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A SURVEY OF EFFECTIVENESS OF ENVIRONMENTAL EDUCATION AT POST HIGHER SECONDARY LEVEL IN KOLKATA

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ABSTRACT

The study focuses on the effectiveness of environmental education at post higher secondary levels in Kolkata at the present moment. The research seeks to find the extent to which the post higher secondary level students in Kolkata are acquainted with the present challenges of environmental issues, faced due to anthropogenic factors that are impacting the environment in direct and indirect manners. Environmental education and educating students on the need of protecting the environment play a vital role towards sustainability. Environmental education, provided as a compulsory course in the curriculum, at different levels of educational institutions, has been leaving an important impact on training and preparing the future generation for a greener and sustainable society. The purpose of this study is to examine the knowledge, perception, attitude, relationship and environmental behaviour of post higher secondary level students who have enrolled in different specialized fields of study in colleges in Kolkata. A total of 70 students participated in this survey, conducted in colleges in Central Kolkata. To collect data for measuring students' environmental education, perception, their attitudes towards environment, and behaviour, responses in written form based on questionnaires were recorded. In this study, it was revealed that students receiving academic education at post higher secondary levels are acquainted with the environmental challenges faced in the present days and they are also acquainted with the concept of 'sustainable living'. As a result of the t-test performed, it was put forward that there was no difference in the levels of students' perception regarding the importance of environmental education. As a result of the correlation analysis, a positive relation was identified between the perception, attitude, and behaviour variables.

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Keywords: Environment, awareness, education, ecosystem, climate change.

INTRODUCTION

Environmental education is concerned with the development of a world population that is well aware of the environmental hazards and concerned about the whole environment and the problems associated with it. The concerned group will possess knowledge, attitudes, motivations, commitment and required skill to work in collective or individual form for solving any current problem and work towards the prevention of new ones to crop up. The yardstick for measuring the effectiveness of environmental education at post secondary levels is a measurement of knowledge focusing on environmental awareness, environmental attitudes and skills for solving environmental issues. *Global concern regarding the steadily deteriorating state of the environment has emphasized the need for environmental education* (Shobeiri et al.).

The seed of environmental education was found in Rousseau in the 18th century. In his fourth walk recorded in "The Reveries of the Solitary Walker", a collection of autobiographical essays, published posthumously in 1782, Rousseau talked about the beauties of nature and the healing power of nature. Rousseau arrested the reader's attention on the blissful repose and loss of one's consciousness of the self in the awareness that the self is only a part of the all

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encompassing whole called Nature. In the present day understanding, this notion would correspond to the ideas of deep ecologists. *There is a growing need for environmental education in order to improve the quality of the environment and to drive sustainable development* (Laiphrakpam).

In India, the study of the environment began in 1991 when the Supreme court of India directed the government to make environmental education compulsory, at all levels of education. The government incorporated the environmental studies in the school syllabus onwards from 2004-05.

Najmun Nahar et al observes, *although a variety of studies have been conducted on the state of and relationships between public knowledge, perceptions, attitudes, awareness, and environmental issues, few studies have evaluated the associations between the environmental perceptions, attitudes, and awareness of urban residents and their demographic characteristics in the context of managing a sustainable urban environment in developing countries* (Nahar). Alexandar Ramadoss in this regard observes, Outdoor education must be enhanced and should be supported by previous learning within the classroom (Ramadoss). Vinit Kumar noted that *education is a fundamental means to bring any desired change in society* (Kumar).

Statement of the problem:

The environment is interconnected with various aspects of the individual's lives, including the economy, health, and social well-being. Being aware of environmental issues helps the learner recognize these connections and make informed decisions. Educational institutions can help to establish sustainable development through teaching programmes and outdoor activities to pave the way for a sustainable future. *For 25-30 years environment has attracted the attention of decision makers, scientists and even laymen in many parts of the world. They are becoming increasingly conscious of issues such as famines, droughts, floods, scarcity of fuel, firewood and fodder, pollution of air and water, problems of hazardous chemicals and radiation, depletion of natural resources, extinction of wildlife and dangers to flora and fauna. People are now aware of the need to protect the natural environmental resources of air, water, soil and plant life that constitute the natural capital on which man depends. We all have to aware about environment and try to clean it properly. Unless environmental issues are not solved or not taken care of the coming generations may find earth worth not living* (Verma). Today's students are the citizens of tomorrow so, the germination of the seed of environmental education, beginning with the students, can lead to a better future.

Awareness of environmental issues is the first step toward adopting more sustainable practices and policies. Informed individuals and learners are more likely to support and advocate for policies and initiatives that address environmental challenges. *The underlying precept of learning is too important for individuals as it relies on self-directed initiatives by recognizing the relationship between learning process and real life* (Khan). Awareness should counter real-life challenges.

Group pressure can lead to positive changes in government regulations and corporate practices. Awareness of environmental challenges is essential for developing effective mitigation and adaptation strategies. This includes reducing greenhouse gas emissions to combat climate change and preparing for its inevitable impacts. Learners can come together to fight these challenges.

Environmental awareness drives research, innovation, and the development of technologies and solutions to address pressing issues. It inspires the next generation of scientists, engineers, and policymakers towards making a sustainable green environment. Environment protection programmes and legislations are meaningless as long as the victims of pollution are denied participation in the process of implementation of the law. Larger public participation can go a long way in dealing with environmental management problems. However, information dissemination is crucial in order to generate capability in the citizens to enable such participation (Gupta).

To ensure a sustainable future, the learners must understand the impact of anthropogenic influences on the planet's ecosystems and act accordingly to find solutions to it. For assessing the effectiveness in environmental education, it is needed to find the gaps. Finally there is the need to develop and implement methods to ensure the development of students with competencies in environmental education.

Objectives:

- To identify and understand the level of understanding and awareness of the college students on the ongoing environmental crisis in and around them
- To explore and analyze the levels of students' cognition on the global issues of environmental challenges faced by people in general

- To assess and evaluate students's perception on the harmful effects on the environment, caused due to anthropogenic impacts and to assess their basic understanding of the sustainable living concepts

Methodology

The present study is exploratory in nature. The aim in exploratory research is to find what is going on with the given situation and to investigate explicitly the current situation. The research study proves quite helpful as this explorative research provides significant insight into the study carried out on the effectiveness of environmental education at post higher secondary level. This helps to determine the best research design, data collection and selection of subjects as projected in the questionnaire.

In order to achieve an effective result, 'Case Study Method' was employed. This 'Case Study Method' proved suitable in conducting an in-depth examination and analysis of a specific group or entity. This 'Case Study Method' provided the scope of a focused exploration of the effectiveness of environmental education at post higher secondary levels, their cognition levels, the scope and effectiveness of their awareness, reasons and prevalence and assessments and evaluation of the crisis of present environmental education and also the impact and challenges faced by the present generation learners.

Interpretive phenomenological analysis (IPA), an inductive research method was also used keeping in mind the study's qualitative approach towards the concerned investigation. Semi-structured interviews focusing on the lived experiences of individual students uncovered how they make sense of the environmental issues within the context of their personal and social worlds around them. This research method saved the research work from being a generalized perspective and helped it to go beyond the summarized opinions of learners grouped together. The subjective experiences and involvements and the way environmental education becomes effective by leaving a remarkable impact on an individual's social world, have been studied by using the IPA research method.

Hypothesis

H0- Environmental education does not impart any significant impetus to the students towards environmental awareness and environmental protection attitudes.

H1-Environmental education imparts significant impetus to the students towards environmental awareness and environmental protection attitudes in direct and indirect manners.

Data Collection

Data collection, as a means for gathering facts, statistics and details from different sources was very significantly carried out. As a process of gathering and measuring information (based on percentage) and variables of interest in an established systematic fashion that could answer the stated research questions, data collection was made effectively within the domain of post higher secondary levels students. Each data was grouped under specific subheadings of male and female students, in the form of Acquainted male and female students (for students, acquainted with or well known with the given issues and concepts of environmental education) and Unacquainted male and female students

(for students, not acquainted with or not well known with the given issues and concepts of environmental education). The four groups thus becomes
i) Acquainted Males ii) Unacquainted Males iii) Acquainted Females and iv) Unacquainted Females

Types of Data Required:

In order to conduct this study, the following types of data were required:

(i) For the first objective, *i.e.*, to identify and understand the level of understanding and awareness of the college students on the ongoing environmental crisis in and around them, the researcher mainly focused on primary data, though secondary means of information was also accessed for this. Primary data were collected through questionnaires and case studies from selected subjects. Data collected from published books, journals and the internet were used as a guide in framing the questions for the case study so that an in depth analysis could be carried out.

(ii) For carrying out the second objective, i.e., to explore and analyze the levels of students' cognition on the global issues of environmental challenges faced by people in general, Primary data were collected through the process of interview schedule method that consisted of both open and closed end questions.

(iii) For fulfilling the third objective, i.e., to assess and evaluate students's perception on the harmful effects on the environment, caused due to anthropogenic impacts and to assess their basic understanding of the sustainable living concepts, Primary data was collected through questionnaire and secondary data were collected from case studies on the selected subjects.

Sources of Data
Primary data was used based on direct field survey for the present study.

Techniques and tools:
Direct conversation, questionnaires, interviews and observations which are collected from the students and learners were the main tools of data collection. The questionnaires included both open and closed ended questions.

Process of Data collection:
Data were collected through semi-structured interviews with both male and female undergraduate students enrolled in three-year undergraduate programmes and four-year undergraduate programme under NEP, at Kolkata colleges. The open-ended questions were meant to gather information on how much the students are aware of the present environmental crises in and around them. Questions were framed keeping in mind the background of study of the students concerned. The questionnaire was quite in keeping with the comfort level of the students as there were a wide variety of students belonging to varied specialized disciplines of study. The interviewees were asked to respond in writing. Various articles and journals and internet websites were meticulously analyzed while formulating the research design.

Sampling: The sample was small groups which represented all the characteristics of the whole learning population. Male and female students, only female students, Honours students and General undergraduate students consisted of various groups in the study. This included purposeful random sampling. 80 college students were contacted for collecting data from three-year and four-year NEP undergraduate students. Finally, 70 students aged between 17-21 decided to engage in the study (Thirty from Honours /Major/ Four-year undergraduate students- NEP, ten from Honours/ Three-year Sem 2- only Female undergraduate students, ten from Honours /Major/ Four-year undergraduate students- NEP- males and females, ten from Multi-disciplinary/ General/Sem 1 students, ten from Minor- General/ Sem 1 students).

Types of Sampling: The present study has followed the method of purposive sampling. This technique is employed keeping in mind the researcher's time constraint and also the convenience in reaching the target learners.

Selection of Respondents: The research further enhanced the study by building more mutual connections and social network and increasing the number of participants

Area of Study: The area of study chosen was concerning the effectiveness of environmental education at post higher secondary level in Kolkata.

Sample Size: The sample size of the study was 70 respondents.

Sampling criteria: Included criteria for the present study:

- The sample criteria included those people who had got admission for post higher secondary
- Only those individuals belonging to undergraduate studies under colleges in Kolkata are included for the present study purpose.

Data Analysis: In order to find the primary and basic level of understanding of the effectiveness of environmental education, all responses were carefully evaluated and all pertinent information was noted. The emerging analyses were documented separately, compared, and then grouped based on their similarities and differences. This was how all of the research interviews in the form of questionnaires were conducted.

Operational Definitions: The Supreme Court of India mandated Environmental education as a compulsory subject in all schools and curriculum across India in 1991. This was a product of following the filing of a PIL (public interest litigation) by M.C.Mehta, India's most famous environmental lawyer who won Magsaysay and Goldman awards. In 1992, the Ministry of Human Resources Development along with the help of National Policy of Education amended the legal instruments and advocated the implementation of environmental education at all levels of education. Environmental education, a multidisciplinary field of study, integrating all disciplines refers to organized efforts to teach how natural environments function, and particularly, the way human beings can manage behaviour and ecosystems to live sustainably. According to the researcher, the environmental education at post higher secondary level should extend at every walks of life, as a holistic and lifelong learning process with an aim at creating responsible citizens who can explore and identify environmental issues for its greater effectiveness, as it is the responsibility of today's students to protect the environment as future citizens of tomorrow.

Significance of the study: The findings of this study and recommendations are significant in a number ways. This study helps to determine how informed the students are about various environmental concerns.

This awareness level is crucial for addressing environmental challenges effectively. This study reveals specific areas where the students may lack understanding or have misconceptions about environmental issues. This information allows for targeted educational efforts. Studies like this, conducted at regular intervals, creates a baseline for tracking changes in public understanding over time, which is crucial for assessing the impact of education and outreach efforts.

Limitation of the study: Limitations are part of any research conducted. Even the researcher remains bound to face so many limitations besides facing the limitations during conduction of the research. *The respondent's right to confidentiality should always be respected and any legal requirements on data protection adhered to* (Kelley et al.) :

- The study is limited to the colleges, taken under consideration in Kolkata. It focuses on the environmental awareness of the post higher secondary levels students only. The facts and findings of this study under consideration may not be applicable to or generalized for other level students or students of other specified disciplines.
- Due to time constraint the researcher could not include more than three post higher secondary level educational institutions.

Research Questions:
Section A: To understand the students' awareness on the basic concepts and terms related to environmental studies:

Q1. Can you define the term biodiversity ?
Yes
No

Q2. Do you know what is carbon sequestration?
Yes
No

Q3. Can you name any greenhouse gas ?
Yes

If yes, name the gas
No

Section B: To understand the students' awareness on the terms related to environmental challenges and their impacts :

Q4. Have you heard the phrase ' Climate Change?'
Yes
No

Q5. Can you explain what is global warming ?
Yes
No

Q6. Can you name any one impact of Climate Change ?
Yes

If yes, name the impact
No

Section C: To understand the students' awareness on the issues related to environmental threats, due to anthropogenic effects and the knowledge on the concept of sustainable living :

Q7. Have you ever heard about Ozone depletion ?
Yes
No

Q8. Can you define 'sustainable living?'
Yes

If yes, write a simple definition
No

Section D: To understand the students' awareness on the harmful effects of pollution and their understanding of the basic concept of ecosystem :

Q9. Do you know what biomagnification is?
Yes
No

Q10. Can you define what an ecosystem is ?
Yes

If yes, write a simple definition
No

Findings:
Vidyasagar College (Honours Students)
Total No of Students Involved: 30
Number of Male-Number of Female = 13-17
Age Group: 19- 22 Years

Table 1
i) The study revealed that majority of the male respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'Greenhouse gas', 'global warming', 'climate change impacts', 'Ecosystem' and others.

ii) It was however found that the majority of the male respondents, studying Honours courses at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', 'Biomagnification', 'sustainable living'.

iii) The study revealed that the number of female respondents, studying Honours courses at the post higher secondary levels exceeded the number of respondents, not acquainted with the terms and concepts like, 'Carbon Sequestration'.

iv) It was further revealed that majority of the female respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'Greenhouse gas', 'global warming', 'climate change impacts', 'Ecosystem' and others.

v) It was also found that the majority of the female respondents, studying Honours courses at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', and 'sustainable living'.

Table 1: Honours Student's Environmental Education and perception for sustainability: Vidyasagar College.

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Males	13	3	10	11	5	12	12	11	05	08
Unacquainted Males	00	10	03	02	8	01	01	02	08	05
Acquainted Females	15	09	15	13	06	17	16	10	04	13
Unacquainted Females	02	08	02	04	11	00	01	07	13	04

Vidyasagar College (Multi- Disciplinary Students)
Total No of Students Involved: 10
Number of Male-Number of Female = 04-06
Age Group: 19- 22 Years

I) The study revealed that majority of the male respondents, studying Multi- Disciplinary courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'biomagnification', 'Greenhouse gas', 'global warming', 'climate change impacts', and others.

ii) It was however found that the majority of the male respondents, studying Multi- Disciplinary courses at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', 'Ecosystem'.

iii) The study revealed that the number of female respondents, studying Multi- Disciplinary courses at the post higher secondary levels and not acquainted with the terms and concepts like, 'Carbon Sequestration' and 'Ozone depletion', exceeded the number of respondents, acquainted with the terms and concepts like, 'Carbon Sequestration' and 'Ozone depletion'.

iv) It was further revealed that the majority of the female respondents, studying Multi- Disciplinary courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', "Ecosystem' and others.

v) It was revealed that all the female respondents, studying Multi- Disciplinary courses at the post higher secondary levels were acquainted with the terms and concepts like 'Greenhouse gas', 'global warming', 'climate change impacts'.

vi) It was also found that the majority of the female respondents, studying Multi- Disciplinary courses at the post higher secondary levels were not acquainted with the terms and concepts like 'biomagnification'.

vii)It was also found that the majority of the female respondents, studying Multi- Disciplinary courses at the post higher secondary levels were not much acquainted with the terms and concepts like 'sustainable living'.

Vidyasagar College (Minor Course Students)
Total No of Students Involved: 10

Table 2: Multi- Disciplinary Student's Environmental Education and perception for sustainability: Vidyasagar College .

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Males	04	02	04	03	03	04	05	04	01	02
unacquainted Males	01	03	01	02	02	01	00	01	04	03
Acquainted Females	04	01	04	02	00	05	05	05	01	03
Unacquainted Females	01	04	01	03	05	00	00	00	04	02

Number of Male-Number of Female = 03-07
Age Group: 19- 22 Years

I) The study revealed that majority of the male respondents, studying Minor Course Students at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'biomagnification', 'Greenhouse gas', 'global warming', 'climate change impacts', 'Ecosystem' and others.

ii) It was also found that none of the male respondents, studying Minor Course Students at the post higher secondary levels were not acquainted with the terms and concepts like 'sustainable living and Carbon Sequestration'.

iii) It was further revealed that the majority of the female respondents, studying Minor Course Students at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion' and others.

iv) It was also found that none of the female respondents, studying Minor Course Students at the post higher secondary levels were acquainted with the terms and concepts like 'sustainable living.

v) It was also found that the majority of the female respondents, studying Minor Course Students at the post higher secondary levels, were not acquainted with the terms and concepts like '. Biomagnification', 'Carbon Sequestration' and 'Ecosystem'.

Table 3: Minor Course Student's Environmental Education and perception for sustainability: Vidyasagar College.

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Males	02	00	02	02	02	02	02	02	00	01
Unacquainted Males	01	03	01	01	01	01	01	01	03	02
Acquainted Females	04	02	05	04	02	06	06	06	00	01
Unacquainted Females	03	05	02	03	05	01	01	01	07	06

Vidyasagar Metropolitan College (Honours Students)
Total No of Students Involved: 10
Number of Male-Number of Female = 03-07
Age Group: 19- 22 Years

I) The study revealed that all the male respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change',

'Ozone depletion', 'global warming', 'climate change impacts'.

ii) It was found that the majority of the male respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like'Ecosystem' and others.

iii) It was however found that the majority of the male respondents, studying Honours courses at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', 'sustainable living'.

iv) It was further revealed that none of the male respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like 'Biomagnification'.

v) It was further revealed that majority of the female respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'Greenhouse gas', 'global warming', 'climate change impacts', and others.

vi) It was further revealed that all the female respondents, studying Honours courses at the post higher secondary levels were acquainted with the terms and concepts like, 'climate change', 'Greenhouse gas', 'global warming', 'sustainable living' and others.

v) It was also found that the majority of the female respondents, studying Honours courses at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', and 'Ecosystem'.

Table 4: Honours Students's Environmental Education and perception for sustainability: Vidyasagar Metropolitan College.

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Males	03	01	03	03	00	01	03	03	02	02
Unacquainted Males	00	02	00	00	03	02	00	00	01	01
Acquainted Females	06	02	07	06	04	07	07	05	05	02
Unacquainted Females	01	05	00	01	03	00	00	02	02	05

Vidyasagar College for Women (Honours Students)
Total No of Students Involved: 10
Number of Female students = 10
Age Group: 19- 22 Years

I) The study revealed that all the female respondents, studying Honours courses in Women's college, at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity' , 'climate change' and 'global warming'.

ii) The study revealed that majority of the female respondents, studying Honours courses in Women's college, at the post higher secondary levels were acquainted with the terms and concepts like, 'Carbon Sequestration', 'Ozone depletion', 'Greenhouse gas','climate change impacts', 'sustainable living', 'Ecosystem' and others.

ii) It was however found that the number of the female respondents, acquainted with terms and concepts of 'Biomagnification', studying Honours courses in Women's college, at the post higher secondary levels were equal to the number of the female respondents, acquainted with terms and concepts of 'Biomagnification', studying Honours courses in Women's college, at the post higher secondary levels.

Table 5: Honours Student's Environmental Education and perception for sustainability: Vidyasagar College for Women.

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Females	10	06	10	09	05	06	10	09	09	09
Unacquainted Females	00	04	00	01	05	04	00	01	01	01
Total										

All three Colleges (Honours & General & Multi-Disciplinary Students)
Total No of Students Involved: 70
Number of Male= 24 ; Number of Female = 46
Age Group: 19- 22 Years

Findings from overall percentage summary of all the studied colleges in general:

I) The study revealed that majority of the male respondents, studying at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'Greenhouse gas', 'global warming' and 'climate change impacts', and 'Ecosystem'.

ii) It was also found that the majority of the male respondents, studying at the post higher secondary levels were not much acquainted with the terms and concepts like, 'Carbon Sequestration', 'Biomagnification' and 'sustainable living'.

iii) It was revealed that majority of the female respondents, studying at the post higher secondary levels were acquainted with the terms and concepts like, 'biodiversity', 'climate change', 'Ozone depletion', 'Greenhouse gas', 'global warming', 'climate change impacts',and 'Ecosystem'.

iv) It was also found that the majority of the female respondents, studying at the post higher secondary levels were not acquainted with the terms and concepts like, 'Carbon Sequestration', and 'sustainable living'.

v) The study revealed that the percentage of female respondents, studying at the post higher secondary levels and acquainted with terms and concepts like, 'Carbon Sequestration', 'climate change',', 'Greenhouse gas', 'global warming' ,'sustainable living' and 'Ecosystem, exceeded the percentage of male respondents.

vi) The study revealed that the percentage of male respondents, studying at the post higher secondary levels and acquainted with terms and concepts like, 'biodiversity', 'Ozone depletion', 'Greenhouse gas', 'biomagnification', 'climate change impacts', exceeded the percentage of female respondents.

Table 6: Students's Environmental Education and perception for sustainability: Three Colleges in north Calcutta in general.

Terms & Names & Explanations & Definitions	Biod-iversity	Carbon Seques-tration	Climate Change	Ozone depletion	Biomagni-fication	Greenhouse Gases	Global Warming	Climate Change Impact	Sustainable living	Eco-system
Acquainted Males	92%	25%	79%	79%	42%	79%	92%	83%	33%	54%
Non-Acquainted Males	8%	75%	21%	11%	58%	21%	8%	17%	67%	46%
Acquainted Females	85%	43%	89%	74%	37%	89%	96%	76%	41%	61%
Non-Acquainted Females	15%	57%	11%	26%	63%	11%	4%	24%	59%	39%
Total										

DISCUSSIONS

The researcher conducted the following discussion to fulfill the research objectives and test the given hypothesis. The objectives were divided into three main areas: to identify and understand the level of understanding and awareness of the college students on the ongoing environmental crisis in and around them; to explore and analyse the levels of students' cognition on the global issues of environmental challenges faced by people in general; to assess and evaluate students's perception on the harmful effects on the environment, caused due to anthropogenic impacts and to assess their basic understanding of the sustainable living concepts.

In this research, all these objectives have been thoroughly analyzed. The collected data and subsequent results provided clarity relating to the effectiveness of environmental education in post higher secondary levels of education. It has been found that post secondary level students have been variously influenced by environmental education. In a study conducted by Vipinder Nagra, there was however *no variation due to genders* of the respondents even though there were some variations regarding effectiveness of environmental education due to their *residential status and subject variations* (Nagra).

Considering all the analysis and findings, it can be concluded that the null hypothesis- " Environmental education does not impart any significant impetus to the students towards environmental awareness and environmental protection attitudes" (H0) is false.

On the other hand, the alternative hypothesis- " Environmental education imparts significant impetus to the students towards environmental awareness and environmental protection attitudes in direct and indirect manners" (H1) has been proved to be true. Therefore the alternative hypothesis (H1) is accepted and the null hypothesis (H0) is rejected.

CONCLUSION

This research on post higher secondary students in Kolkata found that environmental education has been effective and it has been influencing the students to various degrees and various significant ways to bring about environmental consciousness with an aim to protect the planet we inhabit.

Over the years, there has been a noticeable increase in awareness about environmental issues, particularly among the younger generation. Concerns about global warming, climate change, and greenhouse gases have gained prominence.

There has been a significant rise in the level of effectiveness of environmental education than before. The impact of education has outreaching efforts. In some cases the effectiveness of environmental education in female post higher secondary level students has superseded the male students and the reverse. This also brings to the surface the fact that the women post higher secondary level learners are not lagging behind. They are at par with the male learners and in some cases they outreach the male learners in recent times.

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