



A study of effectiveness of e-content on the Educational achievement of the students in science and technology subject

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Abstract:

In the present era of grey revolution, teachers' role is highly challenging to make their students meet global demands. Instructional practices and instructional strategies vary based on the need of the learners. Technology can be imperative for individualized instruction in order to bridge the gaps between teaching and learning. Contribution of science is instrumental for the economic growth and social transformation. The Kothari commission report asserts that if science is poorly taught and badly learnt, it is a little more than burdening the mind with dead information. It could even degenerate into new superstitions. In India, science teaching needs overhauling. To understand the real concept of science, classical face-to-face teaching methods may have to be supplemented by innovative methods. Developing e-content is emerging to be an innovative method which could help the learners visualizes the content so as to make them be creative and productive learners. The e-contents are developed with the integration of multimedia components such as text, audio, video, animation and image which are set to ensure better understanding of science by the students. In that way, e-content on science and technology was developed for finding its impact on learners. 126 secondary school students from both genders were taken as a sample. Results revealed that e-content has its positive impact on science and technology learning among students irrespective of gender.

Keywords: e-content, Educational Achievement

1. Objectives of Research

- To construct the e-content on the selected two units of Science and Technology of Std. X.
- To assess the effectiveness of teaching through e-content on the educational achievement of the students of Std. X.
- To develop an achievement test on selected two units of Science and Technology of Std. X.
- To assess the effect of gender on educational achievement by e-content.

2. Hypotheses of Research

Ho₁: There will be no significant difference between the mean scores of Science and Technology subject of the students for Experimental group and the Controlled group.

Ho₂: There will be no significant difference between the mean scores of Science and Technology subject of boys and girls of the Experimental group.

3. Population and Sample

In the present study the students studying during the year 2008-09 of Std. X in the Secondary Schools of Gujarati medium of Ahmedabad and Gandhinagar District are the population.

Sample was selected by using the purposive sampling method in the study, in which two schools are included. Total 126 students were included in the study. In which total 49 girl students and 77 boy students included.

Table 1: Number of Students of Control group and Experimental Group

Group	Boys	Girls	Total
Control Group	40	24	64
Experimental Group	37	25	62
Total	77	49	126

4. Research method - Design

For experimentation on the selected sample, equal group only Post Test Design had been implemented. For this, in order to make the equal groups, the test based on the subject of Science and Technology of Std. 8 and 9 was administered to the students of Std. 10. Out of the sample e-content was implemented on the Experimental group and the method of traditional class-room teaching was implemented on the controlled group. After the implementation, post test was administered to assess the effectiveness of e-content on the Science and Technology subject. T-test was used as the suitable statistical technique for hypothesis testing with the help of the scores obtained in the test.

5. Preparation of e-content

The main objective of the present study was to construct e-content material based on two units of science and technology subject of standard 10 of Gujarat state board Prescribed syllabus. It was prepared based on the two units of Science and Technology of Std. 10 namely "Reflection and Refraction of light" and Dispersion of light and Optical Instruments. The course contents were prepared by the researcher using Gujarat state Textbook board prescribed science and technology subject textbook of standard 10 with other material from the internet.

E-content is developed with the integration of multimedia components such as text, video, animation and image which will give multi-sensory experience to the learners. In the present study, the investigator decided to develop the e-content in HTML format based on the objectives. At this stage, the sub topics were formed and appropriate images, animations, and videos were created based on topics in which researcher himself delivered the content to minimize the subjectivity in both experimental and controlled group.

Editing was done by the investigators with the help of experts in the studio. The e-content in HTML format, contains text, images, video and animations. The investigator prepared the video and animation to explain the concept according to the instructional objectives and carefully edited. After the editing the total video portion is presented as a complete e-content which was validated by the experts.

6. Construction of other tools.

In the present research, a test was constructed to make the equal groups based on standard 8 and 9th science and technology subject prescribed syllabus of Gujarat state textbook board and post test was constructed of the subject Science & Technology of Std. X to assess the effect of e-content .

7. Data Collection and Analysis

In the present study at the end of experiments the post test was administered to the students. In order to assess the effectiveness of e-content Mean, S.D. and standard deviation were calculated by gender wise and group wise of the scores of the post test And t-test was used to compare the means of the obtained scores.

Table 2: Mean scores of Boys and Girls of Experimental Group in Post-test

Group	N	Mean	SD	't' value	Significance level
Control group	64	19.75	8.27	5.71	Significant at 0.01 level
Experimental group	62	28.14	10.49		

Table3: Mean scores of Control Group and Experimental Group in Post-test

Gender	N	Mean	SD	't' value	Significance level
Boys	37	28.52	10.80	0.45	Not Significant at 0.01 level
Girls	25	27.47	10.03		

It can be found from the table II, those students of experimental group which was given treatment of e-content that effect of e-content integration in science and technology found effective. From table III, it is concluded that e-content integration in science and technology learning did make no difference with reference to gender.

8. Hypothesis Testing

Hypothesis testing of the present study is mentioned in Table 1.

Table 4:Hypotheses Testing

No.	Hypothesis	t-value	Level of Significance	Acceptance or Non-Acceptance
1	Ho1:-There will be no significant difference between the mean scores of Science and Technology subject of the students for Experimental group and the Controlled group.	5.71	0.01	Not Accepted
2	Ho2:-There will be no significant difference between the mean scores of Science and Technology subject of boys and girls of the Experimental group.	0.45	0.01	Accepted

9. Finding of Research

Following are the findings or conclusions of the study based on the interpretations obtained from the hypotheses testing constructed suited to the present study:-

- With reference to two units namely ' Reflection and Refraction of Light and Dispersion of Light and optical instruments of Science and Technology of Std. X, there was the significant effect of Teaching through e-content on the educational achievement of the students of the Experimental groups.
- With reference to two units namely ' Reflection and Refraction of Light and Dispersion of Light and optical instruments of Science and Technology of Std. X, there was no significant effect of gender by Teaching through e-content on the educational achievement of the students of the Experimental groups.

10. Conclusion

The researcher made effort to know the effect on the educational achievement by teaching through e-content in the subject of Science & Technology. It has been proved here that the level of educational achievement can be taken at height in the subject of Science and Technology, through the e-content prepared by adequate treatment. Moreover the researcher had experienced that by the use of the technology schools can give qualitative education to the students and can improve the quality also. Simultaneously they can save the time also. Thus, in the present study, the researcher has attempted to prepare the e-content with the aim of giving the new teaching-learning process and secondly with the aim of making the Educational achievement effective. Learning through e-content encourages critical and active learning. Humans can integrate information from different sensory stimuli into meaningful experiences. This empirical study proved that e-content enhances the achievement of the students.

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