

# THE EFFECT OF E-CONTENT ON LEARNING OF SCIENCE FOR D.El.Ed. TRAINEES - GAIN SCORE ANALYSIS

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## ABSTRACT

Teaching is a process in which the teacher and students create an interactive environment. ICT (Information and Communication Technology) is an essential tool for achieving sustainability and will help in enabling better and increased access to information to enrich the teaching learning process. The development of teaching and learning resources has always been integral to education and training and largely the domain of teachers. Several factors have led to an increased emphasis on content development now as a separate and more specialized activity, and often involving a consultative approach or team effort, or undertaken by people who may or may not be involved in the teaching. The present study aimed to find out the effect of e-content on the achievement of learning of science for D.El.Ed (Diploma in Elementary Education) trainees. The sample consisted of 80 student teachers with 40 student teachers in the control group and experimental group, respectively. The data were collected and analyzed with 't' test. The finding was the gain scores of the experimental group students were higher than the control group students. So it was concluded that e-content learning material is an effective tool.

**Key Words:** Elementary Education, Teacher Education, ICT, - e-learning, e-content

## Introduction

Teacher Education is a continuing process and its pre-service and in-service components are inseparable. According to The International Commission on the Development of Education, teacher training programmes should be so modified that teachers are equipped for the different roles and functions imposed by new technologies. The training institution should provide opportunities and facilities to the trainees to handle audio-visual equipment, new learning-teaching material, worksheets, programmed books, teaching machines and other latest instruments meant for individualised learning as also for various other methods which are sought to be employed in new emerging models of teaching-learning. To strengthen the two dimensions of teacher education, i.e., Pre-Service and In-service area, District Institute of Education and Training (DIET) was established across the nation. About teachers, the Education Commission (1964-66) had observed, "of all the factors that influence the quality of education... the quality, competence and character of teachers are undoubtedly the most significant."<sup>1</sup> E-content is a very powerful tool for education.<sup>2</sup> E-content is valuable to the learners and also helpful to teachers of all individual instruction systems; It is the latest method of instruction that has attracted more attention along with the concept of models. Education is to enrich the qualities of head, hand and heart. Education is one of the basic needs of men and women. The role of the education is the attainment of human excellence and perfection not just in the field of knowledge or activity, but life in totality.

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**Statement of the problem**

"Today's world is a computer world. Most important activities are computerised. This has made computer education inalienable".<sup>3</sup> Research reveals that only 10 per cent of the students are intelligent enough to understand classroom teaching. Others are not able to imagine, what the teacher tries to explain verbally.<sup>4</sup> The animations would help students teach subjects, especially mathematics, science and social science, in a better way. Information Technology department and School Education Department have initiated the e-smart classroom project in Tamil Nadu. The movement towards the ICT and the interference of behavioural psychology influenced the field of teaching and learning. Knowledge packing and web casting are changing the traditional rigid class room environment and teaching materials. The problem under the present investigation is stated as "Effect of E-Content on Learning of Science for Diploma in Elementary Education (D.El.Ed) Trainees."

**Objectives of the Study**

1. To find out whether there is equal level of gain scores among the experimental and control group student teachers in their achievement in science learning.
2. To find out whether there is any significant difference between control and experimental group student teachers in their mean gain scores.
3. To find out whether there is any significant difference between male and female student teachers of experimental group in their mean gain scores.

**Hypotheses of the Present Study**

1. There is no equal level of gain scores among the experimental and control group student teachers in their achievement in science learning.
2. There is no significant difference between control and experimental group student teachers in their mean gain scores.
3. There is no significant difference between male and female student teachers of experimental group in their mean gain scores.

**Method of the Study**

The investigators have used experimental method for the present study. In an experimental method, pre-test, post-test and two group equivalent groups design is selected. The groups are matched with their achievement in pre-test. One of the equivalent groups served as the control group and the other as experimental group. The experimental factors are applied to the experimental group for a specific period of time. The difference is observed at the end of the period between the control and experimental group.

**Variables of the study**

The independent variable or cause variable of the study is e-content learning material developed by the investigators. The dependent variable or the effect variable is the achievement test in science learning.

**Samples of the study**

The investigators have selected 80 student teachers studying in DIET, Pudukkottai and DIET, Mannargudi to serve as both the control and the experimental group, respectively, with 40 trainees each.

### Research Tools

- The following tools were used by the investigators for the present study. They are Multimedia based interactive e-content developed by the investigators.
- Pre-test questionnaire which is based on the selected topic from the text book of Teaching of science, standardized by the investigators.
- Post-test achievement questionnaire, which is based on the selected topic from the text book of Teaching of science, standardized by the investigators.
- Personal data sheet to gather the personal information from students.

### Statistical Techniques Used

For the present study, the investigators has used the following descriptive and differential statistical techniques.

Mean  
Standard Deviation  
't' test

### Hypothesis Testing

#### Hypothesis -1

There is no equal level of gain scores among the experimental and control group student teachers in their achievement in science learning.

**Table 1 THE LEVEL OF GAIN SCORES BETWEEN CONTROL GROUP AND EXPERIMENTAL GROUP STUDENT TEACHERS**

Group	Low		Average		High		Total
	N	%	N	%	N	%	
Control Group	9	22.50	24	60	7	17.50	40
Experimental Group	6	15	24	60	10	25	40
Total	15	–	48	–	17	–	80

It is inferred from the above table, that 22.50 % of the control group students has scored a low level, 60% of them have scored average level, and 17.50% of them has scored a high level of gain scores.

Among the experimental group students 15% has scored low level of scores, 60% of them has scored average level, and 25% of them has scored high level of gain scores. The three levels are interdependent, unequal and vary. Hence the null hypothesis is accepted.

#### Hypothesis -2

There is no significant difference between control and experimental group student teachers in their mean gain scores.

**Table 2 The difference between control Group and Experimental Group Students in their Gain Scores**

Group	Category	N	Mean	SD	't' Value	Remarks at 5% Level
Control Group	Gain Score	40	18.30	3.20	12.07	Significant
Experimental Group		40	26.55	3.08		

The calculated "t" value 12.07 is greater than the table value of 1.96. So, the hypothesis has been rejected. It is inferred from the above table, that experimental group trainees have gained more than control group. This shows that e-content learning material is an effective tool in the learning of science for D.El.Ed trainees.

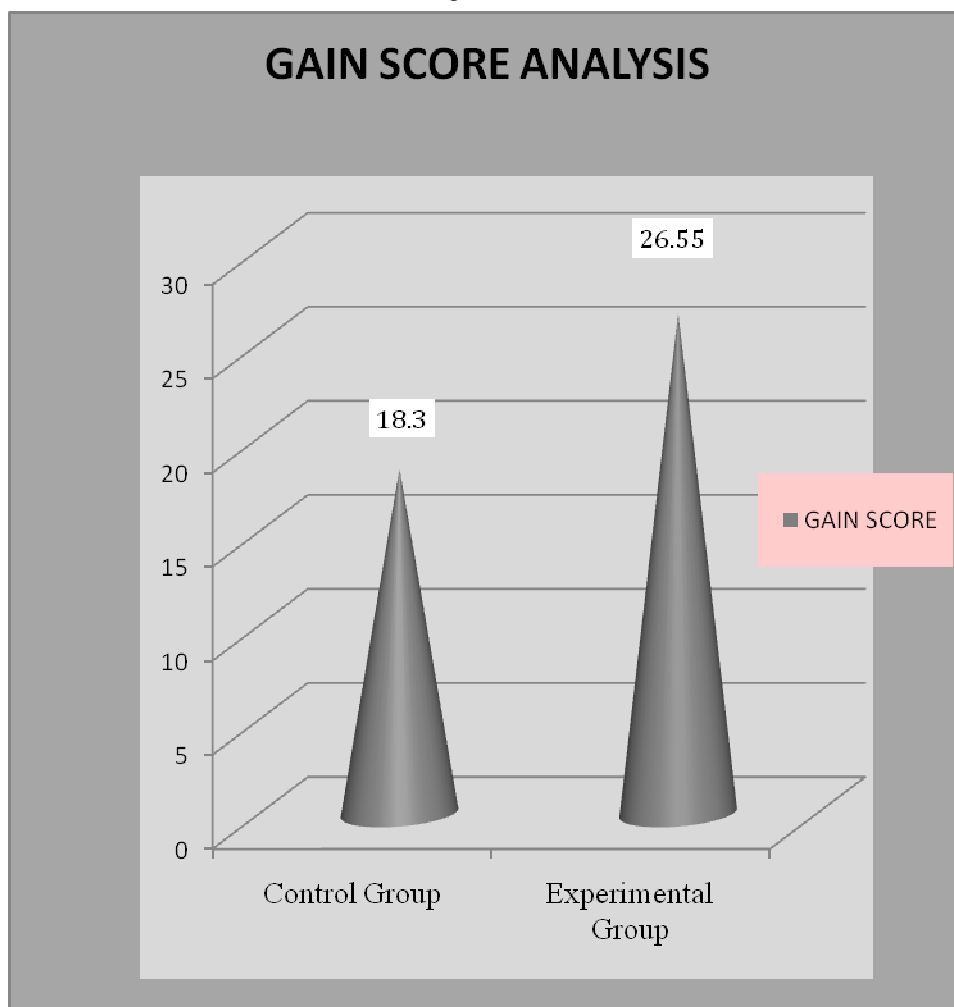


Fig. 1 The Difference Between Control Group and Experimental Group in their Gain Scores

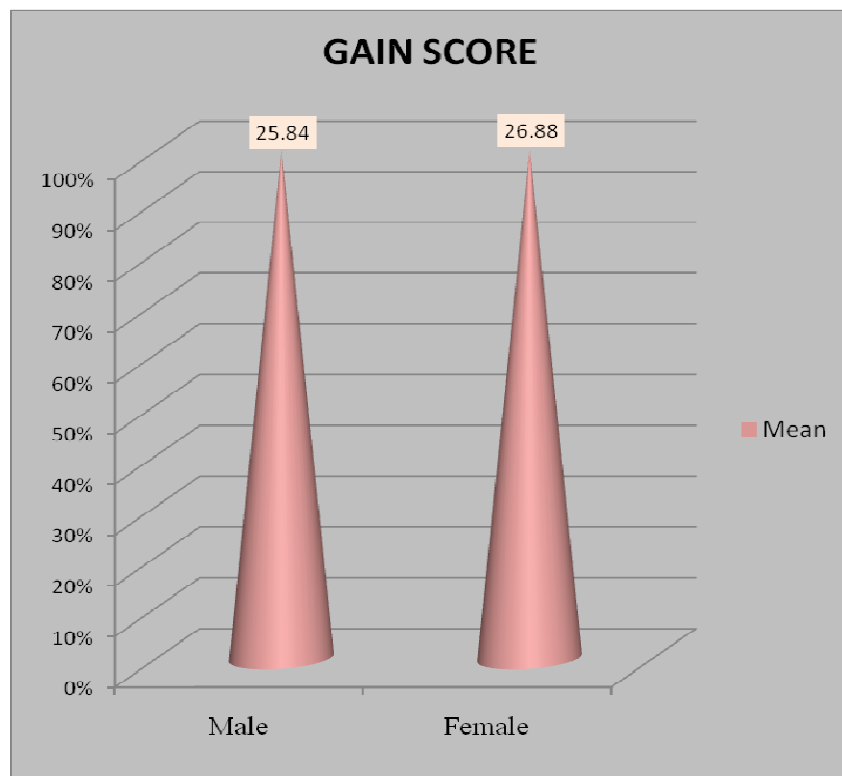
**Hypothesis -3**

There is no significant difference between male and female trainees of experimental group in their gain scores.

**Table -3 The Difference between Male and Female Trainees of Experimental Group in their Gain Score**

Gender	Category	N	Mean	SD	't' Value	Remarks at 5% Level
Male	Gain Score	13	25.84	3.46	1.00	Not Significant
Female		27	26.88	2.9		

The calculated "t" value 1.00 is less than the table value of 1.96. So, the null hypothesis has been accepted. It is inferred from the above table; both male and female trainees have gained almost equal level in their mean gain score. Hence, it is proved that the developed e-content is apart from gender difference.



**Fig. 2 The Mean Difference between Male and Female Trainees of Experimental Group in their Gain Scores**

### **Findings of the study**

The following are the major findings of the present study.

1. The result shows that there is no equal level of gain scores among the experimental and control group of student teachers in their achievement in science learning. This might be due to the effect of e-content in their science learning.
2. The Experimental group trainees have gained more than the control group. This shows that e-content learning material is an effective tool in learning of science for D.El.Ed trainees.
3. Both male and female trainees have gained almost equal level in their mean gain score. Hence, it is proved that the developed e-content is apart from gender difference.

### **Delimitations of the study**

Only Multimedia (MID) Instructional Design Model is used in developing the e-content learning materials.

Among 30 DIETs in Tamil Nadu, only two DIETs have been selected for the present study.

The study is restricted to only eighty student teachers in each DIET.

The researcher has selected only two units from the text book, teaching of science for the present study.

For the present study, the contents are selected only from the content part from the text book, even though the book contains methodology part also.

### **Limitations**

Student teachers are selected only from DIETs for the present study and Govt TTIs, Aided TTIs and self financing TTIs have not included.

Though D.El.Ed. level contains first year and second year student teachers, the present study is limited to first year students only.

### **Recommendations**

According to the findings and conclusion of the present study, the following recommendations have been framed by the investigators.

The audio-visual approach can be adapted in teaching other subjects such as English, Chemistry, Maths, Physics, and Geography etc.

Lecture method in the class may be minimized and other new innovative methods can be introduced.

Both the theoretical knowledge and practical knowledge can be enhanced through e-content.

The library should contain not only text books, but also CD ROM based learning materials.

T.V., Computer room and all other provisions are needed for the usage of ICT in teaching-learning process. So computer and other needed things can be provided in installments by the government.

Software engineers may be appointed in every school to train teachers as well as students in the preparation of e-content packages.

## Conclusion

Based on the findings, it is concluded that e-content material has been identified as an effective tool in teaching-learning process. It enhances the student teachers learning ability, irrespective of the extraneous variables e.g. gender. And also e-content material has motivated all the trainees in equal manner. Even though, the production cost is more, it is a worthy one time investment.

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