IMPACT OF E-CONTENT IN TEACHING PHYSICS FOR XI STANDARD STUDENTS WITH RESPECT TO LOCALE, PARENTAL OCCUPATION AND LEARNER'S GENERATION

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IMPACT OF E-CONTENT IN TEACHING PHYSICS FOR XI STANDARD STUDENTS WITH RESPECT TO LOCALE, PARENTAL OCCUPATION AND LEARNER’S GENERATION

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(Received 26th April 2018, Revised 30th April 2018, Accepted 01st May 2018)

Abstract

An innovative application of computer in the teaching and learning process is e-content. This includes text, video, audio, animation and graphics. E-content is the advancement of technology to design, deliver, select, administer and extend learning. E-content in education is a powerful tool that may be used effectively and efficiently within the classroom to create more exciting learning environment and deliver a higher level of educational expertise to students. The script was carefully planned and prepared adhering to the norms. The audio part of the script contains the matter that has to be orally explained and the sound effect. The visual part of the script shows all shot that will explain the processes involved in the selected topic. The aim of the study is to find out the impact of e-content in teaching physics at higher secondary level. E-content in teaching physics was developed by the investigator. Based on the material incorporated in the e-content, an achievement test was developed on the basis of guidelines of Bloom which was validated by the experts. Experimental method has been adopted for the present study. The sample of this study consisted of 80 Students studying XI standard. It is found that there is a significant difference between E-content method and conventional method of teaching-learning process.

Key words: Impact of E-Content, Achievement in Physics, XI Standard Students.

Introduction

The primary objective of science education is to improve teaching and learning practices. The field of science education has developed into a diverse aggregation of interest areas as witnessed in the pages of research in science education and other journals in this field. An innovative application of computer in the teaching and learning process is e-content. This includes text, video, audio, animation and graphics. E-content is the advancement of technology to design, deliver, select, administer and extend learning. E-content in education is a powerful tool that may be used effectively and efficiently within the classroom to create more exciting learning environment and deliver a higher level of educational expertise to the students. Physics, or the central science as it is sometimes called, bridges other natural sciences together. Although Physics plays a vital role in the world of science, students and teachers in higher secondary education alike have always found difficulty with this particular subject. As students in higher secondary education lose interest in studying physics, it is crucial that researchers should create innovative technology to increase it. One of the major goals for Physics teachers is to develop more current methods to teach higher secondary students the necessary concepts in physics. The new and improved technological advances have been created to ease the fear of the students and the possible misconceptions they may have about Physics before even entering the classroom.

Need for the Study

The quality of education depends to great extent on the quality of teachers. It is a known fact that quality teachers opt for an innovation in their teaching aspect through integrating technology in the
classroom instruction to give the best to student. To be effective in the classroom instruction, teacher should acquire the knowledge and skills to use the new challenges in promoting innovative teaching strategies that are student-centered, collaborative, engaging, authentic, self-directed and based on the development of higher order thinking skills with respect to handling classes for student which aim to achieve high academic standards. Education technology has great potential for improving the teaching - learning process. Educational technology is the development, application and evaluation of systems, techniques and also aids in the field of human learning. One of the important contributions of educational technology is individualized instruction, which enables is to make use of self-instruction programmers. With the help of traditional instructional process, the teachers in general are not able to satisfy the heterogeneous group of students in learning. This problem could be overcome by the application of innovative teaching technology. In this study, individualized instruction through e-content as an alternative strategy for conventional mode. Through this method, the students are allowed to proceed and learn on this own pace, depending on his abilities and past history of achievement. Further, it motivates the students for self-learning.

**Objectives of the Study**

1. To find out whether there is any significant difference between the higher secondary Students’ achievement scores in Physics of the control group and experimental group at Pre - test level.
2. To find out whether there is any significant difference between the higher secondary Students’ achievement scores in Physics of the control group and experimental group at Post - test level.
3. To find out whether there is any significant difference between experimental groups of higher secondary Students’ achievement in Physics of various categories of sub-samples-wise.
   a. Locale
   b. Parental Occupation
   c. Learner’s Generation

**Hypotheses of the Study**

1. There is no significant difference between the higher secondary Students’ achievement scores in Physics of the control group and experimental group at Pre-test level.
2. There is no significant difference between the higher secondary Students’ achievement scores in Physics of control group and experimental group at Post-test level.
3. To find out whether there is any significant difference between control and experimental group of higher secondary Students’ achievement in Physics of various categories of sub-samples-wise.
   a. Locale
   b. Parental Occupation
   c. Learner’s Generation

**Method of the Study**

The main objective of the present study was to test the impact of E-Content on achievement in physics among XI standard Students. In the present research, experimental method was employed.

**Sample of the Study**

This study was 120 XI standard students from Musthafa Metric Higher Secondary School, Chidambaram, Cuddalore Districts in Tamil Nadu. Out of these 120 students, 80 students were selected, based on their performance in the first model exam, which is a common one. For that, those students who have secured 60% and above marks are alone selected. Further an entrance test prepared by the Investigator was administered to the 80 students thus selected. Based on the marks of the entrance test, students were arranged in descending order. From that the Investigator selected the first one for control group, next for experimental group. The control group consists of odd number of students and experimental group consists
of even number of students. Control group was exposed to traditional method of teaching. It consists of 40 students. In the same way experimental group was given treatment through E-Content in teaching. It also consists of 40 students. Thus 80 students were the total sample selected for this study.

**Tools Used for the Study**
1. Syllabus based E-Content package was used.
2. Syllabus based Pre-Test and Post-Test Materials were prepared and validated by the investigator.

**Statistical Techniques**
Statistical techniques serve the fundamental purpose of the description and inferential analysis. The following statistical techniques were used in the study.
1. 't' test was applied to analyze the deferential hypothesis.
2. 'f' test was used to find out the significance of relationship between the Sub-group variables.

**Analysis of Post-Test Performance**
The following table furnishes the data on the Post-Test performance of the Control and Experimental groups and also furnishes the significance of difference between the achievement scores of students in various groups in detail.

**Gain score**
A pre-test was conducted to the control and experimental group before the treatment. After that the teaching and learning process of experimental group through E-content package and control group through conventional method, a post test score and the pre-test score was calculated for analysis.

**Differential Analysis**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t' Value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>40</td>
<td>9.90</td>
<td>3.12</td>
<td>0.50</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Experimental</td>
<td>40</td>
<td>10.25</td>
<td>3.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no significant difference between the control and experimental group higher secondary school students in respect of their achievement in physics at Pre-Test level. The details of the calculations are given in the above table. In respect of the control and experimental group higher secondary school students in respect of their achievement in physics, the t' value is found to be 0.50 which is not significant at 0.05 level. Therefore the null hypothesis is accepted and it is concluded that there is no significant difference between the means of control and experimental group higher secondary school students in respect of their achievement in physics at pre test level.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t' Value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>40</td>
<td>42.40</td>
<td>6.05</td>
<td>21.47</td>
<td>Significant</td>
</tr>
<tr>
<td>Experimental</td>
<td>40</td>
<td>64.35</td>
<td>4.73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no significant difference between the control and experimental group higher secondary school students in respect of their achievement in physics at Post-Test level. The details of the calculations are given in the above table. In respect of the control and experimental group higher secondary school students in respect of their achievement in physics, the t' value is found to be 21.47 which is significant at
0.05 level. Therefore the null hypothesis is rejected and it is concluded that there is significant difference between the means of control and experimental group higher secondary school students in respect of their achievement in physics at Post-Test level.

Table - 3
Significance of Difference between the scores of Achievement in Physics of the Rural and Urban Students

<table>
<thead>
<tr>
<th>Sub Samples</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t' Value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>14</td>
<td>41.50</td>
<td>5.34</td>
<td>0.72</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Urban</td>
<td>26</td>
<td>42.88</td>
<td>6.45</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no significant difference between the means of rural and urban higher secondary school students in respect of their achievement in physics. The details of the calculations are given in the above table. In respect of the Rural and Urban higher secondary school students in respect of their achievement in physics, the t’ value is found to be 0.72 which is not significant at 0.05 level. Therefore the null hypothesis is accepted and it is concluded that there is no significant difference between the means of Rural and Urban higher secondary school students in respect of their achievement in physics.

Table - 4
Significance of Difference between the scores of Achievement in Physics with respect to Parental Occupation of Higher Secondary Students

<table>
<thead>
<tr>
<th>Parental Occupation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>52.827</td>
<td>2</td>
<td>26.413</td>
<td>0.71</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1376.773</td>
<td>37</td>
<td>37.210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1429.600</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no significant difference among the parental occupation of higher secondary students in respect of their achievement in physics. The details of the calculations are given in the above table. In respect of the parental occupation of higher secondary students, the F value is found to be 0.71 which is not significant at 0.05 level. Therefore the null hypothesis is accepted and it is concluded that there is no significant difference among the parental occupation of higher secondary students.

Table - 5
Significance of Difference between the scores of Achievement in Physics with respect to Learner’s Generation of Higher Secondary Students

<table>
<thead>
<tr>
<th>Sub Samples</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t’ Value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>19</td>
<td>43.05</td>
<td>4.39</td>
<td>0.65</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Second and Above</td>
<td>21</td>
<td>41.81</td>
<td>7.30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There is no significant difference among the Learner’s Generation of higher secondary students in respect of their achievement in physics. The details of the calculations are given in the above table. In respect of the Learner’s Generation of higher secondary students, the t’ value is found to be 0.65 which is not significant at 0.05 level. Therefore the null hypothesis is accepted and it is concluded that there is no significant difference among the Learner’s Generation of higher secondary students.

Conclusion
Learning through e-content encourages critical and active learning. With e-content materials, the learner and teacher will understand that he or she is changing from a provider of facts to the one who facilitates a learning environment. It is in this assumption that this investigation attempts to devise an innovative teaching technique through e-content approach. The XI Standard Students in experimental
groups have excelled in e-content on Physics than control groups which had gone through Physics in traditional method. The post test scores of control and experimental group of higher secondary students is not significant with respect to locale, parental occupation and learner’s generation in their achievement in physics. It may be concluded that use of E-Content way of teaching has significant impact on enhancing the achievement in Physics among the XI standard Students.

References