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A Study on Effectiveness of Environmental Awareness of Secondary Students

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Abstract:

This paper is based on the result of effectiveness of environmental awareness in secondary students. It was a two-staged process namely Phase-I and Phase-II. In Phase-I, the researcher taught Geography to both the groups obtained in a conventional way and evaluated their initial environmental awareness in the form of an achievement test, or the Pre-Test. In Phase-II, the researcher maintained the conventional method with the Control group and applied the teaching Geographical phenomenon based on environmental education with the Experimental group. The post achievement test was the terminal level of Environmental Awareness.

The researcher used an experimental method; a sample of 649 government aided secondary school students in Purba Medinipur District in West Bengal was taken. Ten schools were used to gather the data. A self-administered survey was developed whose sixteen items were based on the areas of application. This questionnaire tried to generate awareness of the environment based on two of the chapters in the Geography class IX curriculum. The data was analysed through the use of a t-test by the researcher.

The analysis showed no significant difference between the Pre-Test of environmental awareness of the Control and the Experimental groups. As well, the difference in the Pre-Test and Post-Test of the Control group was not significant in Environmental awareness. Nevertheless, the Experimental group also exhibited a great enhancement in terms of environmental awareness between the Pre-Test to Past Test after listening to Geography.

Keywords: Environment, Environmental Education, Awareness, Environmental Awareness, Geography, Application Domain, Conventional Method of Teaching and Teaching-Learning with Highlight of Environmental Education-Related Plug Point

Introduction:

Environmental education would help in achieving environmental awareness. The knowledge base that the society possesses plays a vital role in its capability to address and deal with environmental concerns. Environmental education is the initial step of enhancing this body of knowledge. A summary of what has happened and is happening to the present state of environmental awareness and education is also favourable, particularly, in most of the developed world. The situation is much more mixed in the so-called developing countries, yet there has been some advancement with environmental education. In the developed world, most people claim to be environmentalists especially the young.

Literature Review:

A literature review's goal is to assist the researcher in comprehending the subject matter of his study as a whole. This vast area aids researchers in finding research or study gaps. By reviewing pertinent material, the researcher avoids repetitious and superfluous details and concentrates on the key elements of the issue. It gives the researcher a comprehensive grasp of the work being done in his field of interest, both in India and beyond.

Below are a few literature reviews-

Research was done at Sardar Patel University by **Chakravorty, D. (2022)** to determine the effectiveness of Scientific Environmental Awareness Program (SEAP) on higher secondary school students. The findings presented very significant results stating that the program managed to bring awareness among the students on environment issues, job of parents and their levels of education.

Ramesh, B. (2021) conducted a study at Andhra University in the Department of Education to examine attitudes of secondary school teachers to incorporation of the environmental education in the curriculum. The results indicated existence of major differences between Head Masters and the School Assistants attitudes. There are no significant differences by married men and women, less than 40 years of age, teachers with less than 10 years' experience, and Government and Local Body teachers.

A study by **Mary, S. (2021)** was done at Sam Higginbotham University of Agriculture, Technology and Sciences. In the study, an intervention package was investigated in terms of its effectiveness to change the attitude and involvement of school-going children in Prayagraj, India. The paper did not find a significant difference between the rural and urban students, as well as between boy and girl after the intervention, regarding environmental awareness.

Danielraja, R. (2019)[1]the study examined the environmental awareness scores of 180 class XII students using an environmental awareness questionnaire. Results showed little variation in scores across vocational and arts categories, and no significant differences based on gender or institution type. Science students scored higher.

Gupta, A. (2018)[2]a study comparing traditional methods and social sites in rural and urban student-teachers found that social media is more effective in educating environmental awareness than traditional classroom instruction. It fosters critical thinking, communication, and problem-solving skills, helping students and teachers become more environmentally conscious.

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[1]Danielraja, R. (2019). A Study of Environmental Awareness of Students at Higher Secondary Level. Shanlax International Journal of Education, vol. 7, no. 3, pp. 6-10.

[2]Gupta, A. (2018), A Comparative Study of Environmental Awareness in Rural and Urban Pupil-Teachers through Social sites and Traditional Methods. University of Kota.

Rational of the study:

Environmental education is a lifelong process that involves various educational institutions, private organizations, and communication channels. It is crucial for societal changes and the future leaders of today's youth. A new subject, "environment," has been introduced in schools to develop environmental awareness and behavioural changes. The study aims to determine the impact through teaching Geography on students' environmental awareness and behavioural changes.

Objective of the study:

This study aims at:

i. To establish the starting point of Environmental Awareness among the Secondary Students through teaching Geography in the traditional teaching method in the Application domain.

ii. To determine the post-test score of the final level of Environmental Awareness of the Secondary Students through the inculcation of Geography as supplemented by the Highlight of Environmental Education-Related Plug Point (HEERPP) in the Application domain.

Hypothesis of the Study:

Based on the aforementioned study objectives, the following hypotheses have been developed for this investigation.…

H_{01}. There is no notable difference in initial level of the achievements of concern for the environment between two group (Control and Experimental) of Secondary Students in Application domain.

H_{02}. There is no important effect from the achievements regarding awareness of environment after teaching-learning of Geography by using Conventional method among Total Boy and Total Girl Secondary Students in Control Group in Application domain.

H_{03}. There is no important effect from the achievements regarding awareness of environment after teaching-learning of Geography by usingHEERPP among Total Boy and Total Girl Secondary Students in Experimental Group in Application domain.

H_{04}. There is no notable effect from the achievements regarding awareness of environment after teaching-learning of Geography by using Conventional method among Total Rural Students and Total Urban Secondary Students in Control group in Application domain.

H_{05}. There is no notable effect from the achievements regarding awareness of environment after teaching-learning of Geography by using HEERPP among Total Rural Students and Total Urban Secondary Students in Experimental group in Application domain.

Delimitations of the Study:

There are several delimitations of the study-

- Investigation place : Purba Medinipur Districts under state of West Bengal.
- Students : Class IX.
- Medium : Bengali.
- Board : West Bengal Board of Secondary Education (WBBSE)
- Sample : 10 Schools.
- Area of school : Rural and Urban.
- No of students : 649(boys & girls).
- Geography Syllabus : 2021

- Sampling Technique : Random Sampling (Purposive).
- Statistical software : SPSS.
- Research Methods : Experimental (Quantitative)

Methodology of the Study:

This research aims to enhance environmental awareness among secondary school students in West Bengal by teaching geography related topics like flood, drought, cyclone, tsunami, earthquake, landslide, soil erosion, and resource conservation. The study aims to improve students' application level the use of above-mentioned environmental components.

Sample Design:

The sample size of 333 high school students was sampled selected within ten higher secondary schools of the Purba Medinipur district. A total of five schools were picked in the urban area of Purba Medinipur and another five schools were chosen in the rural area. The sample was chosen according to each odd number in the subject roll list (Control group) and even numbers in the subject roll list (Experimental group). In this research, it is a quantitative study.

Variables of this Study:

The current study will be quantitative research. In quantitative research, variables are very important factors and are regarded as the basic building blocks of research. The dependent variables are secondary students The independent variables are flood, drought, cyclone, tsunami, earthquake, landslide, soil erosion and conserving resources.

Tools used in the study:

The researcher has used self-made MCQ structured questionnaire on the basis application domain of 16 question items from two chapters of class IX Geography i.e. Hazards & Disaster and Resources in India.

Conducted Study for Data Collection:

The researcher obtained permission from ten higher secondary school headmasters/ headmistress to administer an Environmental Awareness Questionnaire on class IX students in Purba Medinipur district, dividing them into Control and Experimental groups.

In this study established rapport with students and administered an Environmental Awareness test to both control and experimental secondary students. Then the researcher has undergone re-teaching after 10 days on both group of students through Traditional method for control group and Teaching with highlight of Environmental Awareness for Experimental group. After the again test is administered on secondary school students. In this way the researcher has administer two tests i.e. i.e. Pre and Post-Test Control and Experimental group respectively.

Data Analysis:

Findings:

Table-1: Initial level of environmental awareness in control and experimental group of secondary students in application domain

Control Group			Experimental group			MD	df	SEm	t-value	Significance
N_1	Mean	SD	N_2	Mean	SD					
330	3.98	1.36	319	3.85	1.37	0.13	647	0.11	1.18*	Not Significance

*t-criterion value at 0.05 level is 1.96 for df 647.

Table-2: Environmental awareness in experimental group of secondary students in application domain

Variable	Group	N	Pre-Test		Post-Test		MD	df	SEm	t-value	Significance
			Mean	SD	Mean	SD					
Total boys	Control	167	3.96	1.31	4.25	1.16	0.29	166	0.14	2.14*	S
Total boys	Experimental	158	3.85	1.38	12.96	1.38	9.11	157	0.11	82.98*	S
Total girls	Control	163	4	1	4.34	1.24	0.34	162	0.12	2.72*	S
Total girls	Experimental	161	3.85	1	12.89	1.36	9.04	160	0.11	84.34*	S
Rural students	Control	185	4	1.40	4.33	1.25	0.33	184	0.14	2.39*	S
Rural students	Experimental	180	3.87	1	12.93	1.38	9.06	179	0.13	71.32*	S
Urban students	Control	145	3.95	1.30	4.25	1.13	0.30	144	0.14	2.10*	S
Urban students	Experimental	139	3.85	1	12.91	1.34	9.06	138	0.10	90.34*	S
Total Students	Control	330	3.98	1.36	4.29	1.20	0.31	329	0.10	3.10	S
Total Students	Experimental	319	3.85	1	12.92	1	9.07	318	0.06	162.00*	S

**t-criterion value at 0.05 level is 1.98 and 0.01 level 2.60 for df 166, 157, 162, 160,179, 138&319*

S= Significant

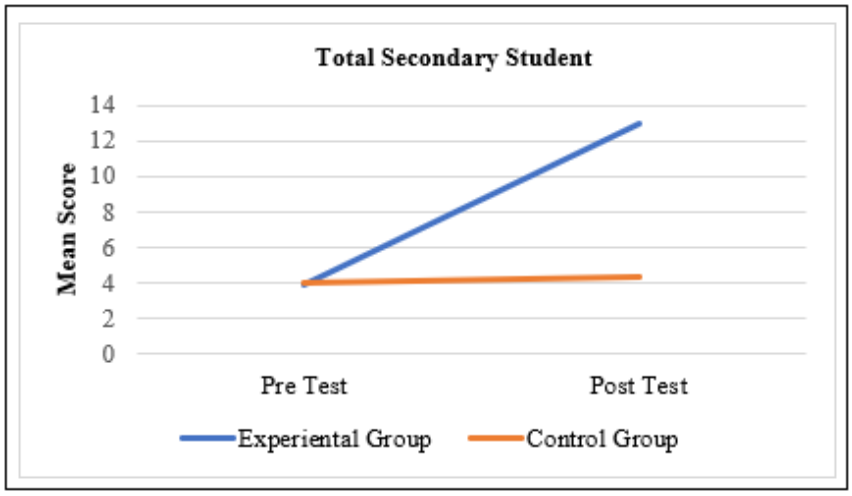

Fig. 1 showing the mean score of Pre-Test and Post-Test in the Experimental and Control group of Total secondary students

Discussion:

This paper reveals that the HEERPP approach can be effective compared to the conventional way of teaching students in the secondary school level on enhancing environmental consciousness. The baseline equivalence of the control and experimental groups (Table 1) would exclude the possibility that any post-intervention differences would be because of additional factors.

Small, insignificant gains on the post-test were found in the control group indicating that the regular Geography teaching does not necessarily develop the applied environmental knowledge. Conversely, there was a high improvement on the experimental group. This high mean difference (9.07) and t-value (162.00), which are very high, can show that strengthening the connections to the environmental in and on the curriculum considerably boosts the prospects of students applying such knowledge.

Notably, this favourable effect was realized across ages, gender, and locations. This shows that HEERPP approach can work effectively in most classroom situations. These findings add weight to the notion that this type of intervention can fill typical educational gaps, and that high environmental literacy can be made accessible to any student.

The effectiveness of the HEERPP is probably attributed to the clarity of abstract geographical concepts rendered by the HEERPP. The strategy of relating ecological related topics such as disasters and resources to their environmental implication foster deeper involvement, the critical thinking process, and a more personal interest to the environmental issues.

Hence, this paper promotes a great argument to alter the teaching strategies. Inclusion of specified environmental applications to routine subjects such as Geography is one method of supporting the transition of moving beyond rote memorization and developing the applied understanding required to become informed sustainable citizens.

Conclusion:

This paper has evidently depicted that the targeted environmental education through the Highlight of Environmental Education-Related Plug Point (HEERPP) technique is far more effective than conventional teaching in enhancing environment awareness of the secondary school learners. Through the study, the researchers are able to prove their initial hypotheses, stating that whereas the normal teaching technique yields minimal results, attention on environmental links as part of the Geography curriculum causes considerable knowledge acquisition in students.

The significant improvement that is observed in the experimental group compared to the little expectation in the control group is the major finding. This indicates the need just to teach Geography is not enough. The objectives of teachers must focus on explaining and underlining the environmental principles in the subject to achieve actual sensitivity. Moreover, the HEERPP approach can be applied to both gender and in both rural and urban communities and has proved to be efficient and effective, hardly impeding its use in other settings of learning in the state.

Therefore, this paper is a strong indicator of such diverse ways of teaching. Designers of curricula and in-service teachers ought to be encouraged to create effective, neat plug points in existing lessons, making ordinary lessons into opportunities to do environmental education. Trainer of educators programs are to be established to enable educators to deliver such integrated information.

These results indicate that this combined view is not a supplementary feature but a potential reformation that must be made to education in order to establish it as an efficient tool of sustainable development. Incorporating environmental education fully in the core subjects will ultimately help the younger generation become better-prepared to fight today ecological challenges and become leaders in the cause of sustainable care of our environment.

Recommendations:

i. The teachers training programs are to be developed in a manner to assist the educators in acquiring skills of incorporating into their Geography and other science curricula the HEERPP method.

ii. Subject syllabi must be adapted so that environmental education topics are explicitly written into existing syllabus documents.

iii. Learning analysts and policy makers are encouraging and facilitating large scale application of this type of instruction in educational centers.

iv. It would benefit by more research to develop and standardize a set of modules/units that would be proven effective in teaching about the environment at a variety of grade/subject levels.

v. Schools must allocate certain resources and time to have teachers collaborate in planning and execution of these better designed lesson plans that emphasise learning through application.

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