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Research Paper

Effectiveness of Different Methods in Teaching Environmental Education to Secondary Students

EDUCATION

KEYWORDS : Environmental Education, ICT-based teaching, environmental issues

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ABSTRACT

One of the major challenges facing environmental education today is the growing public attention and concern that education has become blurred with advocacy and that the environmental content in environmental education is no longer based on sound frameworks of natural and social sciences. In order to use technology effectively, educators need to be trained in using technology and they need to develop a good understanding of it. Technology is used to enhance learning, therefore it is important for educators to be comfortable using it to ensure that students get the full advantages of educational technology. Teaching with technology is different from teaching in a typical classroom. The present study is an attempt to analyze the effect of ICT-based teaching of environmental issues amongstudents.

INTRODUCTION

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978). Environmental education is education through, about and for the environment. Its scope is therefore, very wide. A lot of teaching-learning can be carried out through the environment. That is the first aspect of environmental education. The increased use of electronic aids on a massive scale makes possible environmental education that is more individualized. It makes it possible for children working independently, to practice skills, develop concepts and obtain data for experimentation and verification. Instruction is made more heuristic, self-explorative with auto-instructional devices. Teachers must be trained in how to plan, create, and deliver instruction within a technological setting. It requires a different pedagogical approach. Teachers must find a way to assess students on what they take away from a class and meaningful, known knowledge, especially within an eLearning setting.An attempt has been made in this study to evaluate how far ICT-based teaching methods have improved the learning potential of secondary students.

NEED FOR THE STUDY

A teacher needs an understanding of the process of technology integration before he or she can appropriately implement those processes into the future classroom curriculum. The processes of integrating technology into the curriculum will help accomplish the educational goals and this will result in enhanced student learning.Environmental Education has found a permanent place in the school curriculum of the present day. A proper integration of environmental education along with the school subjects is the need of the hour. The use of modern methods of teaching such as ICT would help enhance the teaching-learning process.

OBJECTIVES OF THE STUDY

1. To compare the effectiveness of ICT-based teaching over the conventional method on the understanding of the concepts of environmental issues among IX standard students.
2. To develop a multimedia package on the concepts of environmental issues.

SCOPE OF THE STUDY

The present study can help to overcome the disadvantages in the conventional method of teaching and learning. This is an innovative approach which will result in an enhanced learning outcome on the part of the learner. The process of teaching-learning becomes more and more rewarding. The teacher has better chances of exploring the possibilities of making environmental education more interesting and beneficial. The results will have a great impact on teacher education institutions in reorganizing their curriculum andincorporating more relevant topics that are much more likely to contribute to optimum learning.

HYPOTHESES FRAMED FOR THE STUDY

1. There is significant difference between the pretest and post test scores of students instructed through Video-based Instruction, Computer Assisted Instruction and Conventional teaching respectively.
2. There is significant difference between the pretest and post test scores of boys instructed through the respective three methods.
3. There is significant difference between the pretest and post test scores of girls instructed through the respective three methods.

TOOLS

1. An achievement test for standard IX was constructed by the investigator for administering pretest and post test.

	Pretest			Post-test		
Method	N	Mean	SD	Mean	SD	'P' value
Video-based instruction	160	17.30	6.33	29.18	7.12	> 0.0001
CAI	160	15.83	5.04	27.26	6.66	> 0.0001
Conventional	160	15.04	4.98	20.37	5.43	> 0.0001

2. Multimedia package consisting of a video presentation on environmental issues.

METHODOLOGY

The investigator developed pretest and post-test question paper for the standard IX students in the topic "Pollution and Ozone Depletion." After a pilot study, reliability and validity of the tool were established.A sample of 480 students from IX standard was drawn by the investigator from six different schools of Coimbatore. The design used for the study was the pretest post test control group design. Of the 480 students, 320 belonged to the two experimental groups. They were taught environmental concepts by two different instructional methods which were ICT based. The ICT-based methods were Computer Assisted Instruction and Video-based Instruction. The remaining 160 students belonged to the control group who were taught through conventional method. The pretest was given to test the existing level of knowledge of the students on the concepts of environmental issues and the post test was given to assess their level of understanding after the treatments. The students who learned through the conventional method did not receive any treatment.

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RESULTS AND DISCUSSION

The results of the present study are discussed below.

The pretest and post test results of students taught through different methods is shown in Table 1.

Table 1: Pretest And Post Test Scores Of Students Taught Through Different Methods

The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. The group of students who were exposed to video-based instruction scored higher than those taught through CAI and Conventional method. The hypothesis "There is significant difference in the pretest and post test scores of students taught through video-based instruction, CAI and Conventional method respectively" is accepted.

The pretest and post test results of boys taught through different methods is shown in Table 2.

Table: 2 Pretest AndPost Test Scores Of Boys Taught Through Different Methods

	Pretest			Post-test		
Method	N	Mean	SD	Mean	SD	'P' value
Video-based instruction	80	16.72	5.46	33.47	6.74	> 0.0001
CAI	80	16.20	6.07	27.75	6.03	> 0.0001
Conventional	80	17.09	5.85	29.84	5.31	> 0.0001

The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. The set of boys who were exposed to video-based instruction scored higher than those taught through CAI and Conventional method. The hypothesis "There is significant difference in the pretest and post test scores of boys taught through video-based instruction, CAI and Conventional method respectively" is accepted.

The pretest and post test results of students taught through different methods is shown in Table 3.

Table: 3 Pretest AndPost Test Scores Of Girls Taught Through Different Methods

	Pretest			Post-test		
Method	N	Mean	SD	Mean	SD	'P' value
Video-based instruction	80	17.59	5.73	34.09	6.73	> 0.0001
CAI	80	16.54	5.71	28.63	5.78	> 0.0001
Conventional	80	15.75	5.71	23.01	5.96	> 0.0001

The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. The set of girls who were exposed to video-based instruction scored higher than those taught through CAI and Conventional method. The hypotheses "There is significant difference in the pretest and post test scores of girls taught through video-based instruction, CAI and Conventional method respectively" is accepted.

RECOMMENDATIONS

1. A full fledged ICT-based teaching and learning in environmental education will help in enhancing the process.
2. In-service training given to teachers on a periodical basis should focus on using ICT-enabled teaching aids in the classroom with regard to environmental education.

CONCLUSION

The results of the present study reveal the fact that ICT-based teaching methods have enhanced the understanding level of secondary students. This is evident from the fact that those students who have been taught through ICT-based teaching methods have fared better in terms of their marks when compared to the set of students taught through conventional method.

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