



## Environmental Education, Awareness and Environmental Ethics among Pre-University Students of Mysuru City, Karnataka, India

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### ABSTRACT

Environmental pollution and climate change have become a burning issue presently in the globe. The study was conducted to evaluate the environmental education, awareness, and environmental ethics among the pre-university students at various colleges in Mysore city. The questionnaires were prepared and circulated and presently a sample of 35 students (boys = 37% and girls = 63%) results have been analyzed in the present research paper. To gauge the environmental awareness among the students. A set of questions was prepared and divided into three sections namely, attitude towards the environment, environmental awareness, and environmental education. The proposed prospective study's statistical analysis will focus on environmental awareness among pre-university students. The sample size is calculated by using simple random sampling techniques. Once a set of questionnaire responses were analyzed, it was found that approximately eighty percent of the students gave the questionnaire an excellent response. Their decisions had the goal of bettering the environment and reducing pollution. In conclusion, environmental awareness is an advantage for kids and can contribute to Mother Earth's sustainability.

**Keywords:** Environment, Environmental awareness, Attitude, Education, Pollution

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### INTRODUCTION

The physical, biological, social, and cultural environments in which every living thing maintains its connections as well as interact with one another are referred to as the environment. The inconsiderate use of natural resources and unregulated destruction of the environment, which is one of the most significant facts of human existence, have terrible direct and indirect impacts. A broad spectrum of issues is addressed within the umbrella of the health of the environment, including production, pollutants in the air, and water, and climate change. Although scientific and technological advances may improve our lives, they also tend to adversely affect the environment. Humanity is the main root cause of environmental problems and only humanity can provide solutions. The delicate equilibrium of the environment has been disrupted by human attempts at controlling it, leading to hazardous environmental issues that pose a threat to the survival of humans (Gök & Kiliç, 2021). The last few decades have seen significant changes in the global environment, most of which have been attributed to human activity. It is estimated that the environment has changed at an alarming rate due to a decline in the quality of the air, water, and soil; an increase in ocean pollution; the extinction of wildlife; a loss of biodiversity; and an increase in the frequency and intensity of catastrophic natural disasters that cause property

damage and loss of life (Abbas & Singh, 2014). The rate at which natural resources are depleted exceeds their rate of replenishment and worldwide climate change. In the long run, environmental issues are being undermined by higher education because universities train the next generation of leaders who will be in charge of many different aspects of society and make decisions. As a result, graduates of these institutions are expected to deal with sustainability issues in both their personal and professional lives. To develop critical judgment, students need to gain a suitable variety of environmental awareness, comprehension, and concepts while they are in school. The last 30 years include a surge in the global acknowledgment of the significant impact that deterioration in the environment and environmentally friendly development have on education and schooling, as well as the connections that the problems have to one another. Currently, national educational policies, curriculum documents, curriculum development, and conservation strategies all integrate the idea of environmental education. There are indications that it is necessary to restart the process of evaluating the nature of our work. For example, efforts are currently being made by the North American Association for Environmental Education to create "Standards" for the field and the initiative's opponents believe it will probably serve to restrict speech than to promote it. Man-made environmental problems that involve degradation because of improper mineral harvesting methods, loss of biodiversity, floods, droughts, and poor sanitation threaten the capacity of the environment to support life. Although some of

these actions have boosted the nation's food supply, they must also be controlled to prevent harming the environment and compromising durability in the future. With a focus on the introduction of learning about the environment in the educational system, research suggests that schools continue to struggle with a lack of funding and a staffing imbalance in both the teaching and support departments. This is a challenge to the teaching and implementation of regulations and environmental education when resources are required to lower the ratio of pupils to educators during teaching so that students may receive enough attention from their teachers. This feature will aid in improving student's comprehension of conservation and how to effectively prevent environmental deterioration (Mashaba *et al.*, 2022). Though everyone has the right to a decent living, certain aspects of the modern world work against achieving and enjoying such a life. Increased environmental contamination can lead to a great deal of suffering. People experience misery and suffering only as a result of our indifference to society as a whole, as well as our lack of ethics and a sense of duty to maintain a healthy ecosystem. We must work together to stop the planet's increasing toxicity if we are to strive for a higher standard of living that will guarantee freedom from poverty, illness, and anxiety (Chavada & Charan, 2020). The discipline of environmental ethics expanded and became wider all over the twenty-first century. Addressing the core challenges in environmental ethics, how to deal with these issues, and how environmental ethical theory connects to urgent real-world environmental ethics today supports a wide range of opposing viewpoints. Here, we summarize some of the main yet opposing viewpoints that are being argued in the field of environmental ethics (Palmer *et al.*, 2014). There is always an alternative to business economic growth, which includes an ecological imbalance. Stakeholder demand for corporations to reduce the environmental impact of their business-related operations has increased recently. In turn, corporations should think about the management of the environment being a measure of their "social welfare" in addition to accepting environmental principles as a means of ensuring their financial sustainability. To achieve the goal of minimizing the environmental impact of company operations, if any of them, management needs to be committed to environmental ethics by developing regulations and enacting them in everyday activities. Multiple research studies show that the sustainability of an organization is dependent upon the environmental awareness of its human resources and their ownership of specific ecological abilities associated with fundamental operations for institutional applications in their development processes (Singh *et al.*, 2019). The aim of this survey was: To outline the primary focuses, advantages, and disadvantages of the existing body of study on students and learning in environmental education; to identify the most significant findings from this body of knowledge for each of the primary areas of focus and assess the limitations of these in terms of their generalization and empirical basis; to draw attention to concerns about the character, quality, and accessibility of current studies on environmental education and learning, and suggest regions of focus for further research (Rickinson, 2001). The past few decades have experienced a significant rise in global consumption, which has encouraged the global economy. This gives rise to overuse and use of natural resources, which in turn decreases the ecosystem. The implications of

environmental degradation are global warming, depletion of the stratospheric ozone layer, pollution of seas and rivers, noise and light pollution, acid rain, and desertification. Grunert (1993) found that private home consumption activities account for approximately 40% of environmental damage. In wealthy nations, public concern over the environment has persisted while it continues to deteriorate. Additionally, it has made emerging nations more aware of the green movement and its importance to environmental preservation (Jenkins & Pell, 2006). Youths who are empowered and aware of the environment have the potential to be the biggest change actors for the long-term preservation and care of the environment. Therefore, if environmental education is successfully implemented in the country, it will allow these youths to have a stronger voice on environmental issues. Therefore, the purpose of this study was to evaluate the knowledge and attitudes of students regarding the environment. However, it is essential to provide environmental literacy to children in school, intermediate, and higher learning systems. Consequently, implementing environmental education into primary and secondary school courses is a way of improving public understanding of the threat posed by environmental issues. It is also thought that a more thorough study of environmental issues results from this awareness of education and its integration in all grade levels of education.

## MATERIALS AND METHODS

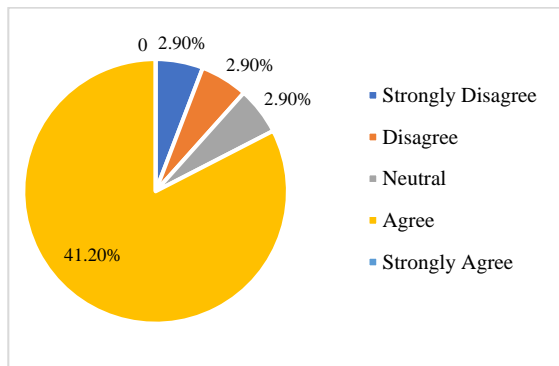
The study used a structured questionnaire survey method to gather data and responses from the sampled population to assess their level of environmental awareness, attitudes, level of care, and roles concerning the environment and environmental protection. There were 138 questionnaires distributed in total. Responses were gathered from a random sample of students who were present in their respective colleges around the university. Three components make up the questionnaire: one on attitudes toward the environment, one on ethics and education, and one on environmental awareness.

## RESULTS AND DISCUSSION

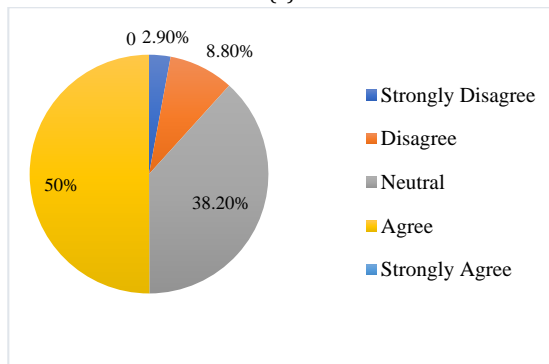
### *Environmental awareness*

Understanding and preserving the environment, encompassing both the natural world and the impact of human activities on ecosystems has been referred to as being environmentally aware. It includes a wide range of issues like depletion of resources, pollution, deforestation, and changes in the climate. Educating people and communities about these problems, promoting sustainable activities, and building a sense of responsibility are the major goals of environmental awareness. Nowadays, waste dumping has become a serious problem across the world. Improper management of waste leads to various types of environmental pollution like air pollution and groundwater pollution, causing airborne diseases, waterborne diseases, various changes in climate, acid rain, and global warming. It reduces soil fertility, disrupts rainfall according to seasons, etc. As per responses depicted in **Figure 1a**, 50% of students strongly agreed, 38.2% of students gave positive responses, 8.8% of students were neutral, and 2.9% of students strongly disagreed. Everyone should complain about waste dumping even if it is near their residences or far away because

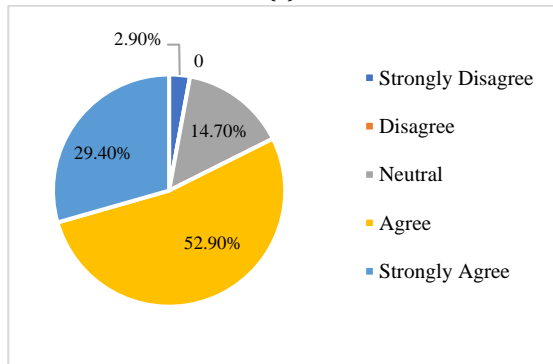
no one has the right to destroy the environment, we should protect our environment because it's our responsibility. Everyone is using excess amounts of natural resources without knowing their value, simply wasting those resources. Nowadays, water scarcity has increased in many countries due to less rainfall, pollution of rivers, groundwater pollution, and overuse of water for many purposes. The responses indicated in the **Figure 1b**, that 2.9% of students strongly concurred, 41.2% of students agreed, 2.9% of students expressed neutrality, and 2.9% of students disagreed. Average responses have been provided by 2.9% of students. Future generations rely on the preservation of natural resources because it promotes sustainability, protects biodiversity, and protects the environment. We can reduce the damage to the environment and leave a healthy planet for future generations by managing resources like water, forests, and minerals sustainably.



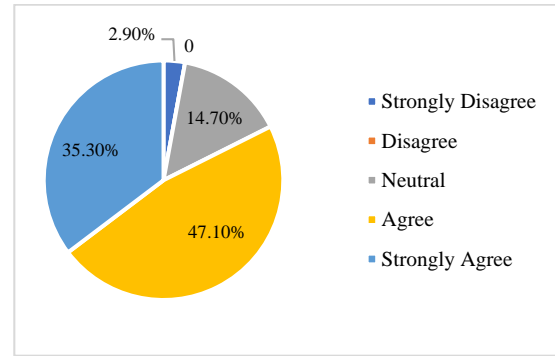
(a)



(b)



(c)

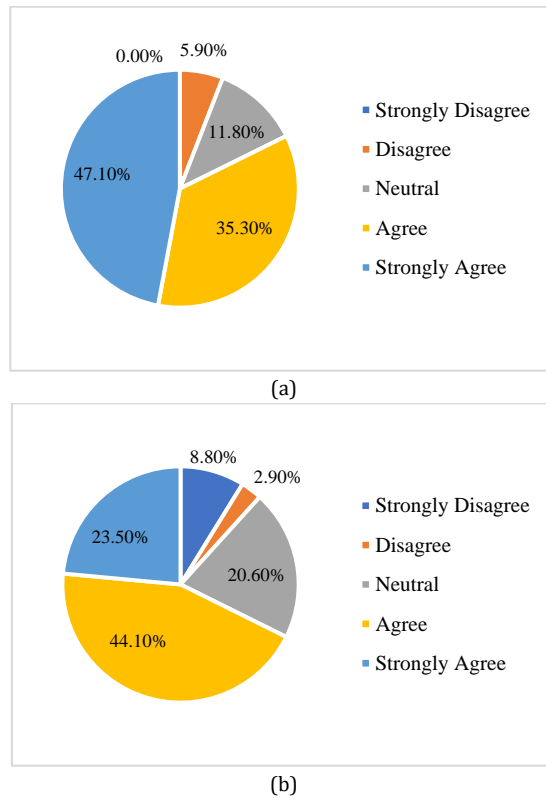


(d)

**Figure 1.** Responses regarding. a) Waste dumping, b) Conservation of resources, c) Concern for environmental protection, d) Depletion of the ozone layer.

Most people aren't aware of the environment, and they continuously spoil the environment by making things that harm the environment. The responses shown in **Figure 1c** indicate that 29.4% of students strongly concurred, 52.9% agreed, 14.7% neutral, and 14.7% strongly disagreed. Average responses have been provided by 2.9% of students. The concept that people need to be punished for their acts that damage the environment is the basis for penalizing those who show a lack of care for environmental protection. This strategy aims to raise people's knowledge of their environmental responsibilities and the effects of their decisions. Penalties are not only a powerful deterrent; they are also an essential component of the legal system that protects the environment. When people who break environmental rules face consequences, it not only deters harmful behavior but also helps ensure that the costs of environmental degradation are fairly internalized. By highlighting the idea that the environment is a shared resource in need of communal preservation, this legal support aids in maintaining the integrity of shared resources.

The destruction of the ozone layer impacts everyone, creating a global problem. Various human activities have emitted ozone-depleting substances into the atmosphere. Examples of these pollutants include halons, chlorofluorocarbons (CFCs), and other synthetic compounds. People contribute to this process by using aerosol sprays, air conditioning, and refrigeration systems that include ozone-depleting chemicals, among other things. According to the responses depicted in **Figure 1d**, 35.3% of students strongly agreed, 47.1% agreed, 14.7% were neutral, and 2.9% strongly disagreed, whereas 2.9% gave average responses. To sum up, the depletion of the ozone layer is still a serious environmental issue with far-reaching effects. Even while worldwide efforts have produced some positive results, constant global cooperation and awareness are necessary to address the enduring hazards posed by compounds that contribute to the depletion of the ozone layer and human activity. Preserving the ozone layer for future generations requires dedication to environmental regulations, the development of sustainable technology, and public knowledge.



**Figure 2.** Responses regarding. a) Environment education in schools, b) Sustainable development.

Education plays a crucial role in protecting the environment, as it lays the foundation for environmental conservation. Responses as shown in **Figure 2a** revealed that 47.1% of students strongly agreed, 35.3% agreed, 11.8% were neutral, 11.8% gave medium responses, and 5.9% disagreed. For a variety of reasons, schools must teach students about environmental pollution and local issues. First of all, it helps students become more environmentally conscious by educating them about the unique difficulties that their communities experience. This knowledge develops awareness and motivates effective involvement in regional environmental concerns. Incorporating such information into the education system also contributes to the early implantation of eco-friendly practices, resulting in a generation that places a high priority on environmental protection and sustainability. Students become activists for positive social change that improves the overall state of the environment around them. Furthermore, teaching kids about local issues strengthens their relationship with society, developing an attitude of leadership and participation. It gives them the ability to work with local governments and take part in community projects to successfully address environmental concerns.

Developing a balance between present enjoyment and future well-being is important. A luxurious present could sacrifice the interests of future generations, leading to resource depletion, environmental damage, and social problems. Ensuring a sustainable future may benefit everyone. The responses indicated in **Figure 2b** that 20.6% of students were neutral, 44.1% agreed, 23.5% strongly agreed, and 2.9% strongly disagreed. Of the students, 2.9% expressed average responses

and strongly disagreed. The responses of 8.8% of the students are below average. Unregulated consumption and industrial activity are the main causes of environmental deterioration, which presents long-term dangers such as pollution, biodiversity loss, and climate change. Resource depletion, particularly of finite resources, could damage the ability of future generations to meet their needs. Furthermore, if present developments are not spread equally, social inequality might increase and result in long-term inequities. In conclusion, it may not be a good idea to put the interests of future generations behind those of present-day luxury. Developing a more equal and sustainable future requires aiming for a balance between enjoying the present and sustainable actions.

#### *Environmental ethics*

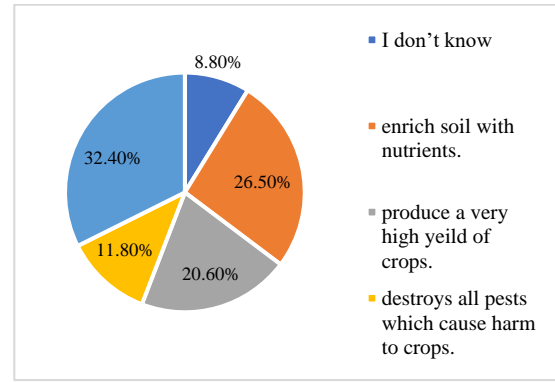
The study of the ethical principles directing how humans interact with the natural environment is known as environmental ethics. It aims to establish moral principles and ideals that will direct people's actions regarding the environment. Environmental ethics guides individuals, organizations, and authorities toward ethical and environmentally ethical conduct. It is the foundation of sustainable development, preservation, and responsible decision-making processes.

Conservation of biodiversity is essential for the environment because most animals, birds, etc. are becoming extinct and some of them are endangered species. To get rid of this problem, we need to construct national parks and reserves, zoos, and forests for their protection. Biodiversity conservation needs a combined strategy. Protecting ecosystems from human activity through the establishment of protected areas is essential, and efforts to restore degraded habitats are meant to bring life back to these areas. Government and laws are essential tools for stopping harmful behaviors, and public awareness encourages responsibility. Sustainable land use strategies highlight the value of neighborhood involvement and respecting cultural traditions while assisting in establishing a balance between human demands and environmental protection. International cooperation promotes global conservation efforts, and the preservation of genetic variety through programs like seed banks is crucial. Thorough investigation and observation yield knowledge that guides practical conservation actions. Furthermore, reducing the effects of climate change on ecosystems and maintaining biodiversity depends on its mitigation. When taken as a whole, these actions provide a thorough plan for successful biodiversity preservation. According to responses indicated in **Figure 3a**, 35.5% of the students have given correct and accurate responses, 20.6% of the students have given not exactly correct responses, 11.8% of the students have given medium responses, 29.4% of the students have given average responses, and 2.9% of the students have given below average responses.

The Worldwide Fund for Nature (WWF) has a simplified representation of a giant panda as its logo. The panda's black and white image highlights the unique colors of this endangered animal. The panda was chosen as a symbol of the organization's commitment to biodiversity preservation and wildlife conservation. The goal of the simple but effective design is to raise awareness as well as sympathy for the importance of protecting Earth's natural resources. The WWF logo is now widely known and associated with environmental preservation

initiatives. It acts as an illustration of the company's goal to protect the planet's many ecosystems and advance sustainability. According to responses indicated in **Figure 3b**, 29.4% of the students have given correct and exact responses, 17.6% of the students have given not exactly correct but near to correct, 17.6% of the students have given medium responses, 8.8% of the students have given average responses, and 26.5% of the students have given below average responses.

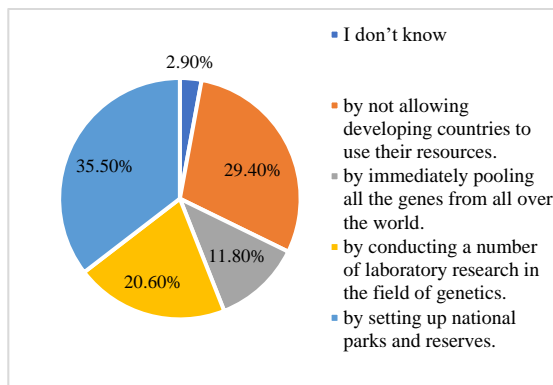
Nowadays agriculture is mainly managed through the use of fertilizers and pesticides. Agricultural fields use a significant amount of pesticides, which is beneficial when used in moderation. Pesticide overuse can have adverse effects on biodiversity, human health, and the environment. Contamination of soil, water, and air could lead to the endangerment of non-target species and the disruption of ecosystems. People have also linked long-term pesticide exposure to health issues such as cancer and respiratory disorders. In addition to causing pests to become sensitive to pesticides, a heavy dependence on pesticides can also lead to a pattern of increased pesticide use. To reduce the harmful effects of pesticides, integrated pest management, and sustainable agriculture methods are essential. According to responses indicated in **Figure 3c**, 32.4% of students have given correct and exact responses, 11.8% have given not exact but near-answers, 20.6% have given medium responses, 26.4% have given average responses, and 8.8% have given below-average responses. To solve this problem, agricultural companies must adopt more integrated and sustainable practices, prioritizing long-term environmental health and balance over immediate profits. We can reduce the negative impacts of pesticides and work toward a more sustainable and ecologically conscious future by implementing appropriate practices.



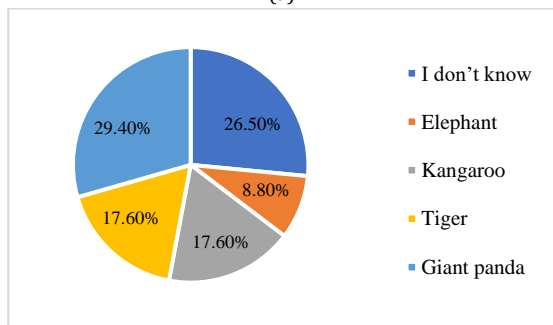
(c)  
**Figure 3.** Responses regarding, a) Measures for conservation biodiversity, b) Logo and symbol of WWF (Worldwide Fund for Nature), c) Excessive use of pesticides.

Manufactured chemicals made up of atoms of carbon, chlorine, and fluorine are known as chlorofluorocarbons or CFCs. In past times, these materials were widely used in a variety of industrial settings, especially as refrigerants in air conditioning and refrigeration units. They were also used in aerosol products as propellants. However, the effects of CFCs on the environment started to become an increasing concern. CFCs may rise to the stratosphere in the atmosphere after being released, where they are broken down by ultraviolet light and release chlorine atoms. The ozone layer is then reduced as a result of the chlorine atoms' catalytic destruction of ozone molecules. After realizing how seriously this was affecting Earth's ozone layer, world leaders moved to take immediate action. According to responses indicated in **Figure 4a**, 55.9% of the students have given a correct answer; 14.7% of the students have given a not-exact correct answer but a near answer; 2.9% of the students have given medium answers; 11.8% of the students have given average answers; and 2.9% of the students have given below-average answers.

Limited resources that cannot be replaced within a human lifetime are known as non-renewable energy sources. These include fossil fuels like coal, oil, and natural gas, as well as nuclear energy derived from uranium. Deforestation, greenhouse gas emissions, air and water pollution, and other environmental problems are caused by the production and use of non-renewable energy. There are global conflicts and economic uncertainty as a result of these resources' gradual depletion. Sustainable development demands converting to renewable energy sources since it reduces environmental impact and provides a more reliable and flexible energy supply in the future. According to responses indicated in **Figure 4b**, 32.4% of the students have given correct and accurate answers, 20.6% of the students have given not exact answers but near answers, 23.5% of the students have given medium answers, 14.7% of the students have given average answers, and 8.8% of the students have given below average answers. In conclusion, because non-renewable energy sources are limited and have negative environmental implications, focusing entirely on them creates serious issues. These resources are running out, which emphasizes how urgently we need to switch to clean and renewable energy sources. Adopting greener technology promotes energy security, reduces dependency on politically



(a)



(b)

sensitive resources, and decreases the impact on the environment.

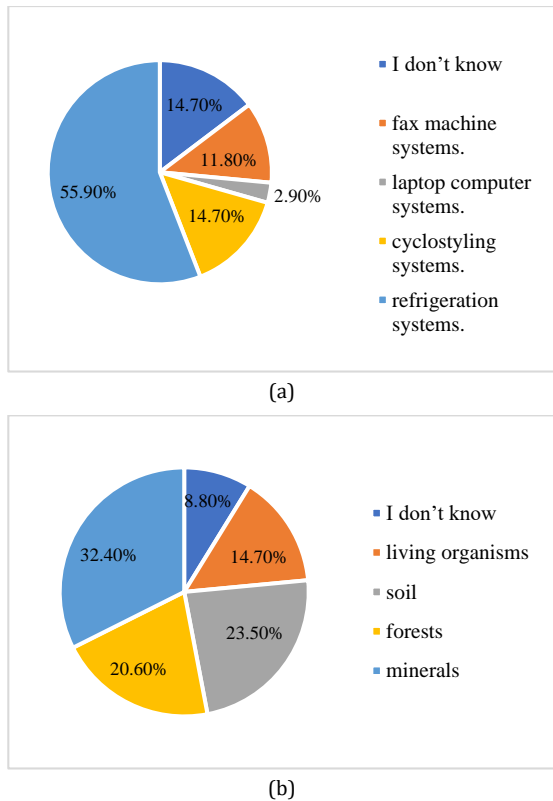


Figure 4. Responses regarding. a) Chloro-Fluro carbons, b) Non-renewable sources of energy.

Environmental education

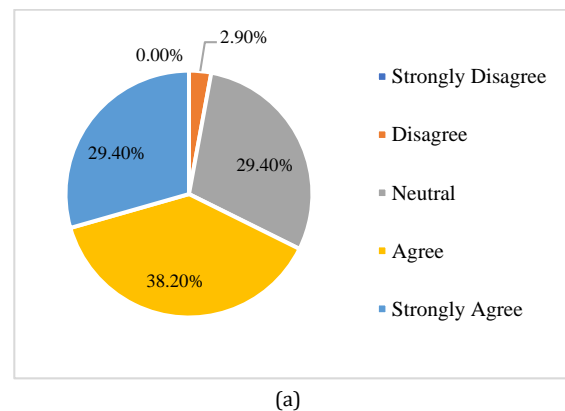
The approach of environmental education aims to spread awareness, distribute knowledge, and develop the skills necessary for individuals and communities to understand and interact with problems related to the environment. It involves acquiring an understanding of the natural world, and the impact that activity by humans has on the environment, as well as promoting environmentally friendly practices.

Teachers should not feel any burden with the work of environment-related activities in school because teachers are the root of education. Educating and shaping students' thoughts is a crucial responsibility of teachers, who mostly concentrate on academic subjects. While it's important to include environmental awareness in the curriculum, teachers shouldn't be placed in charge of controlling any environmental activity in the classroom. Teachers' attention may be drawn away from their primary teaching duties by additional duties like planning events, supervising recycling programs, or carrying out sustainability projects. Schools should assign specialized environmental coordinators or teams to manage these initiatives to promote a comprehensive approach and free up teachers to concentrate on their main responsibility of providing excellent teaching. This cooperative undertaking provides an equitable and efficient incorporation of environmental education while avoiding overburdening educators with extracurricular responsibilities. According to responses indicated in Figure 5a, 29.4% of the students have

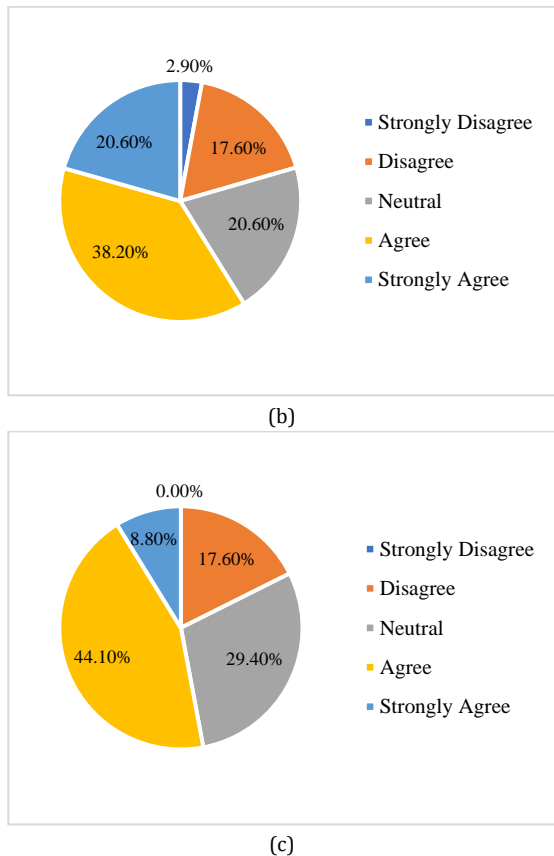
given positive responses, 38.2% of the students have given positive responses, 29.4% of the students have given medium responses, and 2.9% of the students have given average responses.

Schools and colleges should encourage students to read books on the issue of environmental pollution, which can distract from regular classes. To develop responsible global citizens who are aware of the challenges our planet faces, we must understand environmental issues. Students who read about pollution get knowledge, but they also develop critical thinking skills and a sense of environmental responsibility. By including such books in the course of study, academic subjects can be given a real-world context, which improves student involvement and value. In addition, it develops a feeling of social responsibility in students by helping them develop an integrated viewpoint on important problems. A thorough educational experience that gives students both academic information and a wider awareness of the world can be created by balancing these readings with core topics. According to responses indicated in Figure 5b, 20.6% of the students have given positive responses, 38.2% of the students have given positive responses, 20.6% of the students have given medium responses, 17.6% of the students have given average responses, and 2.9% of the students have given below average responses.

Teachers may find it extremely difficult to implement the project method in environmental education programs. This method is often required for organizing, supervising, and organizing practical tasks, which require more time and work from educators. Instructors may have to manage a variety of tasks, including identifying resources, planning field adventures, and supporting students with practical applications. Managing projects' unpredictability and attending to the various demands of students increases the burden. It can be difficult to achieve a balance between project-based learning and standard education, and doing so might put teachers under too much pressure. Schools will decrease this stress by giving teachers the tools, training, and support they need to successfully incorporate project-based environmental education into their classes without sacrificing their general well-being or the standard of their instruction. According to responses indicated in Figure 5c, 8.8% of the students have given positive responses, 44.1% of the students have given positive responses, 29.4% of the students have given medium responses, and 17.6% of the students have given average responses.



(a)



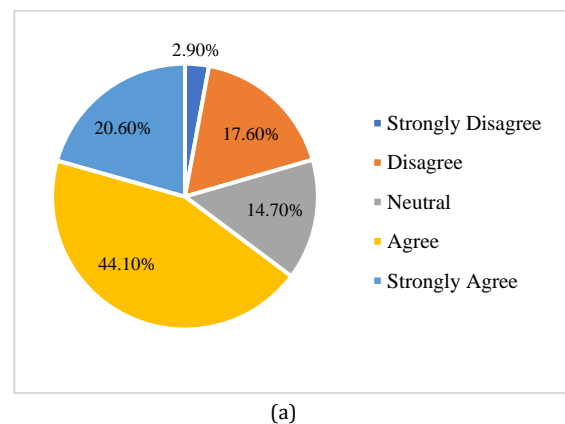
**Figure 5.** Responses regarding a) Work of environment-related activities in schools, b) Importance of reading environmental issues, c) IT-based educational training.

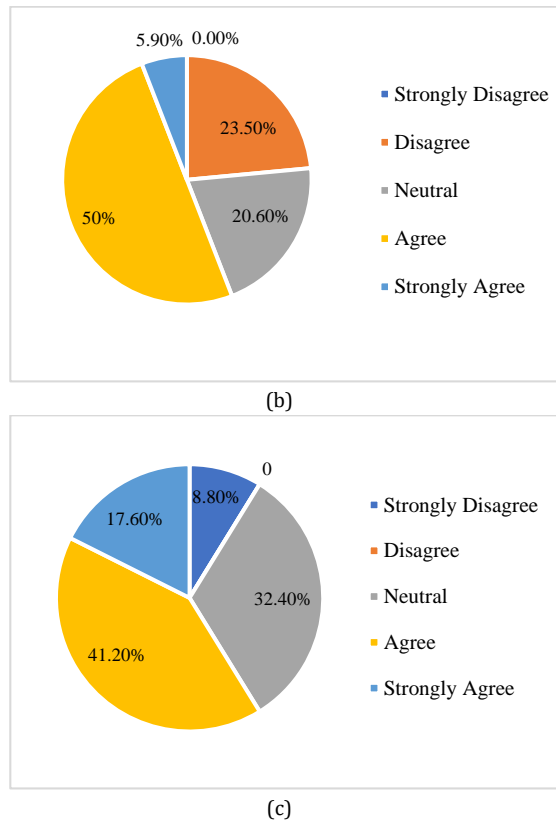
To encourage ecological awareness and responsible citizenship, teacher education programs must include an environmental element. By making it required, aspiring teachers learn the information and abilities needed to integrate environmental principles into their teaching. By performing this, you can make sure that environmental sustainability is included throughout the school system, which will help students gain an in-depth understanding of ecological issues and promote environmentally conscious conduct. This method raises a generation of environmentally conscious individuals while also preparing teachers to handle today's environmental issues. According to responses indicated in **Figure 6a**, 20.6% of the students have given positive responses, 44.1% of the students have given positive responses, 14.7% of the students have given medium responses, 14.7% of the students have given medium responses, 17.6% have given average responses, and 2.9% of the students have given below average responses. This strategy recognizes the connection between environmental responsibility and education, and it also fits with the growing focus on environmental sustainability around the world. Teachers who possess a thorough awareness of environmental issues can include these aspects in their teaching schedules and raise a generation of environmentally aware people.

Teachers may find it difficult to include environmental preservation in their normal lessons because of the limitations of already present courses and the demands on their time. There can frequently be little space in the traditional academic system

to conduct an in-depth study of environmental issues. However, it's becoming more and more important to help students develop a feeling of environmental responsibility. One solution to relieve the burden on teachers is to develop specific environmental education programs or work with external organizations. The incorporation of environmental subjects into the curriculum can be made easier by these programs' ability to provide specialized information and resources. According to responses indicated in **Figure 6b**, 5.9% of the students have given positive responses, 50% of the students have agreed and given positive responses, 20.6% of the students have given medium responses, and 23.5% of the students have given average responses. Without overburdening teachers, schools can give students important insights into environmental challenges by partnering with outside organizations, putting in place specialized environmental education programs, and incorporating hands-on experiences. To create a more sustainable and knowledgeable future, this cooperative and methodical approach guarantees that the fundamental lessons of environmental preservation become a vital component of students' education.

Teachers will always have a responsibility to help children develop an understanding of the environment. Teachers are very important in developing students' viewpoints and ideals since they are major figures in their lives. By including environmental topics in the education system, educators develop a sense of responsibility for the health of the earth in addition to sharing information. Encouraging ethical behavior and developing environmental awareness in students gives them the tools for understanding how their actions affect the environment. Beyond the classroom, this education influences students to make responsible decisions that support a society that is more ecologically sensitive. Educating students to be responsible, knowledgeable citizens who actively contribute to the preservation of the world is a fundamental obligation of teachers, especially in light of the global issues posed by climate change and environmental degradation. According to responses indicated in **Figure 6c**, 17.6% of the students have given positive responses, 41.2% of the students have given positive responses, 32.4% of the students have given medium responses, and 8.8% of the students have given average responses.





**Figure 6.** Responses regarding. a) Implementation of IT-based technology, b) Orienting students with environmental education, c) The responsibility of teachers to develop environmental awareness among students.

## CONCLUSION

In today's world, life is so fast-paced that people have no time to care for the environment. Moreover, the constant overuse and depletion of natural resources in the name of development worsens the situation further. Minerals and resources that could have been renewable in the long term are now facing the verge of scarcity due to negligence and misuse. The problem is more prevalent among the youth of society. Instead of caring for and sustaining Mother Earth, they spread pollution. To assess the severity of the situation, this survey was conducted among the pre-university students to investigate their environmental awareness, environmental education, and environmental ethics. The results of the survey revealed that pre-university students are becoming aware and concerned about the harm done to the environment due to intentional or unconscious human activities. The responses obtained from the survey questions showed a positive side of their awareness of the environment.

Thus, environmental awareness and education related to the health hazards of polluting the environment should be taught at educational institutions backed by several activities. This will bring more and more students, and also other people to join hands together in saving the sustainability of our mother earth.

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