undecided and 4.1% disagreed to the statement.

Majority of the respondents (75.5%) agreed that the current syllabus of EVS is effective in developing right habits in the learner for environmental protection and conservation while 22.4% had no opinion and 2% of the respondents disagreed to the statement.

Majority of the respondents (87.8%) agreed that the current syllabus of EVS is good for building the knowledge of the learner in environmental protection and conservation while 12.2% were could not decide whether they agree to the statement or not. There were no respondents who disagreed on this statement.

There are 44.9% of respondents who were undecided on whether the EVS syllabus caters to the needs of the State of Mizoram in the context of environmental conservation and protection. However, 42.9% agreed that the EVS syllabus caters to the needs of the State of Mizoram in the context of environmental conservation and protection and the remaining 6% disagreed to the statement.

Majority of the respondents (75.5%) agreed that the EVS syllabus is suitable for learners, 18.4% were undecided and 6.1% disagreed to the statement.

There are 49% of respondents who were undecided on the statement that the current syllabus needs to be changed or modified. However, 36.7% agreed that the current syllabus needs to be changed or modified while 14.3 % disagreed to the statement.

Majority of the respondents (73.5%) disagreed that the present syllabus is difficult for UG students. There are 18.4% of respondents who were undecided on the statement and 8.2% of respondents agreed that the present syllabus is difficult for UG students.

There are 38.8% among the respondents who agreed that the present syllabus is vast and some topics which are not necessary should be removed. However, 36.7% of them disagreed to the statement and 24.5% were undecided.

Table No. 4.29

Responses regarding the second dimension (students)

Item No.	Statements	Agree	Undecided	Disagree
9.	Students show great interest during EVS periods	29 (59.2%)	16 (32.7%)	4 (8.2%)
10.	The average attendance of students in EVS classes is satisfactory	42 (85.7%)	4 (8.2%)	3 (6.1%)
11.	Students participate actively in the classroom interaction	30 (61.2%)	11 (22.4%)	8 (16.3%)
12.	Students remain passive throughout the EVS classes	20 (40.8%)	18 (36.7%)	11 (22.4%)
13.	Majority of students score good marks in EVS subject	31 (63.3%)	13 (26.5%)	5 (10.2%)
14.	Students have been complaining about EVS subject	2 (4.1%)	9 (18.4%)	38 (77.6%)
15.	Students have been complimenting the EVS subject	16 (32.7%)	29 (59.2%)	4 (8.2%)
16.	Students feel free to express their ideas towards the subject in the class room	33 (67.3%)	9 (18.4%)	7 (14.3%)

Table no 4.29 shows that 59.2% of the respondents agreed that students show great interest during EVS periods, 32.7% were undecided and 8.2% disagreed with the statement.

Majority of the respondents (85.7%) agreed that the average attendance of students in EVS classes is satisfactory, 8.2% were undecided and 6.1% disagreed with the statement.

There are 61.2% respondents who agreed that students participate actively in the classroom interaction while 16.3% disagreed and 22.4% were undecided.

It can also be seen that 40.8% of the respondents agreed that students remain passive throughout the EVS classes, 36.7% were undecided and 22.4% disagreed with the statement.

Majority (63.3%) of the respondents agreed that majority of students score good marks in EVS subject, 26.5% were undecided and 10.2% disagreed with the statement.

Majority (77.6%) of the respondents disagreed that students have been complaining about EVS subject while 18.4% were undecided and 4.1% agreed to the statement.

There are 59.2% of the respondents who were undecided whether students have been complimenting the EVS subject or not while 32.7% agreed to that and 8.2% disagreed with the statement.

This table also shows that majority (67.3%) agreed that students feel free to express their ideas towards the subject in the class room, 18.4% were undecided while 14.3% disagreed with the statement.

Table No. 4.30

Responses regarding the third dimension (Teaching methods)

Item No.	**Statements**	**Agree**	**Undecided**	**Disagree**
17.	Lecture method is the most useful method for teaching EVS	14 (28.6%)	24 (49%)	11 (22.4%)
18.	Demonstrative method (employing teaching aids) is the best method for teaching EVS	31 (63.3%)	18 (36.7%)	0
19.	Taking students for field trips is most beneficial for students when teaching EVS subject	33 (67.3%)	16 (32.7%)	0
20.	Employing practical method is the most effective method for teaching EVS	32 (65.3%)	16 (37.7%)	1 (2%)

21.	Discussion method is the most suitable method for teaching EVS	32 (65.3%)	15 (30.6%)	2 (4.1%)
22.	Laboratory work should be introduced for EVS	13 (26.5%)	27 (55.1%)	9 (18.4%)

Table no. 4.30 shows the responses regarding teaching methods of EVS. It can be seen that 28.6% of the respondents agreed that lecture method is the most useful method for teaching EVS while 49% were undecided and 22.4% disagreed to the statement.

Majority (63.3%) of the respondents agreed that demonstrative method (employing teaching aids) is the best method for teaching EVS while 32.7% were undecided and there were no respondents who disagreed to the statement.

Majority (67.3%) of the respondents agreed that taking students for field trips is most beneficial for students when teaching EVS subject while 32.7% were undecided and there were no respondents who disagreed to the statement.

Majority (65.3%) of the respondents agreed that employing practical method is the most effective method for teaching EVS while 37.7% were undecided and 2% disagreed to the statement.

Majority (65.3%) of the respondents agreed that discussion method is the most suitable method for teaching EVS while 30.6% were undecided and 4.1% disagreed to the statement.

This table also shows that 55.1% of the respondents were undecided whether Laboratory work should be introduced for EVS while 25.5% agreed and 18.4% disagreed to the statement.

References:

Gronlund, N. E., and Linn, R. L. (1990). *Measurement and evaluation in teaching (6th ed.)*. Macmillan Publishing Company, New York

Hopkins, C. D. and Antes R. L. (1990). *Classroom Measurement and Evaluation*. F. E. Peacock Publishers, Inc., Itasca, Illinois

Thorndike, R. M. and Thorndike-Christ, T. (2013). *Measurement and Evaluation in Psychollogy and Education.* Pearson India Education Services Pvt. Ltd. Noida 201 301, Uttar Pradesh India.

CHAPTER - V

MAJOR FINDINGS AND DISCUSSIONS, SUGGESTIONS FOR FURTHER RESEARCH AND CONCLUSION

CHAPTER-V

MAJOR FINDINGS AND DISCUSSIONS, SUGGESTIONS FOR FURTHER RESEARCH AND CONCLUSION

5.1.0 Findings and discussion regarding the environmental knowledge of college students in Mizoram.

This study revealed that-

- Majority (94.48%) of college students of Mizoram had high environmental knowledge.
- 5.88% of college students fell under average category
- 0.64% of the students had low environmental knowledge.
- The mean score of college students in Mizoram on environmental knowledge was 42.99 and Standard deviation was 4.87

Majority of the college students had high environmental knowledge. Only negligible percentage of college students had average and low environmental knowledge. Thus it can be rightly assumed that college students of Mizoram in general had high environmental knowledge during the time this study was undertaken.

5.2.0 Findings and discussion regarding the comparison of the environmental knowledge of college students in Mizoram with reference to their gender

A comparison of environmental knowledge of college students in Mizoram with reference to their gender revealed that-

- Among the male students, only a negligible percentage i.e., 0.65% had low environmental knowledge, 6.17 % of them had average environmental knowledge and the remaining majority, i.e. 93.18% had a high environmental knowledge.
- Among the female students, only negligible percentage i.e., 0.62% had low environmental knowledge, 6.54 % of them had average environmental knowledge and the remaining majority, i.e. 92.83 % had a high environmental knowledge.

- The Mean score of male students is slightly higher with a value of 43.09 in comparison with the Mean score of female students with a value of 42.91
- The Standard Deviation of the score of male students was 4.61 while female was 5.17

Although male students had a slightly higher mean value than the female students, the study found no significant difference between male and female college students in Mizoram in their knowledge towards the environment. This particular finding was in agreement with the finding of Bareh (2010) when he conducted a research on environmental awareness among students in secondary level in Jowai town. He found out that the environmental awareness of male and female students were very high and there was no significant difference between male and female students in their environmental awareness. This finding also concurs with the finding of Astalin in his research conducted in Uttar Pradesh when he find out secondary school male students had more environmental awareness in comparison with female students.

5.3.0 Findings and discussion regarding the environmental knowledge of college students in Mizoram with reference to their stream of study

The study revealed that-

- A huge majority of 96.08 % of Science students had high environmental knowledge 3.27 % had average environmental knowledge and only 0.65 % low environmental knowledge.
- Among the Arts students, 92.57 % had high environmental knowledge, 6.86 % had average environmental knowledge while only 0.57 % of them had low environmental knowledge.
- 86.51% of the Commerce students had high environmental knowledge, 12.70% had average environmental knowledge and 0.79 % had low environmental knowledge
- Science students had the highest mean score and Arts students had lowest Mean score among the three streams of study (Science=44.26> Commerce=42.17> Arts=42.14)

- The Standard Deviation is lowest in Arts Stream (Commerce=5.65> Science=4.79> Arts=4.56)

The study disclosed a significant difference between the environmental knowledge of Science and Arts students where Science students shown a greater Mean value in comparison with Arts students. The study also showed that there was a significant difference between the environmental knowledge of Science and Commerce students where Science students showed a greater Mean value in comparison with Commerce students. However there is no significant difference between Arts and Commerce Students. Thus, it can be rightly stated that Science students had the best environmental knowledge among the three streams of study. This finding is not unexpected since environmental concerns are regarded to be closely related with the curriculum of life sciences and physical sciences.

5.4.0 Findings and discussion regarding the comparison of the environmental knowledge of college students in Mizoram with reference to their locale

This study revealed that-

- 93.87 % of college students coming from urban areas had high environmental knowledge; 5.83 % had average environmental knowledge and only 0.31 % had low environmental knowledge
- 93.40 % of college students coming from rural areas had high environmental knowledge, 5.94 % had average environmental knowledge and only 0.66 % had low environmental knowledge
- The mean score of students coming from rural areas is 42.87 and Standard Deviation is 4.88
- The mean score of students coming from rural areas is 43.24 and Standard Deviation is 4.45

This study showed that majority of both college students from rural and urban areas had high environmental knowledge. A comparison of their Mean scores showed a slight difference where students from urban areas showed slightly higher mean value. However, the environmental knowledge of college students from urban and rural areas did not differ significantly.

5.5.0 Findings and discussion regarding the environmental attitude of college students in Mizoram

This study revealed that that-

- The mean score of college students in Mizoram on environmental attitude was 177.95 and Standard deviation was 20.85
- A large section of the students i.e. 43.72% had above average environmental attitude
- 31.16% had high environmental attitude
- 14.47% had average environmental attitude
- 9.54% had extremely high environmental attitude
- 0.79% had extremely low environmental attitude
- 0.30% had below average environmental attitude

It could be realized from this finding that college students in Mizoram had sound attitude towards the environment since only minority of the students had 'below average' and 'extremely low' environmental attitude. This fact was somehow anticipated because the findings in the previous objective revealed that college students in Mizoram had high environmental knowledge which resulted in having a sound attitude towards the environment

5.6.0 Findings and discussion regarding the comparison of the environmental attitude of college students in Mizoram with reference to their gender

This study showed that-

- A large section of both male (44.48%) and female (41.12%) college students had above average environmental attitude.
- While 8.12% of male students had extremely high environmental attitude, 2.18% of female students had extremely high environmental attitude.
- 25.65% of male students had high environmental attitude while 15.58% of female students had high environmental attitude.
- While 39.88% of female students had average level of environmental attitude, 20.78% of male students had average level of environmental attitude.

- While 0.32% of male students had below average environmental attitude, no female students were under this category
- While 0.31% of female students had low environmental attitude, no male students were under this category.
- The remaining 0.65% of male students and 0.93% of female students had extremely low environmental attitude.
- The Mean score of female was slightly better with a value of 178.22 in comparison with the Mean score of male which is 177.54.
- The standard deviation of male was 20.76 and the standard deviation of female was 21.03

Although there was a slight difference in the environmental attitude of male and female college students in Mizoram, the study found that the difference was not statistically significant. This finding showed that male and female students in colleges of Mizoram were more or less similar in their environmental attitude at the time this study was undertaken.

5.7.0 Findings and discussion regarding the environmental attitude of college students in Mizoram with reference to their stream of study

This study showed that-

- 12.42% of Science students had extremely high environmental attitude while 7.43% of Arts students and 7.94% of Commerce students had extremely high environmental attitude.
- While 41.18% of science students had high environmental attitude, 40.48% of Commerce students and 24.86% of Arts students had high environmental attitude.
- A large section of Arts students i.e. 49.71% had above average environmental attitude while 39.87% of Science Students and 37.30% of Commerce students had above average environmental attitude.
- While 17.43% of Arts students had average environmental attitude, 14.29% of Commerce students and 4.58% of Science students had average environmental attitude.

- Among the Science students, 0.65% of them had below average environmental attitude while there were no arts students whose score had to be classified under below average environmental attitude.
- The remaining 1.31% of Science students and 0.57% of Arts students had extremely low environmental attitude.
- There were no Commerce students whose score had to be classified under the categories of 'below average', 'low' and 'extremely low'.
- Science students had the highest Mean score although it was almost similar to the Mean score of Commerce students. Arts students had the lowest Mean Score (Science=180.85>Commerce=180.53>Arts=176.38)
- The Standard Deviation was lowest among Commerce stream (Commerce=15.78<Arts=19.16<Science=21.59)

This study revealed a significant difference in the attitude of students among the three streams of study. A further study indicated that there was a statistically significant difference between Arts and Science students and between Arts and Commerce students where Arts student had least favorable attitude towards the environment when compared with Science students and Commerce students.

Since analysis of variance between the three streams of studies showed significant difference, a comparison was made between each stream by employing t-test. The study exposed a significant difference between Arts and Science students in their attitude towards environment with Science students having a higher mean value. The study also revealed that there was a significant difference between Arts and Commerce students in their attitude towards the environment with Commerce students having a higher mean value. However, it can be seen that the difference in the attitude of Science and Commerce students towards environment was not statistically significant. Therefore it can be said that Arts students had the least favorable attitude towards environment among the three streams of study.

5.8.0 Findings and discussion regarding the environmental attitude of college students in Mizoram with reference to their locale

This study revealed that-

- A total of college students coming from both rural and urban areas, i.e. 46.86% of students from rural areas and 40.49% of students from urban areas had above average environmental attitude.
- While 11.04% of students of urban areas had extremely high environmental attitude, 7.92% of students from rural areas had extremely high environmental attitude.
- The study also showed that 34.36% of students from urban areas and 28.38% of students from rural areas had high environmental attitude.
- While 16.17% of students from rural areas had average environmental attitude, 12.88% of students from urban areas had average environmental attitude.
- Under below average level, there were 0.33% of students of rural areas and 0.31% of students from urban areas.
- While no student from rural areas scored under low category, 0.31% of students from urban areas had low environmental attitude.
- The remaining 0.61% of students coming from urban areas and 0.33% of students coming from rural areas had extremely low environmental attitude.
- The Mean score of college students coming from urban areas is slightly higher with a value of 179.48 in comparison with the mean score of college students coming from rural areas with a value of 176.99.
- The Standard Deviation of scores of students coming from urban areas is 20.002 and the Standard Deviation of scores of students coming from rural areas is 19.40

A comparison of the attitude of college students coming from rural and urban areas towards the environment showed no significant difference between them although students coming from urban areas had a higher Mean score in comparison with students coming from rural areas. This finding disagreed with the finding by

Sarkar (2011) when he studied the Secondary students' environmental attitude in Bangladesh and found out that students in rural areas had a slightly higher level of environmental attitude than that of the students in urban areas. The reason behind this difference may be the difference in the stages of education or the difference in location.

5.9.0 Findings and discussion regarding the objective- To standardize a scale to measure the environmental activities of students in Mizoram

This objective was successfully realized and a standardized tool was developed by the researcher with a hope that this tool will be useful for scholars, researchers and teachers if the need to study the environmental activities of students arise. This tool is also applicable for not only college students but also secondary and higher secondary school students.

5.10.0 Findings and discussion regarding the environmental activities of college students in Mizoram

The study shows that-

- Majority i.e. 74.09% of college students of Mizoram had average environmental activities
- A meager but still significant 12.56% of college students in Mizoram had low environmental activities
- A small but rather significant 13.35% had high environmental activities
- The Mean score of college students on environmental activities was 43.66 and the Standard Deviation was 5.63

It was a surprise to find 12.56% of college students still had low environmental activity although the attitude and awareness levels were quite high. Although no study was done to investigate this further, the researcher attributed this to lack of opportunity. Even though college students had high knowledge and very positive attitude towards the environment, they hardly have time to perform environmental activities in society. This could be the reason why they have scored rather low in this area (i.e. social environmental activity) which brought down their overall scores a great deal. The finding stated here was in

disagreement with the findings by Chan in Hong Kong (1996) where she found out that environmental attitudes demonstrated a high predictive power of willingness to participate in pro-environmental behaviors. This may be due to situational differences and differences in opportunity for environmental activity. However, this finding concurred with the findings of Mifsud (2011) in his study to investigate environmental knowledge, attitudes and behavior of Maltese youth. He found out that students had strongly positive attitude towards environment while they seemed to perform few positive actions towards the environment.

5.11.0 Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their gender

This study indicated that-

- 76.01% of female students had average environmental activities while 66.88% of male students had average environmental activities.
- While 14.61 % of male students had high environmental activities, 13.71% of female students had high environmental activities.
- The study also revealed that 18.51% of male students and 10.28% of female students had low environmental activities
- Female students had a slightly better Mean value of 43.74 in comparison with the Mean value of 43.24 of male students
- The Standard Deviation of the scores of female students was 5.54 and the Standard Deviation of the scores of male students was 6.07

This study disclosed that apart from a slight difference, no statistically significant difference was found between the environmental activities of male and female college students in Mizoram. This was an indicator that male and female children are given much the same treatment in Mizo society which could attribute to their rather similar activity towards environment. This finding stated here is in disagreement with the findings of Sivamoorthi et al. (2013) in their research on environmental awareness and practices among college students in Dingidul district, Tamil Nadu. They found out that gender was influencing the practice of the students since the environmental practice among girls was much higher than boys in the study area. The difference in findings between the two studies could be because of difference in social setting.

5.12.0 Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their stream of study

The study revealed that-

- Among the three streams of study, 74.86% of Arts students of Mizoram colleges had average environmental activities while 73.02% of Commerce students and 67.32% of Science students of Mizoram colleges had average environmental activities.
- 16.99% of Science students of Mizoram colleges had high environmental activities while 14 % of Arts students and 8.73% of Commerce students of Mizoram colleges had high environmental activities.
- This study also revealed that 18.25% of Commerce students of Mizoram colleges had low environmental activities while 15.69% of Science and 11.14% of Arts students of Mizoram colleges had low environmental activities.
- Science students had the highest Mean score and Commerce students had the lowest Mean score among the three streams of study (Science=44.02>Arts=43.78>Commerce=42.60)
- Standard deviation was lowest among the Arts students. (Arts=5.52<Science=5.88<Commerce=5.97)

Although there were trivial differences in the environmental activities of college students among the three streams of study, no significant difference was found in the activities of college students belonging to Arts, Science and Commerce streams. The previous findings in this study revealed that Science students had the highest environmental knowledge and attitude; however they were not outstanding in terms of environmental activities.

5.13.0 Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their locale

The study revealed that-

- 78.22% of Mizoram college students coming from urban areas had average environmental activities while 71.62% of Mizoram college

students coming from rural areas had average environmental activities.

- However, 13.86% of Mizoram college students coming from rural areas had high environmental activities while 9.51% of Mizoram college students coming from rural areas had high environmental activities.
- While 14.52% of Mizoram college students coming from rural areas had low environmental activities, 12.27% of Mizoram college students coming from urban areas had low environmental activities.
- The Mean score of college students coming from urban areas is slightly higher with a value of 43.90 in comparison with the mean score of college students coming from rural areas with a value of 43.64.
- The Standard Deviation of scores of students coming from urban areas is 5.62 and the Standard Deviation of scores of students coming from rural areas is 5.77

Although there was a difference in the environmental activities of college students coming from rural and urban areas, the study showed no significant difference in the environmental activities of college students coming from rural and urban areas.

5.14.0 Findings and discussion regarding the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram

It was found from the study that the environmental knowledge, attitude and activities of college students in Mizoram had a significantly positive interrelationship to one another in spite of the fact that the students did not score high in the activity area. Although students scored a bit lower in the activity area when compared with the other two areas i.e. knowledge and attitude, this finding indicated that if a student had good environmental knowledge, he also had a good environmental attitude and activities. A student who had good environmental attitude also had good environmental knowledge and activities. Furthermore if a student had good environmental activities, he also had good environmental knowledge and attitude. This finding corroborated with the findings of Sahin et al. (2013) where they

determined significant relationships between the general environmental knowledge, attitude levels and individual characteristics of university students in Gazi University. However this finding is in disagreement with the findings of Levine and Strube (2012) when they found out in their study that environmental knowledge of American college students was not significantly related to their attitudes. It also clashed with the findings of Sivamoorthy et al. (2013) in the study they conducted in Tamil Nadu where they found out no significant correlation between environmental awareness and environmental practice among the students.

5.15.0 Findings and discussion regarding the opinion of college teachers teaching environmental studies towards this subject

The study disclosed that-

- Majority of the respondents (75.5%) agreed that the current syllabus of EVS is good enough for inculcating positive attitude in the learner towards environmental protection and conservation while 20.4% were undecided and 4.1% disagreed to the statement.
- Majority of the respondents (75.5%) agreed that the current syllabus of EVS is effective in developing right habits in the learner for environmental protection and conservation while 22.4% had no opinion and 2% of the respondents disagreed to the statement.
- Majority of the respondents (87.8%) agreed that the current syllabus of EVS is good for building the knowledge of the learner in environmental protection and conservation while 12.2% were could not decide whether they agree to the statement or not. There were no respondents who disagree on this statement.
- There were 44.9% of respondents who were undecided on whether the EVS syllabus caters to the needs of the State of Mizoram in the context of environmental conservation and protection. However, 42.9% agreed that the EVS syllabus caters to the needs of the State of Mizoram in the context of environmental conservation and protection and the remaining 6% disagreed to the statement.
- Majority of the respondents (75.5%) agreed that the EVS syllabus is suitable for learners, 18.4% were undecided and 6.1% disagreed to the statement.
- There were 49% of respondents who were undecided on the statement that the current syllabus needs to be changed or modified. However, 36.7% agreed that

the current syllabus needs to be changed or modified while 14.3 % disagreed to the statement.

- Majority of the respondents (73.5%) disagreed that the present syllabus is difficult for UG students. There are 18.4% of respondents who were undecided on the statement and 8.2% of respondents agreed that the present syllabus is difficult for UG students.
- There were 38.8% among the respondents who agreed that the present syllabus is vast and some topics which are not necessary should be removed. However, 36.7% of them disagreed to the statement and 24.5% were undecided.
- 59.2% of the respondents agreed that students show great interest during EVS periods, 32.7% were undecided and 8.2% disagreed to the statement.
- Majority of the respondents (85.7%) agreed that the average attendance of students in EVS classes is satisfactory, 8.2% were undecided and 6.1% disagreed to the statement.
- There were 61.2% that agreed that students participate actively in the classroom interaction while 16.3% disagreed and 22.4% were undecided.
- 40.8% of the respondents agreed that students remain passive throughout the EVS classes, 36.7% were undecided and 22.4% disagreed to the statement.
- Majority (63.3%) of the respondents agreed that majority of students score good marks in EVS subject, 26.5% were undecided and 10.2% disagreed to the statement.
- Majority (77.6%) of the respondents disagreed that students have been complaining about EVS subject while 18.4% were undecided and 4.1% agreed to the statement.
- There were 59.2% of the respondents who were undecided whether students have been complimenting the EVS subject or not while 32.7% agreed to that and 8.2% disagreed to the statement.
- Majority (67.3%) agreed that students feel free to express their ideas towards the subject in the class room, 18.4% were undecided while 14.3% disagreed to the statement.
- 28.6% of the respondents agreed that lecture method is the most useful method for teaching EVS while 49% were undecided and 22.4% disagreed to the statement.

- Majority (63.3%) of the respondents agreed that demonstrative method (employing teaching aids) is the best method for teaching EVS while 32.7% were undecided and there were no respondents who disagreed to the statement.
- Majority (67.3%) of the respondents agreed that taking students for field trips is most beneficial for students when teaching EVS subject while 32.7% were undecided and there were no respondents who disagreed to the statement.
- Majority (65.3%) of the respondents agreed that employing practical method is the most effective method for teaching EVS while 37.7% were undecided and 2% disagreed to the statement.
- Majority (65.3%) of the respondents agreed that discussion method is the most suitable method for teaching EVS while 30.6% were undecided and 4.1% disagreed to the statement.
- Majority (55.1%) of the respondents were undecided whether Laboratory work should be introduced for EVS while 25.5% agreed and 18.4% disagreed to the statement.

From this finding, it could be assumed that the current syllabus for Environmental Studies (EVS) was good enough and effective to inculcate right habits to the learners since majority of EVS teachers agreed to that. Students showed interest in the subject and scored good marks. However there were a large percentage of the EVS teachers who agreed that the current syllabus was too wide and need certain modifications. This finding indicated that the EVS subject was still efficient for today's learners and the teachers. However, necessary modifications were considered needed to be made in order to improve the effectiveness of the subject. Also, majority of the teachers did not go through any training for teaching environmental studies subject while only 16.3% were trained for teaching the subject. Since no earlier study was found on this topic, there was no other finding to compare with the findings of the researcher.

5.16.0 Educational Implications

Sound environmental knowledge, favorable attitude towards environment and activities to conserve the environment are three very important steps to reaching sustainable development. These steps are interrelated to one another and cannot take place independently. Therefore, each and every one of us has a very important role in

promoting right environmental knowledge in order to develop a citizen who has a good attitude and activities towards the environment. Since education has proved to be the most effective instrument of social change, teachers play a very important role in inculcating right knowledge about the need to conserve and protect our environment to their students.

From the findings of the present study it can be seen that majority of the college students had high environmental knowledge and majority of the college students had a sound environmental attitude. However majority of the college students had average environmental activity. Although it was mentioned in the findings that environmental knowledge, attitude and activities had positive interrelationship, this study revealed that a high environmental knowledge and sound environmental attitude yields average environmental activity. In order to inculcate right activities towards the environment, teachers - even more than policy makers and administrators - play a very important role. The kind of awareness imparted in the society and in the education system need necessary modifications with the passage of time. New approaches and strategies suited to the new generation are needed to mold the attitude of every citizen towards environmental conservation.

Regarding the opinion of college teachers teaching EVS towards the subject, some teachers felt that the syllabus needed to be revised and local issues should be included in the syllabus. EVS being a compulsory subject in higher education, all institutions should be given separate EVS teacher/s that are trained and qualified in the subject. Presently, EVS is taught by teachers across different disciplines ranging from social sciences to humanities and to actual sciences in most of the colleges in Mizoram. Since EVS is an interdisciplinary subject, it is not wrong to recruit teachers from various streams of study. However, these teachers need to undergo a special orientation programs as well as in-service re-orientation in order to do justice to this vital subject.

5.17.0 Suggestions for further Research

1. An analytical study of the steps taken by the state government towards environmental protection
2. A critical study of the impact of EVS subject on learners.
3. A study on evaluation of results and teaching-learning process in environmental education related subjects at different levels of education
4. A case study of Mizo society in the context of environmental protection.
5. A comparative study of practices of environmental education among different states of the country.

5.18.0 Conclusion

The present study clearly highlighted that college students in Mizoram had high environmental knowledge and attitude but they had average environmental activities. The fact that college students had high environmental knowledge and attitude may be the result of integrating environmental education in the education system of the country. However, inculcating right environmental activities should be given more attention since having average environmental activities will not suffice the need to conserve the degrading environment. Male and female college students did not differ in their environmental knowledge, attitude and activities. Among the three streams of study, although Arts, Science and Commerce college students were not far from each other in their environmental knowledge, attitude and activities, Science students were better in comparison with the other two streams in environmental knowledge and attitude. However, there was no difference between the three streams of study in their activity towards the environment. Although there were slight differences in the environmental knowledge, attitude and activities of college students coming from rural and urban areas, it was not significant. From the opinion of the college teachers teaching EVS subject, it can be assumed that the curriculum is good enough for the learners although there may be a need to make necessary modifications.

The need to have adequate knowledge regarding our environment, sound attitude and environmental friendly activities for environmental conservation and protection cannot be stressed enough. Environmental conservation is not just a matter of conserving wildlife and natural resources because of their rarity and aesthetic value of significance but what underlines is the understanding that if other systems are threatened, the existence of man is also under threat. It is in fact, the

interdependence of all living things and the finiteness of the resources upon which they and we depend upon for our mutual survival. It is concerned with actions and attitudes of human beings towards man, nature, the world and the future. It is based on morality and ethical sense and at the end of the day; these values are much more worthwhile than all material gains in terms of longevity of man and the maintenance of equilibrium on Earth.

BIBLIOGRAPHY

BIBLIOGRAPHY

Ajaz Ahmad Naikoo, A. A. (2017). *Teachers Attitude towards Environmental Education and Sustainable Development: A case study of Secondary School Teachers of Kupwara District of Jammu and Kashmir State, India.* International Education & Research Journal Vol. 3 Issue 4 Apr 2017. Retrieved from http://ierj.in/journal/index.php/ierj/article/view/799

Akhtar, R. (1990). *Environmental Pollution and Health Problems*. Ashish Publishing House 8/81 New Delhi-110026

Alexander, R. (2012). *Environmental Education for Sustainable Development in Selected Schools of Puducherry and Cuddalore regions, India*. Retrieved from http://www.ncert.nic.in/departments/nie/der/publication/pdf/RAlexander.pdf

Amérigo, M, García, A & Côrtes, L. (2017). *Analysis of Environmental Attitudes and Behaviors: An exploratory study with a sample of Brazilian University Students.* Retrieved from ANALYSIS OF ENVIRONMENTAL ATTITUDES AND BEHAVIORS: AN EXPLORATORY STUDY WITH A SAMPLE OF BRAZILIAN UNIVERSITY STUDENTS (scielo.br)

Astalin, P. K. (2011). *A Study of Environmental Awareness among Higher Secondary Students and Some Educational Factors Affecting it.* Retrieved from http://zenithresearch.org.in/images/stories/pdf/2011/Nov/7_vol-1issue-7%20_%20%20%20P%20K%20ASTALIN%20Paper%20for%20ZENITH.pdf

Bajwa, S. & Goyal, S. (2011). *Responsible Environmental Behaviour of Secondary School Students in Relation to their Locus of Control and Achievement Motivation.* Indian Educational Review, Vol. 49, No.2, pp 99-116.

Bareh, W. (2010). *Environmental Awareness amongst the Class X Students at Secondary Level in Jowai Town*. M.Ed Dissertation, Department of Education, NEHU Shillong – 793022

Best, J.W. & Kahn. J. V. (2000). *Research in Education* (7th Ed). New Delhi: Prentice-Hall of India Private Limited

Bhat, B. A., *et al.* (2016). *Environmental Awareness among College Students of Kashmir Valley in the State of Jammu and Kashmir and their Attitude towards*

Environmental Education. International Journal of Innovative Research and Review. 2016 Vol. 4 (2) April-June, pp.20-25

Budvytyte, A. (2011). *Environmental Education at Secondary School System in Lithuania.* Retrieved from http:lup.lub.lu.se/student-papers/record/1961765/file/1961769.pdf.

Chan, K. (1996). *Environmental attitudes and behaviour of secondary school students in Hong Kong*. Retrieved from (PDF) Environmental attitudes and behaviour of secondary school students in Hong Kong (researchgate.net)

Chauhan, A. S. (2004). *Environmental Studies*. Jain Brothers 16/873 Karol Bagh New Delhi – 110 005

Chhokar, B., Pandya, M. & Raghunathan, M. (2004). *Understanding Environment*. Sage Publications India Pvt Ltd B-42, Panchsheel Enclave New Delhi 110 017

Danilo V, Rogayan, Eveyen E. D. & Nebrida (2019). *Environmental Awareness and Practices of Science Students: Input for Ecological Management Plan.* International Electronic Journal of Environmental Education Vol.9, Issue 2, 2019, pp. 106-119

Das, H. (2013). *A Study on the Environmental Awareness of Primary School Students of Palasbari Town.* Unpublished M. Ed Dissertation. Department of Education, Gauhati University, Goinath Bordoloi Nagar, Guwahati-781014

Deka, A. (2006). *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.* An unpublished M. Ed Dissertation. Department of Education, Gauhati University, Guwahati.

Dey, B & Dey, N. (2016). *Environmental Accounting and Reporting Practices of Major Industrial Units in Assam.* Mizoram University Journal of Humanities & Social Sciences. Vol II Issue 1: pp. 145-151.

Erach Bharucha. (2005). *Textbook of Environmental Studies for Undergraduate Courses.* Universities Press (India) Private Limited. 3-5-819 Hyderguda, Hyderabad 500 029 (A. P.), India.

Fanchun, H. (2017). *Environmental Impacts of Chite River and its Tributaries Aizawl.* An unpublished M. Sc Dissertation in Environmental Science. Department of Environmental Science, Mizoram University, Aizawl, Mizoram

Garrett, H. E. (2009). *Statistics in Psychology and Education.* Paragon International Publishers. %, Ansari Road, Daryaganj, New Delhi – 110 002

Ghanta, R. & Rao, D. B. (2003). *Environmental Education Problems and Prospects*. Discovery Publishing House 4831/24, Daryaganj, New Delhi-110 002

Grimmette, K. A. (2014). *The Impact of Environmental Education on Youth and their Environmental Awareness*. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1134&context=envstudtheses .

Gronlund, N. E., and Linn, R. L. (1990). *Measurement and evaluation in teaching (6th ed.).* Macmillan Publishing Company, New York

Gupta, K. R. (2010). *Environmental Education in India*. Atlantic Publishers & Distributors (P) LTD 7/22, Ansari Road, Darya Ganj, New Delhi-110002

Hanneman, L. E. (2013). *The Effectiveness of Experiential Environmental Education: O'Neill Sea Odyssey Program Case Study*. Retrieved from http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=7823&context=etd_theses.

He, J. (2016). *Study of College Students' Environmental Awareness Cultivation Under the View of Ecological Civilization*. Retrieved from https://www.researchgate.net/publication/305632334_Study_of_College_Students'_Environmental_Awareness_Cultivation_Under_the_View_of_Ecological_Civilization

Heyl, M. et al. (2013). *Environmental Attitudes and Behaviors of college students: a case study conducted at a Chilean University*. Retrieved from Environmental attitudes and behaviors of college students: a case study conducted at a chilean university (scielo.org.co)

Hmangaihzuali, V. L. (2015). *Environmental Ethics Among Secondary School Students in Aizawl City*. An unpublished M. Phil dissertation. Department of Education, Mizoram University

Hooda, S. (2016). *A Study of Attitude and Awareness of College Students towards Environmental Pollution*. Retrieved from http://epratrust.com/articles/upload/11.Dr.%20Sehdev%20Hooda.pdf?

Hopkins, C. D. and Antes R. L. (1990). *Classroom Measurement and Evaluation*. F. E. Peacock Publishers, Inc., Itasca, Illinois

https://www.ripublication.com/ijeisv1n1/ijeisv5n1_08.pdf.

Jain, T. (2012). Educational Measurement and Evaluation. S. B. Nangia, APH Publishing Corporation 4435-36/7, Ansari Road, Darya Ganj New Delhi-110 002

Jha, P. (2010). Environmental Awareness Ability Measure (EAAM-J). National Psychlogical Corporation. 4/230 Kacheri Ghat, Agra – 282 004.

Kaur, R. & Kaur, M. (2009). *Environmental Awareness of Secondary and Senior Secondary Students.* Journal of All India Association for Educational Research, Vol. 21 Number 1: pp. 83-86

Koprivnik, M., Maja Korban-Crnjavic, M. & Hus, V. (2016). *Primary School Teachers' Opinions on Teaching the Environmental Studies Subject Outside of the Classroom.* Retrieved from https://www.researchgate.net/publication/322454094_Primary_School_Teachers'_Opinions_on_Teaching_the_Environmental_Studies_Subject_Outside_of_the_Classroom

Krishnamacharyulu, V., & Reddy, G. S. (Ed.). (2007). *Environmental Education.* Neelkamal Publications Pvt. Ltd: Sultan Bazar, Hyderabad- 500 095

Kumari, C. & Awasthi, S. (2009). *Developing Environment Friendly Behaviour among Adolescents- Role of Intervention.* Indian Educational Review, Vol. 45, No.1, January 2009, pp 108-117

Lahiri, S. (2019). *Environmental Education*. Studera Press 1586/113. FF, Tri Nagar, Delhi – 110 035

Lalremruati, P.C. (2014). *Environmental Education in Elementary Schools in Mizoram: An Analytical Study.* An unpublished M. Phil dissertation. Department of Education, Mizoram University

Lalremruati, P.C. (2019). *Environmental Education in Colleges of Mizoram: An analytical study.* An unpublished Ph. D thesis. Department of Education, Mizoram University

Levine, D. S. & Strube, M. J. (2012). *Environmental Attitudes, Knowledge, Intentions and Behaviors Among College Students.* Retrieved from Environmental Attitudes, Knowledge, Intentions and Behaviors Among College Students: The Journal of Social Psychology: Vol 152, No 3 (tandfonline.com)

Lushai Hills Regulation No. II 1954 The Lushai Hills District (Jhumming) Regulation, (1954). Retrieved from https://lad.mizoram.gov.in/uploads/files/the-lushai-hills-district-jhumming-regulation-1954.pdf

Magulod, G. C. (2018). *Climate change awareness and environmental attitude of College students in one campus of a State University in the Philippines.* Retrieved from http://www.innspub.net/wp-content/uploads/2018/03/JBES-Vol-12-No-2-p-211-220.pdf

Mahanta, R. P. (2013). *A Study on Environmental Awareness and Environmental Concern among Gauhati University Students.* Unpublished M. Ed Dissertation. Department of Education, Gauhati University, Gauhati-14.

Mehra, V & Kaur, M.(2012). *Effectiveness of Outdoor Environmental Education Programme for Enhancing Responsible Environmental Behaviour among Fifth Grade Students.* Indian Educational Review, Vol. 50, No.1, January 2012

Mehra, V. & Kaur, J. (2010). *Participatory Learning and Action for Environmental Education.* Indian Educational Review, Vol. 47, No.2, July 2010, pp 30-44.

Merriam-Webster. (n.d.). Environment. In *Merriam-Webster.com dictionary*. Retrieved March 16, 2021, from https://www.merriam-webster.com/dictionary/environment

Mifsud, M. C. (2011). *An Investigation on the Environmental Knowledge, Attitudes and Behavior of Maltese Youth.* Retrieved from https://files.eric.ed.gov/fulltext/ED524899.pdf

Mondal, N. et al. (2009). *Achievement in Environmental Education in relation to Attitude, Cognitive style and Ethics.* School Science- A Quarterly Journal of Science Education, Vol. 47 No. 2: pp. 70-73.

Msengi, I. et al. (2019). Assessment of knowledge and awareness of "sustainability" initiatives among college students. Retrieved from https://www.rees-journal.org/articles/rees/pdf/2019/01/rees180008.pdf

Naquin, M., Cole, D., Bowers, A. & Walkwitz, E. (2016). *Environmental Health Knowledge, Attitudes and Practices of Students in Grades Four through Eight*. Retrieved from https://files.eric.ed.gov/fulltext/EJ954496.pdf

Nayak, J. (2011). *An Investigation into the Awareness, Knowledge and Attitude of Student Teachers towards Climate Change*. Indian Educational Review, Vol. 49, No.2, July 2011, pp 54-63

Ningrum, Z. B. & Herdiansyah, H. (2018). *Environmental awareness and behavior of college students in regards to the environment in urban area.* Retrieved from https://www.e3s-conferences.org/articles/e3sconf/pdf/2018/49/e3sconf_icsolca2018_10004.pdf

Oweini, A. & Houri, A. (2007). *Factors Affecting Environmental Knowledge and Attitudes among Lebanese College Students.* Retrieved from https://www.tandfonline.com/doi/full/10.1080/15330150600648945?scroll=top&needAccess=true

Pandey, V. C. (2003). *Environmental Education.* Discovery Publishing House: New Delhi-1100 02

Qasim, S. H. (2016). *Primary School Teachers' Attitude towards the Environment*. Asian Journal of Educational Research and Technology Vol 6 (4), Oct 2016, pp. 56-61. Retrieved from https://www.researchgate.net/publication/333203748_Primary_school_teachers'_attitude_towards_environment_An_empirical_study

Rani, A & Singh,J. (2018). *A Correlational Study of Environmental Ethics and Environmental Attitude among College Students.* Retrieved from Melisew Shibabaw et al., International Journal of Research in Engineering, IT and Social Sciences, ISSN 2250-0588,Impact Factor: 6.452, Volume 08 Issue 2, February 2018, Page 20- (indusedu.org)

Rao, V. K. & Reddy, R. S. (2012). *Environmental Education.* Commonwealth Publishers: New Delhi- 110002

Rashid, S. (2018). *A Study on Environmental Awareness among College Students with special reference to Male-Female and Rural-Urban Dichotomy*. AGU International Journal of Research in Social Sciences & Humanities. 2018, Vol. No. 6, Jan-Jun, pp 643-649.

Rider, T. R. (2005). *Education, Environmental Attitudes and the Design Professions: A Master's Thesis.* An unpublished thesis presented to the Faculty of the Graduate School of Cornell University In Partial Fulfillment of the Requirements for the Degree of Master of Science. Retrieved from https://ecommons.cornell.edu/bitstream/handle/1813/2118/Rider_Thesis2.pdf;sequence=1.

Sadik, F. & Sadik. S. (2014). *A study on environmental knowledge and attitudes of teacher candidates.* Retrieved from https://pdf.sciencedirectassets.com/277811/1-s2.0-S1877042814X00108/1-s2.0-S1877042814005941/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEMn%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJIMEYCIQDYLlJFXO%2F5hlNeeAZZJf67O5geirqQVpaWPmOJmIElKwIhAPVEG43PqQHSz6bKo74C7W5rTZvDIzUj2kiczo6K0ZbNKr0DCML%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEQAxoMMDU5MDAzNTQ2ODY1IgzeAKwUAUo%2F6s16nLcqkQP1XjXN%2BJ7DclVSmAwFdbawhUGAA3aQEZR9DU98bWjFOk80ng270s3hon53vkWsU2CLvB4POwauX6nu7fkM%2BT4Ma4KqVJxpy87QqzjUDvB5x6kAPjVqC3a6RMjRkThKmyJgpi%2F60w4WcM42gVx0PvJPxaGYFGHSGo4iLFJ%2B1WNuoPIRm4kFhAXkOAVrn7yg%2FNtB%2FubM2X0FUiLCqyWXZ0E3tP5w6ERYliDJ09GGRej9ur57l6rDHxB1J4%2BzjbVPL10VlNc9bZ6WRRSYU0IEWTOkNGER449H%2FrEayyF9GPyqpB53FehRyF4KS7lxXuFMleyDrYG2G4Bcca%2FK95q6Tf

YrCJkVh1yBahM4BlPLX2a5aDQsaHmCiO0s0Tk%2Bu1yHOah%2FeqipZ5IJUOURhzsTRVo%2FjGyZbkNI7fmshn7ZaKpZ9IutqvtVG3%2BJlxFDVFcJ%2FyyHC9PXHQw1RtZxGedQMYOJbp84JLKRsm4jZYPuS0N17xgSIMa2B9QTJDb05Dd9UOFk5bo7kQYhDUVkVMccW%2BwboTDwtZWBBjrqAUz%2Bltus7Mr72rZk5X37XkPCHzJeC5GYy5MlMCxMYTZVnCTqWJNmnsv46rdGn9%2Fh%2BHso5qk3WV0t3IJzDWTTKxrYzrGNBGoIsx5E2SOZr9RrcJeqNJHAFQw88%2FU5t7a%2FNyJxPJlqSLdduTSXN1mKQa6HS5%2BacS7FQ16qs1zTnTPYc1aBimxYUNzUDfYsRFTTBHIFohMl0VFQNI54oIGkaPpKw%2Fhb13pt9NgXCFwq%2B%2B%2FzoTREvWmzuOh0g%2Fi%2FYS0iq0iQtp8NeVIJRWpgb8I804YrTeu%2BMdUmEtC5WudqMg1rrMROfjv7C5jnXA%3D%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20210211T174001Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYZGW5JDHA%2F20210211%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=28d0fd99e8fe2411fd058355f008d16a72e67aef81082af00d47e9e3369818e7&hash=368c1110eb48ee1df27553850808bc4f4088969794ef0e237df28beb99b05c2f&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S1877042814005941&tid=spdf-cc022d78-130e-4288-89be-96cbabca2391&sid=9630029e2e0c014b9868f4a-845c5e874acagxrqb&type=client

Sahin, H. , Kilic, I. & Erkal, S. (2013). *An Analysis of the Environmental Knowledge and Attitudes of University Students.* Retrieved from https://www.researchgate.net/publication/288212763_An_Analysis_of_the_Environmental_Knowledge_and_Attitudes_of_University_Students

Sahu, U., Roy, M., Monika & Rajkiran (2015). *Environmental awareness among undergraduate students in rural area.* IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT). Volume. 1 Issue. 4, pp 27-32

Sampath, K. & Sundaramoorthy, T. (2014). *Knowledge of Teachers and Students on Environmental Concerns from Elementary Eco-schools in Cuddalore District of Tamilnadu State*. Journal of Indian Education, Vol. No. XXXIX, Number 4, February 2014, pp 117-128.

Sarkar, M. (2011). *Secondary students' environmental attitudes: The case of environmental education in Bangladesh.* Retrieved from https://www.researchgate.net/publication/324029150_Secondary_students%27_environmental_attitudes_The_case_of_environmental_education_in_Bangladesh

Sengupta, M. et al. (2009). *Effect of Sight and Gender on Environmental Awareness and Pro-Environmental behaviour amongst School Students.* Journal of All India Association for Educational Research, Vol. 21 Number 1: pp. 60-63

Sethi, Purnima., & Kulkarni, V. S. (2011). *Environmental Education.* Alfa Publication: New Delhi-110 002

Sethi, U. (2015). *Attitude of degree and B. Ed. College Students towards Environmental Pollution.* Retrieved from

Shafiei, A & Maleksaedi, H. (2020). *Pro-environmental behavior of university students: Application of protection motivation theory.* Retrieved from Pro-environmental behavior of university students: Application of protection motivation theory - ScienceDirect

Shair, B. & Akhtar, R. (2012). *Comparative Study of Environmental Education in Adolescents and Higher Education Students*. Journal of Indian Education, Vol. No. XXXVIII, Number 2, August 2012, pp 113-120

Sharma, K. (2009). *Environmental Education at School Level: Issues at glance.* Journal of Indian Education, Volume XXXV Number 3: pp. 111-119

Sharma, R. A., Maisnam, P. & Lenka S. K. (2015). Environmental Education. Vinay Rakheja C/o R. Lall Book Depot Meerut 250 001

Sharma, S. P. (2006). *Environmental Education.* Vista International Publishing House: Delhi-110053

Shrivasta, K. K. (2007). *Environmental Education- Principles, Concepts and Management.* Kanishka Publishers, Distributors: New Delhi-110 002.

Singh, G. (2018). *Sentimental value alone can't save Mizoram's dying rivers*. Retrieved from https://india.mongabay.com/2018/11/sentimental-value-alone-cant-save-mizorams-dying-river/

Sivamoorthy, M., Nalini, R.& Kumar, C. S. (2013). *Environmental Awareness and Practices among College Students.* International Journal of Humanities and Social Science Invention. Volume 2 Issue 8 August. 2013, pp 11-15

Sudhir, M. A. (2013). *Participatory Learning and Action for Environmental Education.* Indian Educational Review, Vol. 51, No.1, January 2013, pp 120-123.

Sultana, N., Hossen, M. S. & Khatun, R. (2017). *Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh.* Retrieved from https://www.arcjournals.org/pdfs/ijres/v3-i2/5.pdf

Taj, H. (2016). *Environmental Attitude Scale (EAS-TH).* H. P. Bhargava Book House. LG-1 & 2, Nirmal Heights, Agra-282 007

The Mizoram (Forest) Act (1955). Retrieved from https://lad.mizoram.gov.in/uploads/files/the-mizoram-forest-act-1955.pdf)

The Mizoram (Prevention and Control of Fire in the Village Ram) Rules (2001). https://lad.mizoram.gov.in/uploads/files/the-mizoram-prevention-and-control-of-fire-in-the-village-ram-rules-2001.pdf

The Mizoram Gazette (2017). Vol XLVI, Issue No. 371. Rerieved from https://lad.mizoram.gov.in/uploads/files/the-mizoram-village-sanitation-rules-2017.pdf

Thomas G. L., George, G., Hassan, A. P., & Gangadharan, A. (2020). *A study of Awareness and Attitude of College Students towards Environmental Pollution.* Retrieved from http://www.plantarchives.org/SPL%20ISSUE%2020-2/363__2167-2171_.pdf

Thorndike, R. M. and Thorndike-Christ, T. (2013). *Measurement and Evaluation in Psychollogy and Education.* Pearson India Education Services Pvt. Ltd. Noida 201 301, Uttar Pradesh India.

Türkoglu, B. (2019). *Opinions of Preschool Teachers and Pre-Service Teachers on Environmental Education and Environmental Awareness for Sustainable Development in the Preschool Period*. Retrieved from https://www.mdpi.com/2071-1050/11/18/4925/pdf

Yimam, A.(2016). *Teachers' Attitude towards Environmental Education and their roles in the school and nearby Community: The Case of Secondary Schools of South Wollo Zone, Amhara Regional State, Ethiopia.* International Journal of Advanced Research (2016), Volume 4, Issue 7, pp. 580-587. Retrieved from https://www.journalijar.com/uploads/687_IJAR-11003.pdf

Young, J. (2009). *All Education is Environmental Education.* Retrieved from http://www.collectionscanada.gc.ca/obj/thesescanada/vol2/OKQ/TC-OKQ-1680.pdf

Zachariou, F., Eleni Tsami, E., Chalkias, C & Bersimis, S. (2017). *Teachers' Attitudes towards the Environment and Environmental Education: An Empirical Study*. International Journal of Environmental & Science Education 2017, Vol. 12, No. 7, pp. 1567-1593. Retrieved from http://www.ijese.net/makale_indir/IJESE_1924_article_59b63fb40e81e.pdf

APPENDICES

APPENDIX - I

Consumable Booklet

of

E A A M-J

(English Version)

Dr. Praveen Kumar Jha *(Madhepura, Bihar)*

Please fill in the following informations :– **Date** | | | | | | | | |

Name _____

Age _____ **Sex** _____

Level of Education _____

School/College _____ **Religion** _____

Caste _____ **Monthly Income** _____

Occupation of Father _____

INSTRUCTIONS

Given forth are fiftyone statements which you should read one by one and respond to each statement by marking tick mark ☑ in any one cell of the two responses–**Agree** or **Disagree.**

Do not spend too much time on any one item. Your responses should be spontaneous as well as accurate because these statements reflect your level of awareness and sensitivity about the environment you live in.

SCORING TABLE

Raw Scores				Total Score	Environmerntal Awareness Level
Page	2	3	4		
Score					

Estd. 1971 **☎:(0562) 2464926**

NATIONAL PSYCHOLOGICAL CORPORATION

4/230, KACHERI GHAT, AGRA-282 004 (INDIA)

Sr. No.	STATEMENTS	RESPONSE		SCORE
		Agree	Disagree	
1.	Man is responsible mainly for environmental pollution.	☐	☐	☐
2.	Pollution is more in developing countries than that in developed countries.	☐	☐	☐
3.	Large scale industrialisation is a significant cause of environmental pollution.	☐	☐	☐
4.	Mass-movement is a must for protection of environment.	☐	☐	☐
*5.	Big dams are essential for production of hydro-electricity.	☐	☐	☐
6.	Special attention must be given to the non-conventional sources of energy, i.e., wind-energy, solar energy etc.	☐	☐	☐
7.	Communication-medias have vital role to make people aware of their environment.	☐	☐	☐
8.	There must be a planned programme to grow renewable and alternative source of energy.	☐	☐	☐
*9.	Use of wind energy in producing electricity enhances pollution.	☐	☐	☐
10.	Use of nuclear reactor is not desirable in view of pollution.	☐	☐	☐
11.	Spray of synthetic fertilizers and pesticides should be banned.	☐	☐	☐
12.	Use of lead-free petrol is desirable.	☐	☐	☐
13.	Smoking at public places should be strictly prohibited.	☐	☐	☐
14.	Increasing population is the main cause of environmental pollution.	☐	☐	☐
15.	There should be balance between available energy sources and their use.	☐	☐	☐
*16.	Energy sources like coal, petrol etc. should be used at large scale.	☐	☐	☐
17.	Green-house effect is responsible for the increment of temperature of biosphere.	☐	☐	☐
			SCORE	☐

Sr. No.	STATEMENTS	RESPONSE		SCORE
		Agree	Disagree	
18.	Leather and fertilizer industries are responsible for water pollution.	☐	☐	☐
19.	Tree plantation is essential for the regulation of environmental temperature	☐	☐	☐
20.	Ozone layer in biosphere is essential for our existence.	☐	☐	☐
21.	Ban on nuclear test is desirable for preventing environmental pollution.	☐	☐	☐
22.	All should take active part in community cleanliness drive.	☐	☐	☐
*23.	Fertilizer factories should be located near the housing colonies.	☐	☐	☐
24.	Our vehicles should be checked time to time for preventing air pollution.	☐	☐	☐
25.	Nuclear wastes should be disposed off with utmost care.	☐	☐	☐
26.	To abide by family welfare programme is the duty of every citizen.	☐	☐	☐
*27.	In order to increase food-grains agriculture should be accelerated by removing forests.	☐	☐	☐
28.	Use of solar energy is pollution-free.	☐	☐	☐
29.	Rapid deforestation unbalances the rain-cycle of a place.	☐	☐	☐
30.	Biofertilizer should be used for maintaining the fertility of soil.	☐	☐	☐
31.	Catalytic converter must be used in the vehicles for preventing smoke pollution (air pollution).	☐	☐	☐
32.	Deforestation is the main cause of soil-erosion and flood.	☐	☐	☐
33.	Use of narcotics and drugs (Opium, charas, cocaine etc.) should be banned.	☐	☐	☐
34.	Every year from 1st to 7th October, forest conservation week must be observed with gaiety.	☐	☐	☐
			SCORE	☐

Sr. No.	STATEMENTS	RESPONSE		SCORE
		Agree	Disagree	
35.	Protection of rare animals like, leopard rhino and Kashmiri stag is essential.	☐	☐	
36.	Paper should be used properly with regard to forest conservation.	☐	☐	
37.	Mixed-cropping and crop-rotation are proper methods fcr upkeeping the fertility of soil.	☐	☐	
38.	Noise-pollution is harmful for our health.	☐	☐	
39.	Fume emitted from vehicles and factories is responsible for acid-rain.	☐	☐	
40.	Silencers must be used in vehicles.	☐	☐	
*41.	Alcohol producing plants like sugarcane, potato etc., should not be grown as substitute of petrol-fuel.	☐	☐	
42.	Indians have more percentage of D.D.T in their body in comparison to the people of other countries.	☐	☐	
43.	White-revolution played an important role in resolving malnutrition-problem.	☐	☐	
44.	Forestation must be there in 1/3 of the net area of India.	☐	☐	
45.	Unpolluted water is essential for life.	☐	☐	
46.	Community immunisation programme should be launched to prevent communicable diseases.	☐	☐	
*47.	Production of refrigerators and jet aircrafts should be stopped for preserving the Ozone layer.	☐	☐	
48.	Fall in mortality rate and increment in average life-span are the prime causes of population growth.	☐	☐	
49.	Attention should be given on the productivity of cattle.	☐	☐	
*50.	Satellites and rockets should not be launched for preventing space-pollution.	☐	☐	
51.	Increase in Green-house gas is a great danger to world community.	☐	☐	
			SCORE	

APPENDIX - II

HPB

Dr. Haseen Taj *(Bangalure)*

Consumable Booklet of

EAS-TH

(English Version)

Please fill in these entries : ***Date*** ☐☐☐☐☐☐☐☐

Name _____ **Father's Name** _____

Date of Birth ☐☐☐☐☐☐☐☐ **Gender : Male** ☐ **Female** ☐

Class Studying _____ **Area : Urban** ☐ **Rural** ☐

Educational Qualification _____ **In Job : Designation** _____ **Institution** _____

School/College _____ **City/Town** _____

Faculty : Arts ☐ **Science** ☐ **Commerce** ☐ **Technical** ☐

INSTRUCTIONS

On the following pages 61 statements regarding environment have been given.

Read each statement carefully and decide your answer on Four point alternative, viz., ***Strongly Agree, Agree, Disagree*** and ***Strongly Disagree***, and put a tick mark ☑ in the appropriate box of alternative which fully describes your thinking.

Please do answer to all the 61 statements.

Your answers will be kept confidential.

Scoring Table

	Raw Score			Level Grade	Stanine Grade	Level of Environmental Attitude
Page	2	3	4			
Score						
Total Score						

Estd. 1938 **☎:(0562) 2601080**

H. P. Bhargava Book House

LG-1 & 2, Nirmal Heights, Near Mental Hospital, Agra-282 007

Sr No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
1.	The use of fertilizers is essential to increase agricultural yield.	☐	☐	☐	☐	•
2.	Over population leads to poverty	☐	☐	☐	☐	
3.	Food additives are not hazardous to the health.	☐	☐	☐	☐	•
4.	Family planning should be made mandatory to decrease population growth.	☐	☐	☐	☐	
5.	Cutting of forests is essential to increase agricultural yields.	☐	☐	☐	☐	•
6.	Children are future investments; the more children a family has, the better for the country.	☐	☐	☐	☐	•
7.	All are responsible for environmental pollution.	☐	☐	☐	☐	
8.	More and more hydroelectric power stations should be built to meet the need of people.	☐	☐	☐	☐	•
9.	Developing countires should have more population in order to accelerate growth.	☐	☐	☐	☐	•
10.	Education about local issues and environmental pollution should be made mandatory in schools.	☐	☐	☐	☐	
11.	Shop keepers should stop handing out plastic carry-bags.	☐	☐	☐	☐	
12.	More and more power stations should be built as a mark of human progress.	☐	☐	☐	☐	•
13.	People who leave their picnic litters in parks should be fined.	☐	☐	☐	☐	
14.	There should be more wind mills.	☐	☐	☐	☐	
15.	The construction of new ski-resorts should be forbidden.	☐	☐	☐	☐	
16.	Destruction to ozone layer will hardly affect the near future.	☐	☐	☐	☐	•
17.	Engine idling is inevitable though it wastes fuel and contributes to air pollution.	☐	☐	☐	☐	•
18.	Habitual meat eaters need not change their food habits, just to show mercy towards animals.	☐	☐	☐	☐	•
19.	Legislation on prevention of killing of animals are unwanted.	☐	☐	☐	☐	•
20.	Possessors of more vehicles contributing to more air pollution should be punished.	☐	☐	☐	☐	•
21.	High income groups who directly or indirectly account for most green house gas emission should be penalized.	☐	☐	☐	☐	
22.	It is a right of high level income groups to have high level of resource consumption and waste generation.	☐	☐	☐	☐	•

Total Score Page 2 ☐

Sr. No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
23.	Protection of environment should be the sole responsibility of the governments and not of the individuals.	☐	☐	☐	☐	⬭
24.	Toxic wastes will not harm the human beings.	☐	☐	☐	☐	• ⬭
25.	Excessive energy consumers should be fined heavily.	☐	☐	☐	☐	⬭
26.	All people need not be kind and compassionate towards animals.	☐	☐	☐	☐	• ⬭
27.	The large sums of money spent on environment pollution control could be put to better use on other things.	☐	☐	☐	☐	• ⬭
28.	Water pollution is not a serious problem because 80% of the world's surface is water.	☐	☐	☐	☐	• ⬭
29.	Even a layman can do a lot to prevent pollution of environment.	☐	☐	☐	☐	⬭
30.	Parking fees should be made compulsory in places of work to those who commute by their personal vehicles.	☐	☐	☐	☐	⬭
31.	Higher gasoline prices should be charged to discourage the use of personal vehicles.	☐	☐	☐	☐	⬭
32.	Conservation of energy should be regarded as the responsibility of everyone.	☐	☐	☐	☐	⬭
33.	The government should increase its revenue by clearing the forests.	☐	☐	☐	☐	• ⬭
34.	Mining brings more benefits than problems to the local community.	☐	☐	☐	☐	• ⬭
35.	Population control does not assure a reasonable standard of living for future generations.	☐	☐	☐	☐	• ⬭
36.	It is not necessary to spend money to clean the drainages, because any way that will be washed away by rain.	☐	☐	☐	☐	• ⬭
37.	We are all responsible in one way or the other for the depletion of ozone layer.	☐	☐	☐	☐	⬭
38.	Aspiring for a better quality of life need not involve one's personal efforts to stem out the increasing toxification of earth.	☐	☐	☐	☐	• ⬭
39.	The interests of the future generations should be sacrificed for luxurious life at present.	☐	☐	☐	☐	• ⬭
40.	One should use energy resources, such as solar, which cause least pollution.	☐	☐	☐	☐	⬭
41.	The government should ban the use of plastic containers to reduce pollution of our surroundings.	☐	☐	☐	☐	⬭

Total Score Page 3 ▭

Sr. No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
42.	People should be encouraged to ride bicycles and paddled bancas to prevent pollution.	☐	☐	☐	☐	⬭
43.	Solid wastes should be made to dispose only in the land fills or pits	☐	☐	☐	☐	⬭
44.	The government should reduce the tax paid by factories that possess anti pollution facilities.	☐	☐	☐	☐	⬭
45.	The explosion of science and technology has lead to the poisonous effect on the environment.	☐	☐	☐	☐	⬭
46.	Over pollution of the environment can cause misery and sufferings to human beings.	☐	☐	☐	☐	⬭
47.	All the smoke belching vehicles should be removed from the roads.	☐	☐	☐	☐	⬭
48.	Participation in afforestation programmes is a mere waste of time and energy.	☐	☐	☐	☐	⬭
49.	People having no concern for environmental protection should be penalised.	☐	☐	☐	☐	⬭
50.	Environment is least affected though domestic garbage is dumped on the roadsides.	☐	☐	☐	☐	⬭
51.	Conservation of resources is necessary for the sake of future generations.	☐	☐	☐	☐	⬭
52.	Pesticides should not be sprayed on vegetables.	☐	☐	☐	☐	⬭
53.	Even the steep hill sides should not be left out of cultivation in order to increase the productivity.	☐	☐	☐	☐	⬭
54.	Excessive use of animals in laboratory experiments for testing medicines should be forbidden.	☐	☐	☐	☐	⬭
55.	The effects of acid rain on our forests are still acceptable.	☐	☐	☐	☐	⬭
56.	It is not wrong to hunt animals for commercial purposes.	☐	☐	☐	☐	⬭
57.	One should participate in campaigns on "stop pollution".	☐	☐	☐	☐	⬭
58.	It is not wrong to hunt animals for food.	☐	☐	☐	☐	⬭
59.	The industrial and toxic waste dumps located away from residential areas do not pose any safety risks.	☐	☐	☐	☐	⬭
60.	Every individual should complain against waste dumping whether it is near to their residences or far.	☐	☐	☐	☐	⬭
61.	Environmental pollution leads to health hazards.	☐	☐	☐	☐	⬭

Total Score Page 4 ☐

APPENDIX – III

ENVIRONMENTAL ACTIVITY SCALE

Name:
Sex:
Age:
Class:
Stream of Study:
Address:
Permanent:
Present:
Suggestions (If any):

Item no	Items	Response		
		Always (Engtiklai pawhin)	Sometimes (A changchang in)	Never (Ngailo)
	Family Activities			
1	Do you use a separate dustbin for perishable and non-perishable wastes? **(Bawlhhlawh tawih thei leh tawih theilo paih nan bawlhhlawh bawm hran i hmang em?)**			
2	Do you harvest rain water at home? **(Ruahtui in khawl em?)**			
3	Do you always finish your plate of food? **(I thleng a mi chaw i ei zo vek thin em?)**			
4	Do you turn off lights and other electronics when you are not using them? **(Light leh electric thil dang i hman loh lain i off thin em?)**			
5	Do you use LED lights instead of higher watt bulbs? **(Bulb watt sang aiin LED light i hmang thin em?)**			
6	Do you use water economically? **(Tui i ren thin em?)**			
7	Do you tell people around you about the need to conserve our environment? **(Midangte hnen ah kan environment humhalh a tulzia i hrilh thin em?)**			
8	* Do you smoke cigarettes in your house? **(In inah meizial i zu thin em?)**			
9	*Do you throw your wastes in public drains?			

	(Vantlang tuiluankawr ah bawlhhlawh i paih thin em?)			
10	Do you bring your own bag when going shopping as to avoid the use of plastic bags provided by shopkeepers? **(I bazaar in polythene an pek che pumpelh nan i bag i keng thin em?)**			
11	Do you save left over food for later use in other purpose? **(Chaw nawi i khawl thin em?)**			
Institutional Activities				
12	Do you make use of the dust-bins provided in the School/college? **(In sikul/college a bawlhhlawh bawmte bawlhhlawh paih nan i hmang thin em?)**			
13	*Do you throw rubbish around when there is no dustbin near? **(Bawlhhlawh bawm a awm hnaih loh in bawlhhlawhte i paih darh mai mai thin em?)**			
14	Do you follow all the protocols provided by the School/college concerning environmental protection? **(Sikul/College in environment humhalhna atan a dan a siam zawng zawng i zawm vek em?)**			
15	Do you use re-usable water bottles inschool/college? **(Bottle hman nawn theih sikul/college ah i hmang (pai) thin em?)**			
16	Do you walk to school/college instead of using vehicles? **(Motor chuan aiin sikul/college ke in i pan thin em?)**			
17	Do you make use of soft copies rather than hard copies for your study materials? **(I zirlai atan hard copy aiin soft copy I hmang tangkai zawk em?)**			
18	Do you use more internet resources/soft resources than books? **(Lehkhabu aiin Internet kaihhnawih i hmang tangkai zawk em?)**			
19	Do you take good care of school/college properties? **(In Sikul/College bungrua tha takin i enkawl thin em?)**			
20	*Do you smoke cigarettes inside school/college campus ? **(Sikul/College huam chhungah mei i zu thin em?)**			

21	Do you attend the environmental awareness programme in the school/college? **(Environmental Awareness programme sikul/college a in hmanin i kal ngai em?)**			
22	When you see rubbish/wrappers inside the school/college campus, do you pick it up and throw in the dust-bin? **(In sikul/college campus chhungah bawlhhlawh i hmuhin, i chharin bawlhhlawh bawmah i paih ngai em?)**			
Social Activities				
23	Do you take part in local voluntary actions for cleaning the streets? **(Vengchhung tihfai hnatlangah i telngai em?)**			
24	Do you take part in local voluntary actions for cleaning the public places like urinals? **(Vantlang hmun eg. Zunin, tihfai hnatlangah i tel ngai em?)**			
25	Do you recycle paper and plastics? **(Lehkha leh plastic te recycle turin I pe/hralh thin em?)**			
26	Do youuse recycledpaper and plastics? **(Paper leh plastic recycle tawh hnu i hmang thin em?)**			
27	*Do you hunt animals and birds? **(Ramsa leh sava i veh thin em?)**			
28	*Do you smoke cigarettes in public places? **(Vantlang hmunah mei i zu thin em?)**			
29	*Do you kill earth-worms/caterpillars when you see them? **(Changpat/pangang i hmuh in i that thin em?)**			
30	Do you make use of the public dust-bins? **(Vantlang bawlhhlawh bawm i hmang tangkai em?)**			
31	Do you plant trees in public places? **(Vantlang hmunah thing i phun tawh em?)**			

APPENDIX - IV

OPINIONNAIRE FOR UG EVS TEACHERS

Profile-

Sex:

Name of College:

Educational qualification:

Teaching experience of EVS subject (in years):

Trained /Untrained for teaching EVS:

Syllabus				
1	The current syllabus of EVS is good enough for inculcating positive attitude in the learner towards environmental protection and conservation	Agree	Undecided	Disagree
2	The current syllabus of EVS is effective in developing right habits in the learner for environmental protection and conservation			
3	The current syllabus of EVS is good for building the knowledge of the learner in environmental protection and conservation			
4	The EVS syllabus cater to the needs of the State of Mizoram in the context of environmental conservation and protection			
5	The EVS syllabus is suitable for learners			
6	The current syllabus needs to be changed or modified			
7	The present syllabus is difficult for UG students			
8	The present syllabus is vast and some topics which are not necessary should be removed			
Students				
9	Students show great interest during EVS periods			
10	The average attendance of students in EVS classes is satisfactory			
11	Students participate actively in the classroom interaction			
12	Students remain passive throughout the EVS classes			
13	Majority of students score good marks in EVS subject			

14	Students have been complaining about EVS subject			
15	Students have been complimenting the EVS subject			
16	Students feel free to express their ideas towards the subject in the class room			
Teaching Methods				
17	Lecture method is the most useful method for teaching EVS			
18	Demonstrative method (employing teaching aids) is the best method for teaching EVS			
19	Taking students for field trips is most beneficial for students when teaching EVS subject			
20	Employing practical method is the most effective method for teaching EVS			
21	Discussion method is the most suitable method for teaching EVS			
22	Laboratory work should be introduced for EVS			

Vol VII Issue 1 June 2021

ISSN (P) : 2395-7352
eISSN : 2581-6780

MIZORAM UNIVERSITY JOURNAL OF HUMANITIES & SOCIAL SCIENCES

(A Bi-Annual Refereed Journal)

MIZORAM UNIVERSITY JOURNAL OF HUMANITIES & SOCIAL SCIENCES
A Refereed Bi-annual Journal
ISSN(P): 2395-7352
eISSN: 2581-6780
Vol. VII, Issue 1 (June 2021)
http://www.mzuhssjournal.in/

Environmental Awareness among College Students of Mizoram

Lalhmangaihzuali[*]
Lynda Zohmingliani[†]

Abstract

Environmental protection has been operationalized into a concept of sustainable development and is sought to be a process of development that discourages the present generation to become better off at the cost of future generation. To make people aware about the need for sustainable development is one of the most important roles of education in the present society. The study analyses the environmental awareness of college students by employing descriptive statistics like mean and standard deviation and inferential statistic i.e., t test. The study revealed that majority of college students in Mizoram had 'High' environmental awareness. Null Hypotheses of the study- 'There is no significant difference between male and female college students in Mizoram with regards to their environmental awareness' and 'There is no significant difference between students coming from rural and urban areas in colleges of Mizoram with regards to their environmental awareness' had been accepted at both .05 and .01 level of significance.

Keywords: *Environment, Education, College Students, Mizoram.*

Introduction

We are living in a world where human beings, the most advanced creature, never hesitate to exploit their environment for the benefit of themselves without considering the effect it may have to humanity as a whole; where environmental protection and conservation is imperative. Man has always taken for granted what is a blessing which comes in the form of our physical and biological environment. Due to rapid development in industries, which leads to improvement in lifestyles and speeding up of resource utility, the natural resources have been massively exploited. The need of modern men keeps on increasing while the storehouse of nature is limited. This has led to a major environmental crisis that poses a great threat to humanity in every part of the world. Manufacturing human day-to-day needs has led

[*]Senior Research Fellow, Department of Education, Mizoram University, Aizawl - 796004, Mizoram, India. Email: lalhmangaihzualichhangte@gmail.com
[†]Professor, Department of Education, Mizoram University, Aizawl - 796004, Mizoram, India. Email: lynda.zohmingliani@gmail.com

to pollution of our environment. The irony lies in the fact that while trying to make our lives easy and better, we are plotting our own doom. Awareness about the pollution and protection of environment is crucial so that our resources may be used sparingly and wisely in order to make them last longer.

Environmental issues and rectification for those issues have been included in the curriculum of schools and colleges in our country but we are still lagging behind in taking measures to revive the natural world that we live in. The area of environmental education has been discussed thoroughly at several national and international seminars, workshops and conferences. Most of the people have recognized the urgent need of environmental education, but only some have clear idea and understanding about the concept of environmental education that needs to be taught to the students (Gina et.al. 2020).

Environmental education has been defined in different manner by various persons. The definition of environmental education in the draft of US Environmental Education Act is considered to be very authentic and is frequently quoted. It states:

> "Environmental Education is an integral process which deals with man's interrelationship with his natural and man-made surrounding, including the rate of population growth, pollution resource allocation and depletion, conservation technology and urban and rural planning to the total human environment. Environmental education is a study of the factors influencing ecosystems, mental and physical health, living and working condition, decaying cities and population pressures. Environmental education is intended to promote among citizens the awareness and understanding of environment, our relation to it and the concern and responsible action necessary to assure our survival and to improve the quality of life."

There is an increasing realization that the human race now stands at the crossroads in choosing the options it has in the areas of environment and development with the help of education. Growth in industrial development is necessary for the growth of a country especially in a third world country like India, but that will no doubt leads to environmental degradation. Sustainable development is a must that we should all opt for. Environmental protection has been operationalized into a concept of sustainable development which implies, 'meeting the needs of the present generation without compromising the needs of the future generations'. It is sought to be a process of development that discourages the present generation to become better off at the cost of future generation. To make people aware about the need for sustainable development is one of the most important roles of education in the present society.[i]

Review of Related Literature

Chan (1996) had conducted a postal survey to 992 secondary students in Hong Kong in order to investigate environmental attitudes. She used Weigel and Weigel (1978)'s environmental concern scale and readiness to engage in various pro-environmental

behaviours including paper recycling at school and at home, using less tissues and less plastic bags. She found out that students had a great concern about the preservation of the environment and were willing to participate in pro-environmental activities. However students were over indulged in modern technology and that had hinder their environmental concern. Pearson correlation coefficient between environmental concern scale and comprehensive behavioural intention was high and positive (0.52). Findings reveal that (a) television and school were the major sources of information regarding environment. Mass media were more important than personal media in the dissemination of environmental information, (b) female students, students belonging to higher education and students who lived in private housing were having more positive environmental attitudes and were more willing to participate in pro-environmental behaviours, and (c) factor analysis disclosed that the environmental concern scale was composed of two factors- 'personal sacrifice' and 'optimism/issue'. Hooda (2016) carried a pilot study where he selected 120 students studying in government and private colleges in Faridabad. For collection of data he employed "Environment pollution attitude scale by Dr. M. Rajamanickam and "Environmental Awareness Ability Measures (EAAM) developed by Praveen Jha. Findings revealed that the students of private colleges were found to be more positive in their attitude towards environmental awareness in comparison with the students of government colleges. Ningrum and Herdiansyah (2018) had conducted a research in which they studied the environmental awareness of 150 college students in one university in Jakarta. In their study, they reported the students' environmental behaviour, and analyse the correlation of some factors towards environmental awareness and behaviour. A questionnaire was developed and tested on students. The data collected from questionnaire was analysed by Spearman test with the help of SPSS. Findings revealed that (a) the level of environmental awareness and behaviours is'good' among both male and female students, (b) there was a difference in the level of environmental practices among male and female, and (c) college students have good environmental awareness and behaviour. Astalin (2011) did a research among 608 students to find the environmental awareness among higher secondary students and some educational factors affecting it. The students were selected from different board by cluster random sampling technique. The sample consisted of 280 male and 328 female students. The investigator developed a tool called "Paryavaran Jagrukata Prashnavali". Analysis of data was done using Post Hoc Tests, F-test and t- ratio test. The study revealed that there was no difference between the environmental awareness of students belonging to 11^{th} and 12^{th} standard; science students had more environmental awareness in comparison to art stream students; CBSE students had more environmental awareness in comparison to UP Board students; students whose parents were literate, undergraduate, post graduate and research had more environmental awareness in comparison to students whose parents belong to high school and intermediate; and male students had also more environmental awareness than female students.

Gina et al. (2020) had done a study where they conducted an investigation on the environmental awareness of 200 graduate and postgraduate students of various colleges around Kothamangalam, a town in Ernakulam District, Kerala, India in order to assess their attitudes and activities related to environmental concerns. The survey had 22 questions that

tested their knowledge, awareness, behaviour and attitude of college students on environmental pollution which was statistically analysed using IBM SPSS 20. The study was designed in such a way that the students were able to analyse, evaluate and draw inference about concerns related to environmental issues. The study finds out that students had high levels of knowledge of issues about the environmental pollution and comprehend the harmful effects of human activities towards the environment; and the null hypothesis that indicate no significant difference in awareness about environment pollution among college students with respect to gender was retained. The above findings clearly indicate the positive impact of education on environmental awareness. Results of different researches also indicated the presence of a distinctive difference in the awareness and awareness towards the environment among male and female college students in colleges where these researches were undertaken. One other thing which stood out was that such a research has not been done in Mizoram which is a tragic gap in knowledge. Therefore, the researcher though it would be wise to carry out a research in Mizoram so as to increase data on this subject and also to gather important data that could be of use to policy makers and hopefully contribute to the improvement of the environmental awareness among Mizo youth.

Objectives of the Study

1. To find out the level of environmental awareness of college students in Mizoram.
2. To compare the environmental awareness of male and female students of colleges in Mizoram.
3. To compare the environmental awareness of students of colleges in Mizoram on the basis of their locale.

Operational Definitions of the Key Term Used

1. Environmental Awareness: The knowledge and perception of college students about environmental problems, protection and conservation.

Delimitation of the Study

Due to limitation of time and resources, the present study was delimited to Aizawl City.

Hypotheses

1. There is no significant difference between male and female college students in Mizoram with regards to their environmental awareness.
2. There is no significant difference between students coming from rural and urban areas in colleges of Mizoram with regards to their environmental awareness.

Methodology

The present study is descriptive in nature. Primary data was used to assess the environmental awareness of College students.

Population: The population included all the College Students of Mizoram.

Sample: Cluster Sampling technique was employed for the present study. The sample consisted of hundred and fifty three (153) 6th semester students studying in colleges of Aizawl.

Tool: The investigator made use of Environmental Awareness Ability Measure (EAAM) prepared by Dr. Praveen Kumar Jha (2010) in order to study the environmental awareness of college students in Mizoram. It is a two point scale and has both positive and negative items and contains 51 questions. The scale purports to measure the extent and degree of awareness of people about environmental pollution and its protection. The scale explores the understanding of people about the importance of environment in which they live and how far the efforts of government through various legislations, mass awakening programmes of NGO and other agencies through mass-media, electronic media and print media could achieve their goals.

Scoring of the Scale: There are 51 items in EAAM. Each agreed item carries the value of 1 mark and each disagree item zero but the negative items are scored inversely. Thus on the total scale the scores ranged between 0 – 51.

Norms of the Scale: Norms have been prepared for the EAAM as follows

Level of Environmental Awareness	Range of Scores
High	37 - 51
Average	16 - 36
Low	0 - 15

Data Collection and Analysis

The Scale was administered to college students after taking consent from the sample students and the college teachers. Instruction was given carefully before administering the Scale. Data was analysed using descriptive statistical techniques like Mean, Standard Deviation and inferential statistical technique i.e., t-test.

Data Interpretation and Discussion

Objective 1: To find out the level of environmental awareness of college students in Mizoram.

For finding out the level of environmental awareness of college students in Mizoram, the researchers classified each and every score of the individual students according to the norms given in the manual. The Mean score and Standard Deviation were also computed.

Table 1: Level of Environmental Awareness of College Students in Mizoram

N	Mean	SD	Level of Environmental Awareness			TOTAL
			High	Average	Low	
153	43.06	2.83	146 (95.42%)	6 (3.92%)	1 (0.65%)	153

Looking at Table 1, we can see that majority (95.42%) of college students of Mizoram had high environmental awareness during the time this study was undertaken. Moreover, only

3.92% of them had average environmental awareness and negligible per cent (0.65%) of the students had low environmental awareness.

Objective 2: To compare the environmental awareness of male and female students of colleges in Mizoram.

Table 2: Difference between the environmental awareness of male and female college students of Mizoram

Gender	N	Mean	Standard Deviation	df	't' value	Significance (at 0.05 and 0.01 levels of significance)
Male	90	42.86	4.63	151	0.66	Not Significant at 0.05 and 0.01 levels of significance
Female	63	43.3	3.64			
Total	153					

Table 2 reveals that the Mean score of male students was 42.86 and Standard Deviation was 4.63. The Mean score of the female students was 43.3 and Standard Deviation was 3.64.The t value was 0.66, which was less than the critical t value at both 0.05 and 0.01 levels of significance. Therefore, the null hypothesis which stated that 'There is no significant difference between male and female college students in Mizoram with regards to their environmental awareness' cannot be rejected. Although looking at the Mean score of both male and female students indicates that female students have a slightly better environmental awareness, the difference is not statistically significant which means that there was no significant difference between the environmental awareness of male and female college students in Mizoram.

Objective 3: To compare the Environmental Awareness of students of Colleges in Mizoram on the basis of their locale.

Table 3: Difference between the Environmental Awareness of male and female college students of Mizoram

Locale	N	Mean	Standard Deviation	df	't' value	Significance (at 0.05 and 0.01 levels of significance)
Rural	71	43.0986	5.27	151	0.003	Not Significant at 0.05 and 0.01 levels of significance
Urban	82	43.0964	3.2			
Total	153					

As seen from Table 3 the Mean score of students coming from rural areas was 43.0986 and Standard Deviation was 5.27. The Mean score of students coming from urban areas was 43.0964 and Standard Deviation was 3.2. The t value was 0.003, which was very much less than the critical t value at both 0.05 and 0.01 levels of significance. Therefore, the null hypothesis which stated that 'There is no significant difference between students coming from rural and urban areas in colleges of Mizoram with regards to their environmental

awareness' cannot be rejected. The mean scores of both students coming from rural and urban areas were almost the same with difference of only 0.0042 which is not statistically significant. Thus it can be concluded that there is no significant difference between students coming from rural and urban areas in colleges of Mizoram with regards to their environmental awareness.

Discussion of Findings

The revelation made by this study is quite impressive. It is pleasantly surprising to find out that 95.42% of college students in Mizoram had high environmental awareness, 3.92% had average awareness and only 0.65% of them had low environmental awareness. Based on the present study it can be rightly assumed that the college students of Mizoram had high environmental knowledge and that the Environmental Studies (which is included in the curriculum of Mizoram University at the under graduate level) played an important role in enabling the learners to be aware about the environmental problems, protection and conservation. Another interesting revelation from this study was that there was no significant difference between male and female in their environmental awareness which shows that each of the gender has adequate knowledge about the environment. This finding was in agreement with the studies done by Kara K.W. Chan in 1996and the one done by Thomas K. Gina et al in 2020 when they study the environmental awareness and environmental practices among the college students in certain parts of India in which they found out that gender does not influence environmental awareness. However this finding is contradictory with the finding of Prashant Kumar Asthalin when he did a study on higher secondary students of UP regarding environmental awareness in 2011 where he found out that male students had more environmental awareness in comparison to female students. This study also reveal that there was no significant difference between the environmental awareness of college students in Mizoram on the basis of locale which means college students of Mizoram hailing from rural and urban areas did not differ in their environmental awareness. This may be the result of having Environmental studies in the curriculum of undergraduate students and the continuous inclusion of environmental studies in the lower stages of education in Mizoram.

Conclusion

The importance of environment has been recognized in India since long. This is also reflected in our Constitution wherein it is stated that it shall be the duty of every citizen to protect and improve the natural environment, including forests, lakes, rivers, wildlife and to have compassion for all living creatures. According to National Policy of Education, "There is paramount need to create a consciousness of environment. It must permeate all ages and all sections of society; beginning with the child, environmental consciousness should inform teaching in schools and colleges. This aspect be integrated in entire educational process." The importance of environmental awareness cannot be over emphasized. We must understand that to improve the environment is to improve quality of life. It is not only a question of air and water pollution. It includes elimination of disease, hunger, malnutrition and poverty, destruction of forests, extermination of wildlife, aversion of soil and accumulation of waste. Hence there is an urgent need for proper management of the environment. Each and everyone

needs to be made aware that we need to curb certain actions that lead to environmental degradation for the betterment of humanity since awareness can bring about desirable attitude and change in the actions of human being.

******

References

Chan, K. (1996).Environmental attitudes and behaviour of secondary school students in Hong Kong. Retrieved from (PDF) Environmental attitudes and behaviour of secondary school students in Hong Kong (researchgate.net)

Gupta, K. R. (2010). Environmental Education in India. Atlantic Publishers & Distributors New Delhi.

Hooda, S. (2016). A Study of Attitude and Awareness of College Students towards Environmental Pollution. Retrieved from http://epratrust.com/articles/upload/11.Dr.%20Sehdev%20Hooda.pdf?

Jha, P. K. (2010). Environmental Awareness Ability Measure. National Psychological Corporation. Agra.

Ningrum, Z & Herdiansyah, H. (2018). Environmental awareness and behavior of college students in regards to the environment in urban area. Retrieved from https://www.e3s-conferences.org/articles/e3sconf/abs/2018/49/e3sconf_icsolca2018_10004/e3sconf_icsolca2018_10004.html

Astalin, P. (2011). A Study of Environmental Awareness among Higher Secondary Students and Some Educational Factors Affecting it. Retrieved from http://zenithresearch.org.in/images/stories/pdf/2011/Nov/7_vol-1issue-7%20_%20%20%20P%20K%20ASTALIN%20Paper%20for%20ZENITH.pdf

Sivamoorthy, M. et al. (2013). Environmental Awareness and Practices among College students. Retrieved from http://www.ijhssi.org/papers/v2(8)/Version-3/CO283011015.pdf.

Thomas, K. et al. (2020). A study of Awareness and Attitude of College Students towards Environmental Pollution. Retrieved from http://www.plantarchives.org/SPL%20ISSUE%2020-2/363__2167-2171_.pdf

Endnote

[i]Gupta, K. R. (2010). Environmental Education in India.

Zeichen Journal

An UGC- care Approved Group-II Journal

ISSN No: 0932-4747

Website: www.ezeichen.com/ Email: editorzeichen@gmail.com

Paper ID: ZJ/2491

CERTIFICATE OF PUBLICATION

This is to certify that the paper titled

Environmental Awareness of College Students in Mizoram and their Activities towards the Environment

Authored by

Lalhmangaihzuali

From

Mizoram University

Has been published in

Zeichen Journal, Volume 8, Issue 03, March - 2022

4.7 IMPACT FACTOR

ISO International Organization for Standarbization 7021-2008

UGC APPROVED JOURNAL

Harihara Baskaran
Editor-in-chief
Zeichen Journal

ISSN: 0932-4747 Impact Factor : submit your paper to : editorzeichen@gmail.com

VOLUME 8 ISSUE 3 2022

Environmental Awareness of College Students in Mizoram and their Activities towards the Environment

Author

Lalhmangaihzuali

Research Scholar

Department of Education, Mizoram University

Corresponding Author

Dr. Lynda Zohmingliani

Professor

Department of Education, Mizoram University

Abstract

The need for conserving our environment can never be an outdated issue because environmental problems keep on arising due to human activities. The need to disseminate certain types of awareness to inculcate environmental friendly behavior is something that requires urgent attention in today's world. This study is an attempt to find out the level of environmental awareness the college students had in Mizoram and their level of participation in protecting the environment. It was found out that college students in Mizoram had high environmental knowledge and average environmental activities. This study also found out that environmental awareness and activities of college students in Mizoram had a significantly positive correlation.

Keywords*: Environmental Awareness, Environmental Activities, College Students*

Introduction

Environmental degradation is happening in a fast pace all over the world due to human activities alone. The over-consumption of natural resources will somehow lead to such a situation where the natural environment is irreparably compromised thus leading to the extinction of humanity. Therefore to ensure a future where we can all live in a perfect harmony with our natural environment, we have to take extra steps to safeguard the cause of our environment. For this purpose it is very much necessary to raise awareness among the

masses regarding the needs to protect and conserve our environment and to gear the attitude of humanity as a whole towards sustainable development with the hope that the awareness will lead to promoting environmental-friendly behavior.

Environmental awareness means being aware of the natural environment and making choices that benefit--rather than hurt--the earth (Environmental Awareness: Definition, History & Importance, 2019). To be 'aware' we need to know the current situation of our environment, the extent of reparation it requires. It can be easily assumed that in a developing country like India, there will be thousands of people who are ignorant of the crisis of environmental degradation and that they have a role to play in conserving their environment.

Environmental Activities are those activities which reduce or eliminate pressures on the environment and which aim at making more efficient use of natural resources. There are some activities which, though not primarily aimed at protecting the environment, may have environmentally beneficial effects. Damage avoidance and treatment may also be included in the field of interest though these activities are more concerned with rectifying damage already done than with preventing it in the first place. Minimisation of natural hazards may be included although these are activities to protect the economy from the environment where the others are concerned with protecting the environment from the economy (Glossary of statistical terms: Environmental Activities, 2005).

Mizoram is a state where environmental issues are significantly less in comparison with other states in India. However, recent occurrences show that the rivers in Mizoram had been polluted to a great extent and deforestation is a common issue due to jhumming cultivation which has been in practice for so long. Waste management and disposal is not efficient which often results to disaster. Non-perishable objects like polythene bags are widely and commonly used by the masses. Although awareness had been given by concern government department, people hardly follows it since their activities had no immediate effect on the environment. Therefore it is very important to inform the masses about the effect that their activities can upshot and the inevitable problems for humanity if such activities that are negatively effecting environment are continuously practiced.

Review of related literature:

Ningrum and Herdiansyah (2018) in their paper "Environmental awareness and behavior of college students in regards to the environment in urban area" analysed the environmental

awareness of college students, report their environmental behaviour, and analysed the correlation of some factors towards environmental awareness and behaviour in a sample of 150 college students in one university in Jakarta. This research concludes that college students have good environmental awareness and behaviour.

Hmangaihzuali (2015) conducted a study on Environmental Ethics among secondary school students in Aizawl City, Mizoram. She used Environmental Ethics Scale developed by Dr. Haseen Taj (2001) and an opinionnaire on issues related to environmental ethics developed by investigator herself. She 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.

Lalremruati (2019) in her 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. She also studied the attitude of college students towards their environment where all the college students were found to have positive attitude towards the environment.

Objectives:

In order to find out whether the environmental awareness of college students influence their environmental attitude, the following objectives had been formulated-

1. To find out the level of environmental awareness of college students in Mizoram
2. To find out the level of environmental activities of college students in Mizoram
3. To determine whether the level of environmental awareness influence the activities of college students in Mizoram towards the environment

Methodology:

Population:

The population of the present study comprised of all the college students of Mizoram

Sample:

A sample of 200 college students in Mizoram was collected on the basis of Random Sampling Technique. The sample was collected through online mode using Survey Monkey app.

Tools used:

1. Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha, Professor P. G. Dept. of Psychology T. P. College, Madhipura (B. N. Mandal University, Madipura) Bihar.
2. Environmental Activity Scale (EAcS) (2021) developed by the investigator

Statistical Techniques used**:**

Descriptive statistics like percentages and inferential statistics i.e. Pearson Product Moment Correlation were used for the analysis of data.

Analysis of Data:

Objective No.1: To find out the level of environmental awareness of college students in Mizoram

In order to find out the level of environmental awareness of college students in Mizoram, Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha was employed. EAAM-J consists of 51 items based on the following dimensions:

1. Causes of pollution
2. Conservation of soil forest, air etc.
3. Energy conservation
4. Conservation of human health
5. Conservation of wild-life and animal husbandry

The scale is a two point scale with positive and negative items. In the positive items, 'agree' carry one point and 'disagree' carry zero point and vice versa in the negative items. The range of the score is 0-51. The norm of the scale was established in such a way that the level of environmental awareness was classified into 'High', 'Average' and 'Low'. The scores

ranging from 37-51 falls under 'High', 16-36 falls under 'Average' and 0-15 falls under 'Low' category

Table No 1: Environmental awareness of college students in Mizoram

N	Mean	SD	High Environmental Awareness	Average Environmental Awareness	Low Environmental Awareness
200	43.11	5.72	176 (88%)	24 (12%)	0 (0%)

Table No. 1 shows that college students in Mizoram had high environmental knowledge with a Mean value of 43.11 and Standard Deviation 5.72. Majority, i.e. 88% of them had high environmental awareness, 12% had average environmental awareness and there are no students who had low environmental awareness

Objective No.2: To find out the level of environmental activities of college students in Mizoram

In order to find out the level of environmental activities of college students in Mizoram, Environmental Activities Scale (EAcS) developed and standardized by the investigator was made use of. The scale consists of 31 items. Each item has three alternative responses- 'always', 'sometimes' and 'never'. In positive items, the point for 'always' is 2, 'sometimes' is 1, 'never' is 0 and vice versa in negative items. The maximum possible score is 62 and minimum possible score is 0. Thus the range of the scale is 0 – 62.

The norm for EAcS was prepared in such a way that scores ranging from 50-62 falls under 'High' category, 38-49 under 'Average' category, 0-37 falls under 'Low' category.

Table No.2: Level of environmental activities of college students in Mizoram

N	Mean	SD	Low Environmental Activities	Average Environmental Activities	High Environmental Activities
200	42.37	5.34	23 (11.5 %)	174 (87%)	3 (1.5%)

Looking at Table No. 2, it can be seen that Mizoram college students had average environmental activities because majority (87%) had average environmental activities. Only 1.5 % had high environmental activities while 11.5% had low environmental activities. The Mean score of college students is 42.37 and the Standard Deviation is 5.34.

Objective No.3: To determine whether the level of environmental awareness influence the activities of college students in Mizoram towards the environment

In order to determine whether the level of environmental awareness influence the activities of college students in Mizoram towards the environment, Pearson Product Moment Correlation was employed to

Table No. 3: Relationship between environmental awareness and environmental activities of college students in Mizoram

Variables	**Critical r value**		**Calculated r**	**Significance**
Environmental Awareness	At 0.05 level of significance	.138	0.89	Significant
Environmental Activity	At 0.01 level of significance	.181		

Table No.3 shows the correlation value between environmental awareness and environmental activities of college students in Mizoram is 0.89 which is a high correlation. Since the calculated r value is higher than the critical r value at both 0.05 and 0.01 level of significance, it can be stated that there is a significantly positive correlation between environmental awareness and environmental activities of college students in Mizoram

Discussion of Findings:

It is plausible to state that college students in Mizoram had high environmental awareness because a large majority i.e. 88% had high environmental awareness and the remaining 12% had average environmental awareness. It is completely unanticipated that no students have low environmental awareness. The reason behind majority of college students having high environmental awareness can be reckoned that environmental education which was included in the education system as a separate subject from lower classes have a positive influence in the learners till they reach higher education stage. This finding coincide with the

finding of Lalremruati that the college students in Mizoram were found to have positive attitude towards the environment since awareness can have impact on the attitude of a person.

Although college students in Mizoram had high environmental awareness, majority i.e. 87% of them had average environmental activity. There are 11.5% of college students having low environmental activity while only negligible percentage of students had high environmental activity. The reason why college students in Mizoram had average environmental activity even though they had high environmental awareness may be due to insufficient amount of activities for environmental conservation and protection in educational institutions in Mizoram.

This study also finds out that there is a significantly positive correlation between environmental awareness and environmental activities of college students in Mizoram. This indicates that if the environmental awareness of college students increases, their activities towards environment will be increasing and at the same time environmental activities of college students decreases as the environmental awareness of college students decreases. The fact that there is a significant correlation between environmental awareness and environmental activities of college students in Mizoram can be somehow anticipated because human beings usually act according to their own ideas and understanding which are being built by the kind of awareness they are having.

Conclusion:

In the 21st century, environmental issues are the most crucial occurrence which requires immediate action. Awareness should be made regarding the protection of environment in all spheres and stages of live. College students, being the future leaders of the nation, needed to be well-acquainted with the present issue that our environment is facing and the remedial measures needed so that they can act out accordingly. Being aware simply is not enough if that awareness in not followed by action. The reason that college students in Mizoram had only average environmental activity while they have high environmental awareness may be lack of opportunity to do environmental-friendly activities. Therefore activities for environmental protection and conservation need to be adequately included in the curriculum not only of college students but in all stages of education since education has proved to be the most effective agent in changing the mindset of people.

REFERENCES:

Ningrum, Zarah & Herdiansyah, Herdis. (2018). Environmental awareness and behavior of college students in regards to the environment in urban area. E3S Web of Conferences. 74. 10004. 10.1051/e3sconf/20187410004.

Environmental Awareness: Definition, History & Importance. (2019, March 19). Retrieved from https://study.com/academy/lesson/environmental-awareness-definition-history-importance.html.

Glossary of statistical terms: Environmental Activities (2005). Retrieved from https://stats.oecd.org/glossary/detail.asp?ID=6420#:~:text=Activities%20which%20reduce%20or%20eliminate,Context%3A&text=In%20addition%2C%20there%20are%20some,may%20have%20environmentally%20beneficial%20effects.

Lalremruati, P.C. (2019). *Environmental Education in Colleges of Mizoram: An analytical study*. An unpublished Ph. D thesis. Department of Education, Mizoram University

Hmangaihzuali, V. L. (2015). *Environmental Ethics Among Secondary School Students in Aizawl City*. An unpublished M. Phil dissertation. Department of Education, Mizoram University

MIZORAM EDUCATIONAL FOUNDATION

Certificate

This is to certify that

Lalhmangaihzuali
Research Scholar, Mizoram University

has presented a paper on

Environmental Activities of College Students in Mizoram: An Analysis on **State Level Seminar on Contemporary Issues in Education** organized by Mizoram Educational Foundation on 24th May, 2018 at Govt. Aizawl West College, Aizawl.

24/5/18
(Dr. LALBIAKDIKI HNAMTE)
Gen. Secretary

24/5/18
(Prof. LALHMASAI CHUAUNGO)
President

MIZORAM EDUCATIONAL FOUNDATION

CERTIFICATE

This is to Certify that ***Ms. Lalhmangaihzuali,*** Research Scholar, Department of Education, Mizoram University, Aizawl, has presented a paper titled "***An Analysis of the Environmental Attitude of College Students in Mizoram***" in the Two Day National Webinar on '***Contemporary Issues and Trends in Indian Education – II***', Organized by Mizoram Educational Foundation on 18th and 19th November, 2020.

(Dr.LALZARMAWII)
Gen. Secretary

(Prof. LALBIAKDIKI HNAMTE)
President

BRIEF BIO-DATA OF THE CANDIDATE

NAME	: Lalhmangaihzuali
FATHER'S NAME	: Chuangkima
DOB	: 09.02.1990
ADDRESS	: ZWB/M-45, Zemabawk Aizawl, Mizoram
GENDER	: Female
RELIGION	: Christianity
MARITAL STATUS	: Single
EMAIL ID	: lalhmangaihzualichhangte@gmail.com
EDUCATIONAL QUALIFICATION	: M.A., NET (JRF), B. Ed
Ph. D. REGISTRATION NO. & DATE	: MZU/Ph.D./960 of 26.05.2017
TITLE OF THESIS	: Environmental Knowledge, Attitude and Activities of College Students in Mizoram

PARTICULARS OF THE CANDIDATE

NAME OF THE CANDIDATE	: LALHMANGAIHZUALI
DEGREE	: DOCTOR OF PHILOSOPHY
DEPARTMENT	: EDUCATION
TITLE OF THESIS	: ENVIRONMENTAL KNOWLEDGE, ATTITUDE AND ACTIVITIES OF COLLEGE STUDENTS IN MIZORAM
DATE OF ADMISSION	: 05.08.2016

APPROVAL OF RESEARCH PROPOSAL

1. DRC : 21. 03. 2017
2. BOS : 22. 05. 2017
3. SCHOOL BOARD : 26. 05. 2017

MZU REGISTRATION NO.	: 2389 of 2008-09
Ph. D. REGISTRATION No. & DATE	: MZU/Ph.D./960 OF 26.05.2017
EXTENSION (IF ANY)	: NO EXTENSION

(Prof. H. MALSAWMI)

Head

Department of Education

ABSTRACT

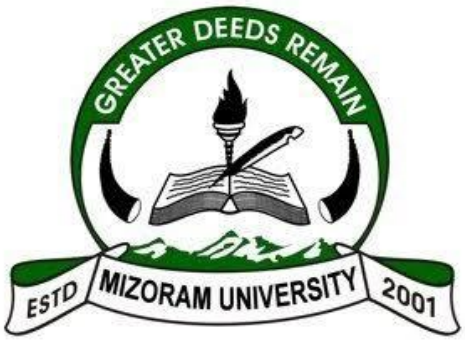
ENVIRONMENTAL KNOWLEDGE, ATTITUDE AND ACTIVITIES OF COLLEGE STUDENTS IN MIZORAM

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

LALHMANGAIHZUALI

MZU REGN. NO.: 2389 of 2008-09

Ph. D REGN No.: MZU/Ph.D./960 of 26.05.2017



DEPARTMENT OF EDUCATION

SCHOOL OF EDUCATION AND HUMANITIES

APRIL, 2022

Environmental Knowledge, Attitude and Activities of College Students in Mizoram

BY

Lalhmangaihzuali

Department of Education

Supervisor

Prof. Lynda Zohmingliani

Submitted

In partial fulfillment of the requirement of the Degree of Doctor of Philosophy in Education of Mizoram University, Aizawl.

Introduction

Environment is taken to mean the complex of physical, chemical, and biotic factors (such as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival (Merriam-Webster).

Due to rapid development in industries, which has led to improvement in lifestyles and speeding up of resource utility, the natural environment has been massively exploited. The need of modern man keeps on increasing while the storehouse of nature is limited. This has led to a major environmental crisis that poses a great threat to humanity in every parts of the world. Manufacturing human day-to-day needs has given rise to uncontrollable pollution of our environment. The irony lies in the fact that while trying to make our lives easy and better, we are plotting our own doom. Therefore it is very important for every human beings to be conscious about the environmental issues, to have a good attitude about environmental conservation and to act friendly towards our environment.

Rationale of the study

Our environment is facing dire threats due to the activities of man. Awareness has been given in certain forms throughout the world but the efforts taken are still not enough to curb the process of the deteriorating environment. The work of some people in certain areas is not enough to heal our degrading earth. Although it is the duty of every human being to conserve our environment for the betterment of ourselves and for the future generation, college students have an even more important role to play because most of them will enter the world of work after this stage is over. Therefore, their awareness, attitude and the activities they like to take up which concerns the environment is likely to have deep impacts on the environment. In today's world, apart from the threat of global warming and depletion of ozone layer, we are living in a state where humanity as a whole is endangered to be doomed in a moment by nuclear war. The deeds of people in certain areas within the globe have had adverse effect to other people in different parts. A very good example is the pandemic that we are facing today. We first heard of it in Wuhan which is in the heart of China but the next time we heard about the pandemic, it

happened on the other side of the globe. And from then on, it has been spreading far and wide even to a remote isolated state in the north-east part of India like Mizoram. This is a good example of how nature does not recognize environmental barriers. The same is true for environmental pollution. One state may not be taking part in many kinds of industrial activities causing air pollution. But if other states or the neighbouring state are taking part in such activities, it will also suffer from air pollution because even air pollution does not recognize borders. So even if our state is not industrially inclined, we still have to know about it and take care ourselves environmentally and be ecologically conscious.

Environmental degradation is a very big issue that we, as human beings, face in our everyday life. It is therefore imperative for each and every human being to stand up for conservation of our environment. At college level, in view of the fact that environmental education has been a part of our formal education system for so long, students are expected to have some knowledge, attitude and be able to take some environmentally sound activities. Therefore, the researcher thought it would be a worthwhile endeavour to find out the amount of knowledge that students have regarding environment and to what extent environmental education influences students' attitude and their activities towards environment at college level. Moreover, it was considered imperative to find out if any relationship existed between environmental awareness, knowledge as well as activities of college students. The present study was undertaken to give a picture of the present situation regarding the efficiency of environmental education in our educational system and certain steps based on the findings of the study may be suggested to improve environmental consciousness. Attempt was also made to find out the opinion that college teachers teaching this subject have towards this subject. Their opinion was expected to enable the researcher to understand more about what needs to be incorporated in environmental education so as to enable it to have a deeper impact on our everyday lives.

Research questions

1. What is the level of environmental knowledge of college students in Mizoram?
2. Is there any significant difference in the environmental knowledge of college students of Mizoram with reference to their gender?

3. Is there any significant difference in the environmental knowledge of college students of Mizoram with reference to their stream of study?
4. Is there any significant difference between college students coming from rural and urban areas in their knowledge regarding environment?
5. What attitude do college students in Mizoram have towards the environment?
6. Is there any significant difference in the attitude of college students in Mizoram towards the environment with reference to their gender?
7. Is there any significant difference in the attitude of college students in Mizoram towards the environment with reference to their stream of study?
8. Is there any significant difference between college students coming from rural and urban areas in their attitude towards environment?
9. How do college students in Mizoram behave towards the environment?
10. Is it possible to measure the activities of college students towards the environment?
11. Is there any significant difference in the activities of college students in Mizoram towards environment with reference to their gender?
12. Is there any significant difference in the activities of college students in Mizoram towards environment with reference to their stream of study?
13. Is there any significant difference between students coming from rural and urban areas in their activities towards environment?
14. Is there any interrelationship between environmental knowledge, attitudes and activities of college students of Mizoram?
15. What is the opinion of college teachers teaching the subject of Environmental Studies (EVS) towards this subject?

Statement of the Problem

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

"Environmental Knowledge, Attitude and Activities of College Students in Mizoram"

Objectives of the Study

1. To find out the environmental knowledge of college students in Mizoram.
2. To compare the environmental knowledge of college students in Mizoram with reference to their gender.
3. To compare the environmental knowledge of college students in Mizoram with reference to their stream of study.
4. To compare the environmental knowledge of college students in Mizoram with reference to their locale.
5. To assess the environmental attitude of college students in Mizoram.
6. To compare the environmental attitude of college students in Mizoram with reference to their gender.
7. To compare the environmental attitude of college students in Mizoram with reference to their stream of study.
8. To compare the environmental attitude of college students in Mizoram with reference to their locale.
9. To standardize a scale to measure the environmental activities of college students in Mizoram.
10. To study the environmental activities of college students in Mizoram.
11. To compare the environmental activities of college students in Mizoram with reference to their gender.
12. To compare the environmental activities of college students in Mizoram with reference to their stream of study.
13. To compare the environmental activities of college students in Mizoram with reference to their locale.
14. To find out the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram.
15. To study the opinion of college teachers teaching environmental studies towards this subject.

Null hypotheses

The following null hypotheses were stated so as to realize the above objectives:

1. There is no significant difference between the knowledge of male and female college students in Mizoram towards the environment.

2. There is no significant difference between the knowledge of Arts, Science and Commerce college students in Mizoram towards the environment.
3. There is no significant difference between the knowledge of
4. students coming from rural and urban areas in colleges of Mizoram towards the environment.
5. There is no significant difference between the attitude of male and female college students in Mizoram towards the environment.
6. There is no significant difference between the attitude of Arts, Science and Commerce college students in Mizoram towards the environment.
7. There is no significant difference between the attitude of students coming from rural and urban areas in colleges of Mizoram towards the environment.
8. There is no significant difference between the activities of male and female college students in Mizoram towards the environment.
9. There is no significant difference between the activities of Arts, Science and Commerce college students in Mizoram towards the environment.
10. There is no significant difference between the activities of students coming from rural and urban areas in colleges of Mizoram towards the environment.

Research Approach

The present study was descriptive in nature. A mixed approach was adopted as the method of data analysis was both qualitative and quantitative.

Population and Sample

The present research study comprised of two kinds of samples so as to realise different objectives.

To study and compare environmental knowledge, attitude and activities, a sample of 629 college students studying in colleges of Mizoram affiliated to Mizoram University offering Arts and/or Commerce and/or Science were taken on the basis of random sampling technique. Survey Monkey app was used to collect data.

Table No 1: Details of Samples

1.	Number of colleges covered	27
2.	Number of male respondents	308
3.	Number of female respondents	321
	TOTAL	**629**
4.	Number of respondents from Arts stream	350
5.	Number of respondents from Science stream	153
6.	Number of respondents from Commerce stream	126
	TOTAL	**629**
7.	Number of respondents from Rural areas	303
8.	Number of respondents from Urban areas	326
	TOTAL	**629**

To study the opinion of college teachers teaching the subject of environmental studies, the researcher prepared an opinionnaire which was administered using Google Forms application. The link was sent to EVS teachers in all the colleges of Mizoram having affiliation to Mizoram University offering Arts and/or Commerce and/or Science subjects. The total number of responses received from college teachers who taught EVS in colleges of Mizoram was 49. The researcher felt that the sample college teachers would suffice the need for this present study since these 49 teachers represented all the non-professional colleges of Mizoram offering Arts and/or Commerce and/or Science subjects during the time this study was undertaken.

Table No.2: List of respondents

S. No	Name of College	Number of Respondent
1.	Aizawl City College	2
2.	Divine Mercy College	1
3.	Govt. Aizawl College	1
4.	Govt. Aizawl North College	1
5.	Govt. Aizawl West College	1
6.	Govt. Champhai College	1

7.	Govt. Hnahthial College	2
8.	Govt. Hrangbana College	1
9.	Govt. J. Buana College	2
10.	Govt. J. Thankima College	2
11.	Govt. Johnson College	3
12.	Govt. Kamalanagar College	3
13.	Govt. Khawzawl College	1
14.	Govt. Kolasib College	1
15.	Govt. Lawngtlai College	3
16.	Govt. Mamit College	2
17.	Govt. Saiha College	2
18.	Govt. Saitual College	1
19.	Govt. Serchhip College	2
20.	Govt. T. Romana College	1
21.	Govt. Zawlnuam College	3
22.	Govt. Zirtiri Residential Science College	4
23.	HATIM	3
24.	Helen Lowry College	1
25.	Lunglei Govt. College	3
26.	Pachhunga University College	1
27.	St. Xavier's College	1
	TOTAL	49

Tools for data collection

For collecting primary data, the investigator used three standardized scales and one opinionnaire-

1. Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha, Professor P. G. Dept. of Psychology T. P. College, Madhipura (B. N. Mandal University, Madipura) Bihar.
2. Environmental Attitude Scale (EAS-TH) (2016) (revised) developed by Dr. (Mrs.) Haseen Taj, Professor, Department of Education, Bangalore University Bengaluru

3. Environmental Activity Scale (EAcS) (2021) developed by the researcher.
4. Opinionnaire developed by the researcher to find out the opinion of college teachers teaching EVS towards the subject.

Collection of Primary Data

1. So as to find out the environmental knowledge of college students in Mizoram, the investigator made use of Environmental Awareness Ability Measure (EAAM-J) (2010) developed by Dr. Praveen Kumar Jha. The reliability of this tool was re-established and was administered to the sample students using Survey Monkey Application after acquiring consent from their respective Principals and teachers and also reassuring them that their responses would remain confidential and only be used for the purpose of the present research.

2. In order to find out the attitude of college student towards the environment, the researcher employed Environmental Attitude Scale (EAS-TH) (2016) (revised) developed by Dr. (Mrs.) Haseen Taj. The investigator ensured reliability for the standardized test and administered the test to the sample students using Survey Monkey application after acquiring consent from their respective Principals and teachers and also reassuring them that their responses would remain confidential and only be used for the purpose of the present research.

3. In order to find out the environmental activities of college students of Mizoram, the investigator prepared and standardized a scale which was administered to the sample college students using Survey Monkey application after acquiring consent from their respective Principals and teachers and also reassuring them that their responses would remain confidential and only be used for the purpose of the present research.

4. In order to find out the opinion of college teachers teaching EVS subject towards the subject, the investigator prepared an opinionnaire. Content validity of the opinionnaire was established and was administered to the desired sample teachers using Google forms application.

Analysis of Data:

Quantitative and qualitative analyses 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, Partial Correlation, ANOVA, t-test, Cronbach's alpha and Discriminating Index given by Gronlund and Linn (1990). Analysis was done manually and by using Microsoft Excel 2010.

Major Findings and Discussions of the study

1. **Findings and discussion regarding the environmental knowledge of college students in Mizoram.**
    - Majority (94.48%) of college students of Mizoram had high environmental knowledge.
    - 5.88% of college students fell under average category
    - 0.64% of the students had low environmental knowledge.
    - The mean score of college students in Mizoram on environmental knowledge was 42.99 and Standard deviation was 4.87

Majority of the college students had high environmental knowledge. Only a negligible percentage of college students had average and low environmental knowledge. Thus it may be rightly assumed that college students of Mizoram in general had high environmental knowledge during the time this study was undertaken.

2. **Findings and discussion regarding the comparison of the environmental knowledge of college students in Mizoram with reference to their gender**
    - Among the male students, only a negligible percentage i.e., 0.65% had low environmental knowledge, 6.17% of them had average environmental knowledge and the remaining majority, i.e. 93.18% had a high environmental knowledge.
    - Among the female students, only negligible percentage i.e., 0.62% had low environmental knowledge, 6.54% of them had average environmental

knowledge and the remaining majority, i.e. 92.83% had a high environmental knowledge.

- The Mean score of male students was slightly higher with a value of 43.09 in comparison with the Mean score of female students with a value of 42.91
- The Standard Deviation of the score of male students was 4.61 while female was 5.17

Although male students had a slightly higher mean value than the female students, the study found no significant difference between male and female college students in Mizoram in their knowledge towards the environment.

3. **Findings and discussion regarding the environmental knowledge of college students in Mizoram with reference to their stream of study**
    - A huge majority of 96.08% of Science students had high environmental knowledge 3.27% had average environmental knowledge and only 0.65% low environmental knowledge.
    - Among the Arts students, 92.57% had high environmental knowledge, 6.86% had average environmental knowledge while only 0.57% of them had low environmental knowledge.
    - 86.51% of the Commerce students had high environmental knowledge, 12.70% had average environmental knowledge and 0.79% had low environmental knowledge
    - Science students had the highest mean score and Arts students had lowest Mean score among the three streams of study (Science=44.26> Commerce=42.17> Arts=42.14)
    - The Standard Deviation was lowest in Arts Stream (Commerce=5.65> Science=4.79> Arts=4.56)

The study discovered a significant difference among the three streams of study in terms of their environmental knowledge and on further testing, it was found that this difference was due to a significant difference between Science and Arts students with Science students having better environmental knowledge. A significant difference was also found between Science and Commerce students with Science students having better environmental knowledge. Thus, it can be rightly stated that

Science students had the best environmental knowledge among the three streams of study. This finding was not unexpected since environmental concerns are regarded to be closely related with the curriculum of life sciences and physical sciences.

4. **Findings and discussion regarding the comparison of the environmental knowledge of college students in Mizoram with reference to their locale**

    - 93.87% of college students coming from urban areas had high environmental knowledge; 5.83% of them had average environmental knowledge and only 0.31% of them had low environmental knowledge
    - 93.40% of college students coming from rural areas had high environmental knowledge, 5.94% had average environmental knowledge and only 0.66% had low environmental knowledge
    - The mean score of students coming from rural areas was 42.87 and Standard Deviation was 4.88
    - The mean score of students coming from rural areas was 43.24 and Standard Deviation was 4.45

This study showed that majority of both college students from rural and urban areas had high environmental knowledge. A comparison of their Mean scores showed a slight difference where students from urban areas showed slightly higher mean value. However, the environmental knowledge of college students from urban and rural areas did not differ significantly.

5. **Findings and discussion regarding the environmental attitude of college students in Mizoram**

    - The mean score of college students in Mizoram on environmental attitude was 177.95 and Standard deviation was 20.85
    - A large section of the students i.e. 43.72% had above average environmental attitude
    - 31.16% had high environmental attitude
    - 14.47% had average environmental attitude
    - 9.54% had extremely high environmental attitude
    - 0.79% had extremely low environmental attitude
    - 0.30% had below average environmental attitude

It could be realised from this finding that college students in Mizoram had sound attitude towards the environment since only minority of the students had 'below average' and 'extremely low' environmental attitude. This fact was somehow anticipated because the findings in the previous objective revealed that college students in Mizoram had high environmental knowledge which resulted in having a sound attitude towards the environment

6. Findings and discussion regarding the comparison of the environmental attitude of college students in Mizoram with reference to their gender

- A large section of both male (44.48%) and female (41.12%) college students had above average environmental attitude.
- While 8.12% of male students had extremely high environmental attitude, 2.18% of female students had extremely high environmental attitude.
- 25.65% of male students had high environmental attitude while 15.58% of female students had high environmental attitude.
- While 39.88% of female students had average level of environmental attitude, 20.78% of male students had average level of environmental attitude.
- While 0.32% of male students had below average environmental attitude, no female students were under this category
- While 0.31% of female students had low environmental attitude, no male students were under this category.
- The remaining 0.65% of male students and 0.93% of female students had extremely low environmental attitude.
- The Mean score of female was slightly better with a value of 178.22 in comparison with the Mean score of male which is 177.54.
- The standard deviation of male was 20.76 and the standard deviation of female was 21.03

Although there was a slight difference in the environmental attitude of male and female college students in Mizoram, the study found that the difference was not statistically significant. This finding showed that male and female students in

colleges of Mizoram were more or less similar in their environmental attitude at the time this study was undertaken.

7. Findings and discussion regarding the environmental attitude of college students in Mizoram with reference to their stream of study

- 12.42% of Science students had extremely high environmental attitude while 7.43% of Arts students and 7.94% of Commerce students had extremely high environmental attitude.
- While 41.18% of science students had high environmental attitude, 40.48% of Commerce students and 24.86% of Arts students had high environmental attitude.
- A large section of Arts students i.e. 49.71% had above average environmental attitude while 39.87% of Science Students and 37.30% of Commerce students had above average environmental attitude.
- While 17.43% of Arts students had average environmental attitude, 14.29% of Commerce students and 4.58% of Science students had average environmental attitude.
- Among the Science students, 0.65% of them had below average environmental attitude while there were no arts students whose score had to be classified under below average environmental attitude.
- The remaining 1.31% of Science students and 0.57% of Arts students had extremely low environmental attitude.
- There were no Commerce student whose score had to be classified under the categories of 'below average', 'low' and 'extremely low'.
- Science students had the highest Mean score although it was almost similar to the Mean score of Commerce students. Arts students had the lowest Mean Score.
  (Science=180.85>Commerce=180.53>Arts=176.38)
- The Standard Deviation was lowest among Commerce stream (Commerce=15.78<Arts=19.16<Science=21.59)

This study revealed a significant difference in the attitude of students among the three streams of study. A further study indicated that there was a statistically

significant difference between Arts and Science students and between Arts and Commerce students where Arts student had least favourable attitude towards the environment when compared with Science students and Commerce students.

8. **Findings and discussion regarding the environmental attitude of college students in Mizoram with reference to their locale**

- A large section of college students coming from both rural and urban background, i.e. 46.86% of students from rural areas and 40.49% of students from urban areas had above average environmental attitude.
- While 11.04% of students with urban background had extremely high environmental attitude, 7.92% of students with rural background had extremely high environmental attitude.
- The study also showed that 34.36% of students with urban background and 28.38% of students with rural background had high environmental attitude.
- While 16.17% of students from rural background had average environmental attitude, 12.88% of students from urban background had average environmental attitude.
- Under below average level, there were 0.33% of students coming from rural areas and 0.31% of students coming from urban areas.
- While no student from rural background scored under low category, 0.31% of students from urban background had low environmental attitude.
- The remaining 0.61% of students coming from urban areas and 0.33% of students coming from rural areas had extremely low environmental attitude.
- The Mean score of college students coming from urban areas was slightly higher with a value of 179.48 in comparison with the mean score of college students coming from rural areas with a value of 176.99.

- The Standard Deviation of scores of students coming from urban areas is 20.002 and the Standard Deviation of scores of students coming from rural areas is 19.40

As shown by findings in the above analyses, comparison of the attitude of college students coming from rural and urban areas towards the environment showed no significant difference between them although students coming from urban areas had a higher Mean score in comparison with students coming from rural areas.

9. Findings and discussions regarding the objective- To standardize a scale to measure the environmental activities of students in Mizoram

A standardised tool was developed by the researcher to study the environmental activities of college students of Mizoram. The developed scale consisted of 31 questions in a three point Likert-type scale. The scale had three dimensions- Family Activities, Institutional Activities and Social Activities. There were 24 positive items and 7 negative items in the scale.

In order to frame questions to measure the environmental activities of college students, the investigator looked into questionnaire framing pattern and consulted relevant literatures and came up with 91 items. Initially the items were framed in the form of a statement. After due consultation with related literature and informal interviews with college teachers teaching Environmental Studies, the items were re-arranged into three dimensions i.e., Home Activities, College Activities and Social Activities and 31 items were rejected as advised by the supervisor. To find out the content validity of the remaining 60 items, it was given to 5 subject matter experts within the University for content analysis. On the basis of the opinions of the experts, the statements were changed to questions, the dimensions were renamed as Family activities, Institutional Activities and Social Activities, 19 items were rejected and 4 items were re-phrased. After that the first scale having 41 items was drafted and was translated to Mizo language by the investigator. The translated version was proof-read by experts from Mizo Department, Mizoram University. The items were displayed in both English and Mizo in the scale for the convenience Mizo students.

The drafted questionnaire consisting of 41 items was administered to hundred 6th semester college students. The scores of these students were arranged in descending order and the top 27% and the bottom 27 % were taken for item analysis.

A t-test for each of the items was calculated from the upper 27% and lower 27%. The scores of students in the upper and lower 27% significantly differ from one another and that they can all be retained.

However, it was felt by the investigator that a further analysis would ensure the accuracy/sensitivity of the scale. (For the present research three separate scales were used, and a minimized number of items would mean lesser items for sample students to respond to, thus lightening their burden. However, if so desired, the total of 41 items would suffice since the t-test clearly showed a clear significance for each item). For this purpose, each item was again checked for its discriminating ability. The Discriminating Index given by Gronlund and Linn (1990) was applied.

Formula for Discrimination Index is-

$DI = R_U - R_L / \frac{1}{2}T$ (Gronlund & Linn 1990)

Where $R_{U=}$ The number of students in the upper group who answered the item in a positive manner

$R_{L=}$ The number of students in the lower group who answered the item in a positive manner.

T= Total number of students who tried the item

After checking each item for their discriminating ability, ten items were rejected and four items were rephrased. Thus, the Environmental Activities Measuring Scale having 31 items was finalized.

To measure the stability of the scale, test-retest method was employed. The scale was administered to fifty (50) sixth semester college students in Aizawl, Mizoram. There was an interval of 14 days between the first-test and the second test. Pearson's Product Moment Correlation Coefficient was used. The Correlation was found to be **0.60** which indicated a strong correlation which meant there was a high

degree of correlation between the scores of the students in the first-test and the second test.

Although it was not a part of the objective of the present study, the researcher administered the scale to twenty six (26) secondary school students in Aizawl, Mizoram so as to widen the utility of the scale for further research. There was an interval of 14 days between the first-test and the second test. Pearson's Product Moment Correlation Coefficient was used. The Correlation was found to be **0.70** which indicated a strong correlation which meant there was a high degree of correlation between the scores of the students in the first-test and the second test.

In order to measure the internal consistency of the scale, it was administered to 100 sixth semester college students. Cronbach's Alpha was employed. The value of Cronbach Alpha was found to be 0.75 which according to the interpretation was 'acceptable'.

Validity of the Scale:

The scale possessed face validity and content validity since each item was judged by experts.

Scoring of the scale:

The scale consisted of 31 items. Each item had three alternative responses- 'always', 'sometimes' and 'never'. In positive items, the score for 'always' was 2, 'sometimes' was 1, 'never' was 0 and vice versa for negative items. The negative items were given star-mark. The maximum possible score was 62 and minimum possible score was 0. Thus the range of the scale was 0 – 62.

Standardization:

For the last step in standardizing the scale, a final try out was done on a sample of 700 college students randomly selected from all the colleges of Mizoram. The sampled students comprised of 1^{st}, 3^{rd} and 5^{th} semester students from Arts, Science and Commerce Streams, both male and female college students coming from rural and urban areas of Mizoram. The norm was established as:

Low (-1σ and Below)	Average (-1σ to 1 σ)	High (1σ and Above)
37 and Below	**38 - 49**	**50 and Above**

10. **Findings and discussion regarding the environmental activities of college students in Mizoram**
    - Majority i.e. 74.09% of college students of Mizoram had average environmental activities
    - 12.56% of college students in Mizoram had low environmental activities
    - 13.35% had high environmental activities
    - The Mean score of college students on environmental activities was 43.66 and the Standard Deviation was 5.63

It was a surprise to find 12.56% of college students still had low environmental activity although the attitude and awareness levels were quite high. Although no study was done to investigate this further, the researcher attributed this to lack of opportunity. Even though college students had high knowledge and very positive attitude towards the environment, they hardly had time to perform environmental activities in society. This could be the reason why they scored rather low in this area (i.e. social environmental activity) which brought down their overall scores a great deal.

11. **Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their gender**
    - 76.01% of female students had average environmental activities while 66.88% of male students had average environmental activities.
    - While 14.61 % of male students had high environmental activities, 13.71% of female students had high environmental activities.
    - The study also revealed that 18.51% of male students and 10.28% of female students had low environmental activities
    - Female students had a slightly better Mean value of 43.74 in comparison with the Mean value of 43.24 of male students

- The Standard Deviation of the scores of female students was 5.54 and the Standard Deviation of the scores of male students was 6.07

Although females were commonly regarded to have more environmentally friendly behaviour in comparison with males, this study disclosed that apart from a slight difference, no statistically significant difference was found between the environmental activities of male and female college students in Mizoram. This was another indicator that male and female children are given much the same treatment in Mizo society which could attribute to their rather similar outlook towards life.

12. Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their stream of study

- Among the three streams of study, 74.86% of Arts students of Mizoram colleges had average environmental activities while 73.02% of Commerce students and 67.32% of Science students of Mizoram colleges had average environmental activities.
- 16.99% of Science students of Mizoram colleges had high environmental activities while 14 % of Arts students and 8.73% of Commerce students of Mizoram colleges had high environmental activities.
- This study also revealed that 18.25% of Commerce students of Mizoram colleges had low environmental activities while 15.69% of Science and 11.14% of Arts students of Mizoram colleges had low environmental activities.
- Science students had the highest Mean score and Commerce students had the lowest Mean score among the three streams of study (Science=44.02>Arts=43.78>Commerce=42.60)
- Standard deviation was lowest among the Arts students. (Arts=5.52<Science=5.88<Commerce=5.97)

Although there were trivial differences in the environmental activities of college students among the three streams of study, no significant difference was found in the activities of college students belonging to Arts, Science and Commerce

streams. The previous findings in this study revealed that Science students had the highest environmental knowledge and attitude; however they were not outstanding in terms of environmental activities.

13. **Findings and discussion regarding the comparison of the environmental activities of college students in Mizoram with reference to their locale**
    - 78.22% of Mizoram college students coming from urban areas had average environmental activities while 71.62% of Mizoram college students coming from rural areas had average environmental activities.
    - However, 13.86% of Mizoram college students coming from rural areas had high environmental activities while 9.51% of Mizoram college students coming from rural areas had high environmental activities.
    - While 14.52% of Mizoram college students coming from rural areas had low environmental activities, 12.27% of Mizoram college students coming from urban areas had low environmental activities.
    - The Mean score of college students coming from urban areas was slightly higher with a value of 43.90 in comparison with the mean score of college students coming from rural areas with a value of 43.64.
    - The Standard Deviation of scores of students coming from urban areas is 5.62 and the Standard Deviation of scores of students coming from rural areas is 5.77

Although there was a difference in the environmental activities of college students coming from rural and urban areas, the study showed no significant difference between the environmental activities of college students coming from rural and urban areas.

14. **Findings and discussion regarding the interrelationship among environmental knowledge, attitude and activities of college students in Mizoram**

- A significantly positive correlation was found between environmental knowledge and environmental attitude of college students in Mizoram (r_{12}=0.91)
- A significantly positive correlation was found between environmental knowledge and environmental activities of college students in Mizoram (r_{13}=0.90)
- A significantly positive correlation was found between environmental attitude and environmental activities of college students in Mizoram (r_{23}=0.92)
- The net correlation between knowledge and attitude with the exclusion of activities ($r_{12.3)}$ was reduced to 0.66. This meant that the third variable, i.e., activities of college students in Mizoram towards environment was positively contributing to the relationship between the knowledge and attitude of college students in Mizoram towards environment.
- The net correlation between knowledge and activities without the interference of attitude ($r_{13.2}$) was reduced to 0.26. This meant that the third variable, i.e., attitude of college students in Mizoram towards environment was positively contributing to the relationship between the knowledge and activities of college students in Mizoram towards the environment.
- The net correlation between attitude and activities without the interference of knowledge ($r_{23.1}$) was reduced to 0.50. This meant that the third variable, i.e., knowledge of college students in Mizoram towards environment was positively contributing to the relationship between the attitude and activities of college students in Mizoram towards the environment.

These findings revealed that a significantly positive correlation was found between environmental knowledge, attitude and activities of college students in Mizoram. This indicated that if a student had good environmental knowledge, he/she also had a good environmental attitude and activities. If a student had good environmental attitude, he/she had good environmental knowledge and activities and

if a student performed good environmental activities, he/she had good environmental knowledge and attitude.

15. **Findings and discussion regarding the opinion of college teachers teaching environmental studies towards this subject**

- Majority of the respondents (75.5%) agreed that the current syllabus of EVS was good enough for inculcating positive attitude in the learner towards environmental protection and conservation while 20.4% were undecided and 4.1% disagreed to the statement.
- Majority of the respondents (75.5%) agreed that the current syllabus of EVS was effective in developing right habits in the learner for environmental protection and conservation while 22.4% had no opinion and 2% of the respondents disagreed to the statement.
- Majority of the respondents (87.8%) agreed that the current syllabus of EVS was good for building the knowledge of the learner in environmental protection and conservation while 12.2% were could not decide whether they agree to the statement or not. There were no respondents who disagreed on this statement.
- There were 44.9% of respondents who were undecided on whether the EVS syllabus catered to the needs of the State of Mizoram in the context of environmental conservation and protection. However, 42.9% agreed that the EVS syllabus catered to the needs of the State of Mizoram in the context of environmental conservation and protection and the remaining 6% disagreed to the statement.
- Majority of the respondents (75.5%) agreed that the EVS syllabus was suitable for learners, 18.4% were undecided and 6.1% disagreed to the statement.
- There were 49% of respondents who were undecided on the statement that the current syllabus needed to be changed or modified. However, 36.7% agreed that the current syllabus needed to be changed or modified while 14.3 % disagreed to the statement.
- Majority of the respondents (73.5%) disagreed that the present syllabus was difficult for UG students. There were 18.4% of respondents who were undecided on the statement and 8.2% of

respondents agreed that the present syllabus is difficult for UG students.

- There were 38.8% among the respondents who agreed that the present syllabus is vast and some topics which are not necessary should be removed. However, 36.7% of them disagreed to the statement and 24.5% were undecided.
- 59.2% of the respondents agreed that students showed great interest during EVS periods, 32.7% were undecided and 8.2% disagreed to the statement.
- Majority of the respondents (85.7%) agreed that the average attendance of students in EVS classes was satisfactory, 8.2% were undecided and 6.1% disagreed to the statement.
- There were 61.2% that agreed that students participated actively in the classroom interaction while 16.3% disagreed and 22.4% were undecided.
- 40.8% of the respondents agreed that students remained passive throughout the EVS classes, 36.7% were undecided and 22.4% disagreed to the statement.
- Majority (63.3%) of the respondents agreed that majority of students scored good marks in EVS subject, 26.5% were undecided and 10.2% disagreed to the statement.
- Majority (77.6%) of the respondents disagreed that students had been complaining about EVS subject while 18.4% were undecided and 4.1% agreed to the statement.
- There were 59.2% of the respondents who were undecided as to whether students had been enjoying the EVS subject or not while 32.7% agreed to that and 8.2% disagreed to the statement.
- Majority (67.3%) agreed that students felt free to express their ideas towards the subject in the class room, 18.4% were undecided while 14.3% disagreed to the statement.
- 28.6% of the respondents agreed that lecture method was the most useful method for teaching EVS while 49% were undecided and 22.4% disagreed to the statement.

- Majority (63.3%) of the respondents agreed that demonstrative method (employing teaching aids) was the best method for teaching EVS while 32.7% were undecided and there were no respondents who disagreed to the statement.
- Majority (67.3%) of the respondents agreed that taking students for field trips is most beneficial for students when teaching EVS subject while 32.7% were undecided and there were no respondents who disagreed to the statement.
- Majority (65.3%) of the respondents agreed that employing practical method was the most effective method for teaching EVS while 37.7% were undecided and 2% disagreed to the statement.
- Majority (65.3%) of the respondents agreed that discussion method was the most suitable method for teaching EVS while 30.6% were undecided and 4.1% disagreed to the statement.
- Majority (55.1%) of the respondents were undecided whether Laboratory work should be introduced for EVS while 25.5% agreed and 18.4% disagreed to the statement.

From the findings, it could be assumed that the current syllabus for Environmental Studies (EVS) was good enough and effective to inculcate right habits to the learners since majority of EVS teachers agreed to that. Students showed interest in the subject and scored good marks. However there was a large margin of the EVS teachers who agreed that the current syllabus was too wide and needed certain modifications. Thus, these findings did not contradict each other but rather they indicated that the EVS subject was still efficient for today's learners and the teachers although modifications were considered needed to be made in order to improve the effectiveness of the subject.

Educational Implications

Sound environmental knowledge, favourable attitude towards environment and activities to conserve the environment are three very important steps to reaching sustainable development. These steps are interrelated to one another and cannot take place independently. Therefore, each and every one of us has a very important role in promoting right environmental knowledge in order to develop a citizen who has a

good attitude and activities towards the environment. Since education has proved to be the most effective instrument of social change, teachers play a very important role in inculcating right knowledge about the need to conserve and protect our environment to their students.

From the findings of the present study it could be seen that majority of the college students had high environmental knowledge and majority of the college students had a sound environmental attitude. However majority of the college students had average environmental activity. Although it was mentioned in the findings that environmental knowledge, attitude and activities had positive interrelationship, this study revealed that a high environmental knowledge and sound environmental attitude yielded average environmental activity. In order to inculcate right activities towards the environment, teachers - even more than policy makers and administrators - play a very important role. The kind of awareness imparted in the society and in the education system need necessary modifications with the passage of time. New approaches and strategies are needed to mould the attitude of every citizen towards environmental conservation.

Regarding the opinion of college teachers teaching EVS towards the subject, some teachers felt that the syllabus needed to be revised and local issues should be included in the syllabus. EVS being a compulsory subject in higher education, all institutions should be given separate EVS teacher/s that are trained and qualified in the subject. At the time this study was undertaken, EVS was taught by teachers across different disciplines ranging from social sciences to humanities and to actual sciences in most of the colleges in Mizoram. EVS, being an interdisciplinary subject, may be taught by teachers from various streams of study. However, without special orientation programmes as well as in-service re-orientation, teachers might not do justice to this vitally important subject.

Suggestions for further Research

1. An analytical study of the steps taken by the state government towards environmental protection
2. A critical study of the impact of EVS subject on learners.
3. A study on evaluation of results and teaching-learning process in environmental education related subjects at different levels of education

4. A case study of Mizo society in the context of environmental protection.
5. A comparative study of practices of environmental education among different states of the country.
6. A study of the relationship between academic profile of EVS teachers and their attitude towards the environment.

Conclusion

The present study clearly highlighted that college students in Mizoram had high environmental knowledge and attitude but they had average environmental activities. The fact that college students had high environmental knowledge and attitude may be the result of integrating environmental education in the education system of the country. However, inculcating right environmental activities should be given more attention since having average environmental activities will not suffice the need to conserve the degrading environment. Male and female college students did not differ in their environmental knowledge, attitude and activities. Among the three streams of study, although Arts, Science and Commerce college students were not far from each other in their environmental knowledge, attitude and activities, Science students were better in comparison with the other two streams in environmental knowledge and attitude. However, there was no difference between the three streams of study in their activity towards the environment. Although there were slight differences in the environmental knowledge, attitude and activities of college students coming from rural and urban areas, it was not significant. From the opinion of the college teachers teaching EVS subject, it can be assumed that the curriculum is good enough for the learners although there may be a need to make necessary modifications.

The need to have adequate knowledge regarding our environment, sound attitude and environmental friendly activities for environmental conservation and protection cannot be stressed enough. Environmental conservation is not just a matter of conserving wildlife and natural resources because of their rarity and aesthetic value of significance but what underlines is the understanding that if other systems are threatened, the existence of man is also under threat. It is in fact, the interdependence of all living things and the finiteness of the resources upon which

they and we depend upon for our mutual survival. It is concerned with actions and attitudes of human beings towards man, nature, the world and the future. It is based on morality and ethical sense and at the end of the day, these values are much more worthwhile than all material gains in terms of longevity of man and the maintenance of equilibrium on Earth.

References:

Garett, H. E. (2004). *Statistics in Psychology and Education*. Paragon International Publishers. 5, Ansari Road, Daryaganj, New Delhi – 110 002

Glen, S. (2020). *Cronbach's Alpha: Simple Definition, Use and Interpretation.* Retrieved from https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/cronbachs-alpha-spss/

Gronlund, N. E., and Linn, R. L. (1990). *Measurement and evaluation in teaching (6th ed.)*. Macmillan Publishing Company, New York

Gupta, K. R. (2010). *Environmental Education in India*. Atlantic Publishers & Distributors (P) LTD. 7/22, Ansari Road, Darya Ganj, New Delhi-110002.

Koul, L. (2015). *Methodology of Educational Research*. Vikas Publishing House Pvt Ltd. 576, Masjid Road, Jangpura, New Delhi-110014

Krishnamacharyulu, V. & Reddy, G. S. (2007). *Environmental Education.* Neelkamal Publications Pvt. Ltd: Sultan Bazar, Hyderabad- 500 095

Mangal, S. K. (2018). *Statistics in Psychology and Education (Second Edition)*. PHI Learning Private Limited. Delhi-110092

Merriam-Webster. (n.d.). Environment. In *Merriam-Webster.com dictionary*. Retrieved March 16, 2021, from https://www.merriam-webster.com/dictionary/environment

Sharma, R.A., Maisnam, P. & Lenka, S. K. (2008). *Environmental Education*. R. Lall Book Depot. Meerut-250 001