E-Content As An Innovative Teaching Tool For Improving Science Process Skills At Secondary Level

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ABSTRACT

The study's primary objective was to measure the "E-Content as an Innovative TeachingTool for Improving Science Process Skills at Secondary Level." Experimental research is the best way to analyze the facts or information. All the Secondary school students in Dindigul are the population; from the population, the investigator selected 68 student samples. For this research, the investigator developed an E-content learning package; for the topics, visualizing Audio, Video, Animation, you-tube video, and pictures; by implementing this, the experimental group students were taught science teaching through the e-content package. Before and after this treatment, pre-tests and post-tests were conducted. Using the 't-test, the investigator obtained the mean score differences separately to determine the E-content teaching-learning process.

Key Words: E-content, Innovative, Science Process Skills, Secondary School Students.

1. INTRODUCTION

Education is a process that helps develop pupils' knowledge, capabilities, behaviour pattern, and values in a modern education system based on individual learning. E-content modules are one of the ways of digitalizing the science teaching-learning process. This isvery helpful for the students to have individualized instruction. E-content modules provide convenient learning to the student's self-pacing facility for every learner; it engages the user through interactivity. E-content modules facilitate the teacher to have adequate teaching; also, they enhance the learner's knowledge level, which leads to creative thinking. Prabakaran and Saravanakumar (2021), Examined an E-content in learning mathematics among 9th standard students using the Solomon four group method. The finding explored was that the e-content module of learning positively influenced student achievement in mathematics when compared with the chalk and talk method of teaching. Gokul Raj. and Nirmala Devi. (2018) investigated high school students' science process skills and achievement in science. The primary aim of this study analysing the science process skills among high school students, as well as whether there are any significant differences in the dimensions of science process skills across high school students about a few personal characteristics. The investigator identifies E-Content as an innovative teaching tool for improving science process skills at the secondary level.

2. OBJECTIVES OF THE STUDY

- ❖ To assess the effectiveness of the E-content package among secondary school students in developing science process skills.
- ❖ To identify the retention ability of the science process skills developed through the E-content package among secondary school students in science.

3. HYPOTHESES OF THE STUDY

❖ There is no significant mean difference between the Experimental & Control group pre-test science process skills scores among secondary school students through E-content.

❖ There is no significant mean difference between the Experimental & Control group post-test science process skills scores among secondary school students through E-content.

❖ There is no significant difference between the Experimental & Control group delayed post-test science process skills scores among secondary school students through E-content.

4. METHODOLOGY OF THE STUDY

The experimental design has been used in this present study. Quasi-experimental equivalent group Pre-test, Post-test design was adopted. The experimental group was taught through the E-content module technique. The control group was conducted through the conventional method only.

5. SAMPLE OF THE STUDY

The sample for the present study is selected IX^{std} students is studying in a Government school in the Dindigul district. Constitutes the population, of the study. The IX^{Std} Students from two government school selected at random constitutes the sample for the study.

TOOLS USED IN THE STUDY

An E-content module from the select units of IX standard science subject was developed with due importance to the science process skill development among the students. Pre-test &post-test science process skills tests are prepared by the investigator.

6. STATISTICAL TECHNIQUES

Statistical techniques serve the fundamental purpose of description and inferential analysis. The following statistics were used in the present study:

Dindigul District

❖ Mean and Standard deviation

❖ t-test for determining the significance of the difference between the means of the twogroups

7. DATA ANALYSIS AND INTERPRETATION

7.1. NULL HYPOTHESIS

H0: There is no significant difference between Experimental & Control group pre-test science process skills scores on secondary school students using E-content

Table:1 Comparison of pre-test science process skills scores of experimental and control groups

Groups	N	Mean	S. D	Mean Difference	t-value
Experimental group	34	28.15	3.644	0.03	0.032 (Significant at

Groups	N	Mean	S. D	Mean Difference	t-value
Control group	34	28.18	3.888		0.05 level)

Table:1 reveals that the experimental and control group pre-test mean scores of science process skills were 28.15 and 28.18, respectively and standard deviation (S.D) were 3.644 and 3.888, respectively. The analysis shows that there is a significant difference between the overall mean scores. The calculated "t" value (0.032) is less than the table value of 1.96 at a 0.05 level of significance. Therefore, the null hypothesis,

"There is no significant difference between Experimental & Control group pre-test science process skills scores on secondary school students using E-content." is accepted.

7.2. NULL HYPOTHESIS

H0: There is no significant difference between Experimental & Control group post-test science process skills scores on secondary school students using E-content

Table:2 Comparison of post-test science process skills scores of experimental and control groups

Groups	N	Mean	S. D	Mean Difference	t-value
Experimental group	34	42.85	3.155	13.67	9.664 (Significant at 0.05 level)
Control group	34	29.18	7.641		

Table:2 reveals that the experimental and control group post-test mean scores ofscience process skills were 42.85 and 29.18, respectively, and standard deviation (S.D) were
3.155 and 7.641, respectively. The analysis shows that there is a significant difference between the overall mean scores. The calculated "t" value (9.664) is less than the table value
1.96 at a 0.05 level of significance. Therefore,

the null hypothesis, "There is no significant difference between Experimental & Control group post-test science process skills scores on secondary school students using E-content" not accepted.

7.3. NULL HYPOTHESIS

H0: There is no significant difference between Experimental & Control group delayedpost-test science process skills scores on secondary school students using E-content

Table:3 Comparison of delayed post-test science process skills scores of experimental and control groups

Groups	N	Mean	S. D	Mean Difference	t-value

Experimental group	34	42.88	3.053		12.748 (Significant at 0.05 level)
Control group	34	29.41	5.873	13.47	

Table:3 reveals that the experimental and control group's delayed post-test mean scores of science process skills were 42.88 and 29.41, respectively, and the standard deviation (S.D) was 3.053 and 5.873, respectively. The analysis shows that there is a significant difference between the overall mean scores. The calculated "t" value (12.748) is less than the table value of 1.96 at a 0.05 level of significance. Therefore, the null hypothesis, "There is no significant difference between Experimental & Control group delayed post-test science process skills scores on secondary school students using E-content" not accepted.

8. MAJOR FINDINGS OF THE STUDY

It is found that there is no significant difference between Experimental & Control group pre-test science process skills scores on secondary school students using E-content (t=0.032), and there is a significant difference between Experimental & Control group post-test science process skills scores on secondary school students using E-content (t=9.664), and there is a significant difference between Experimental & Control group Delayed post-test science process skills scores on secondary school students using E-content (t=12.748).
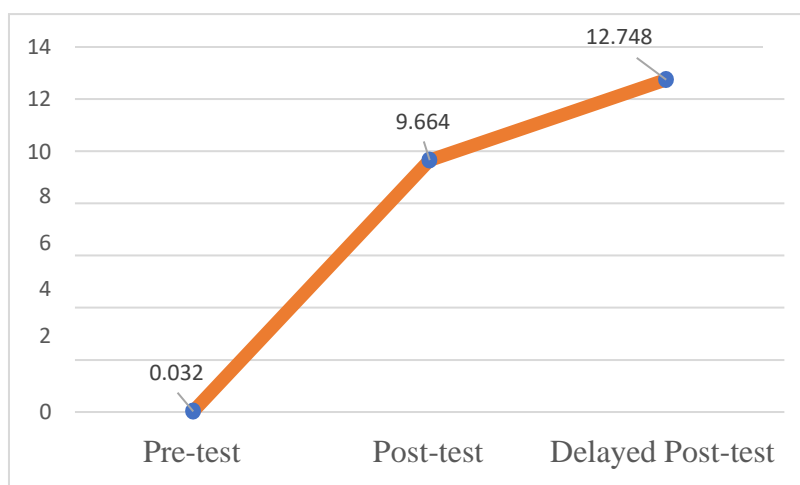
9. CONCLUSION

The research indicates that using an E-content package once per day did produce a high level of achievement in secondary school students. This can be implemented in all the subjects to make the students learn interestingly. The teaching-learning process is more effective and interactive by using various varieties of teaching science. So that the academic performance of secondary school students can be significantly influenced, this, in turn, will make their learning more meaningful and intrinsically motivating.

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