

EFFECTIVENESS OF E-CONTENT IN LEARNING MATHEMATICS AMONG SECONDARY TEACHER TRAINEES

Research
Paper

ABSTRACT

The present study found out the effectiveness of the e-content in learning mathematics among secondary teacher trainees. The study was conducted to develop a e-content for the methods of teaching mathematics and experimenting the same with an set of trainees studying and finding out its effectiveness over the conventional method of teaching. Two equivalent group experimental-designs are employed for this study. The investigator has chosen 26 B.Ed. trainees for the study. On the basis of their score in the pre-test, 13 students were chosen as control group and 13 students were chosen as experimental group. Finally the investigator concluded that (a) there was significant difference between control and experimental group students in their gain scores, that is the experimental group students are better than the control group students in their gain score and (b) there was significant difference between control and experimental group students in their gain scores for attainment of the knowledge, understanding, and application objectives.

INTRODUCTION

'e-content' is one of the recent techniques in the educational technology. In this e-content way of instruction teaching is learner centric. The expansion for e-content is electronic content. e-content is a product of e-learning. The products bring solutions to facilitate quick and efficient development in education. To maintain standard or quality in education one should make use of e-content in the teaching-learning process. Mathematics is considered as a dry subject and students do not find anything interesting in it. This impression about mathematics can be reversed with the help of recreational activities in Mathematics. So the problem of this study is stated as follows: "Effectiveness of e-content in learning mathematics among secondary teacher trainees."

OBJECTIVES OF THE STUDY

- To study the effectiveness of e-content in mathematics education among B.Ed., teacher trainees.
- To find out whether there is any significant difference between control and experimental group trainees in their gain scores.

HYPOTHESES OF THE STUDY

1. There is no significant difference between control and

experimental group trainees in their gain scores.

2. There is no significant difference between control and experimental group trainees in their gain scores for attainment of the knowledge, understanding and application objectives.
3. There is no significant difference between pre-test and post-test scores of control and experimental group students.

METHODOLOGY

Two equivalent group experimental-designs are employed for this study. To find out the effectiveness of the e-module, the investigator has chosen experimental research. Experimental research describes what will be when certain variables are carefully controlled or manipulated. The focus is on variable relationship.

K.Thiyagu

Assistant Professor,

Dr.Sivanthi Aditanar College of Education
Tiruchendur.

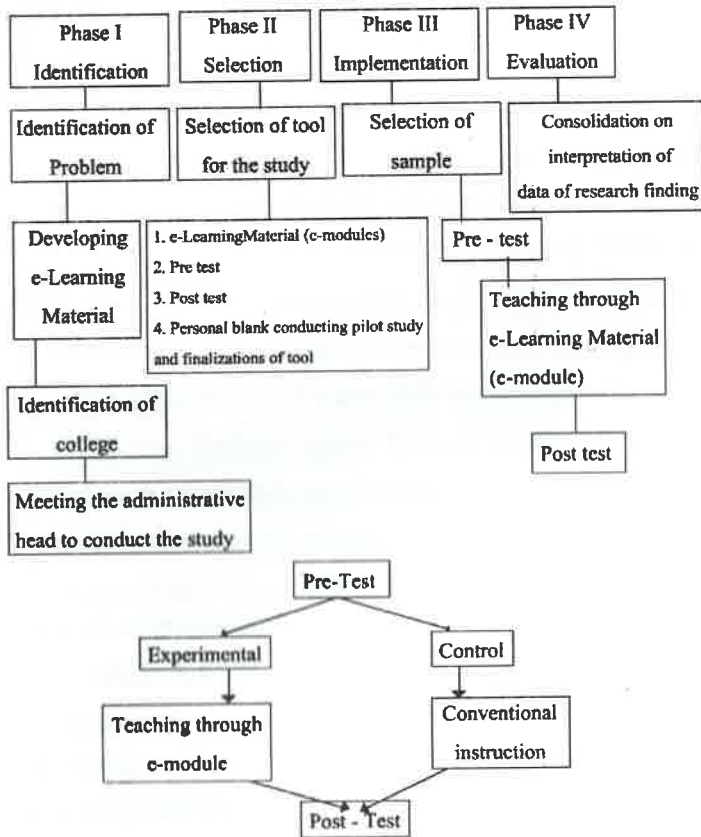
Dr.I.Muthuchamy

Associate Professor,

Department of Educational Technology,
Bharathidasan University, Trichy

Figure 1
Research Design

Table 1



FORMING TWO EQUIVALENT GROUPS

The sample of the study consisted of 26 B.Ed. trainees studying mathematics as an optional subject in Dr. Sivanthi Aditanar College of Education, Tiruchendur affiliated to Tamil Nadu Teachers Education University. On the basis of their score in the pre-test, 13 students were chosen as control group and 13 students were chosen as experimental group. The mean difference between these groups in pre-test was found not to be significant. Thus two equivalent groups were formed.

TOOLS USED

The following are the tools used for the present study.

1. An e-content package developed by the investigator for teaching the methodology of teaching mathematics to secondary teacher trainees.
2. An achievement test in mathematics constructed and validated by the researcher.

CONDUCTING THE EXPERIMENT

A) Administration of the Pre-test and post test. were administrated for both the control and experimental groups.

B) Treatment: The investigator had developed the e-content for the following topics: Inductive method, Deductive method, Analytic method, Synthetic method, Heuristic method, Laboratory method and Problem Solving method. The experimental group sample of 13 students was taken to the computer lab. These students were taught with the e-content way of instruction. Corrective feedback was given wherever necessary. When any point was not learnt additional time was given and the media material was screened once again wherever necessary. The treatment was given for 60 minutes per day by the investigator for fifteen days.

The control group sample of 13 students was taken to the regular classroom. These students were taught in the traditional way. The treatment was given for 60 minutes per day.

STATISTICAL TECHNIQUES USED

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

- ★ Mean (m) and standard deviations (SD)
- ★ 't' test for determining the significance of difference between the means of the two sub-groups.

HYPOTHESES TESTING

Null Hypothesis 1

There is no significant difference between control and experimental group trainees in their gain scores.

Table 1
DIFFERENCE BETWEEN CONTROL AND EXPERIMENTAL GROUP STUDENTS IN THEIR GAIN SCORES

Group	Mean	S.D	Calculate d 't' value	Remark at 5% level
Control group	6.46	2.6	3.58	*Significant
Experimental group	9.92	2.32		

(*At 5% level of significance the table value of 't' is 2.06)

It is inferred from the above table that there is a significant difference between control and experimental group students in their gain scores. That is, the experimental group students are better than the control group students in their gain scores. Hence, the developed e-content package is considered effective in training the secondary grade teacher trainees.

Null Hypothesis 2

There is no significant difference between control and experimental group students in their gain scores for attainment of the knowledge, understanding and application objectives.

Table 2
DIFFERENCE BETWEEN CONTROL AND EXPERIMENTAL GROUP STUDENTS IN THEIR GAIN SCORES FOR ATTAINING THE OBJECTIVES

Objectives	Control group		Experimental group		Calculated 't' value	Remark at 5% level
	Mean	S.D	Mean	S.D		
Knowledge	3.46	1.98	5	1.68	2.13	*Significant
Understanding	1.78	1.28	3.13	1.79	2.93	*Significant
Application	1.54	1.19	2.61	2.62	2.23	*Significant

(*At 5% level of significant the table value of 't' is 2.06)

It is inferred from the above table that there is significant difference between control and experimental group students in their gain scores for attainment of the knowledge, understanding and application objectives.

Null Hypothesis 3

There is no significant difference between pre-test and post-test scores of control and experimental group students.

Table 3
DIFFERENCE BETWEEN PRE-TEST AND POST-TEST SCORES OF THE CONTROL AND EXPERIMENTAL GROUP STUDENTS

Group / Test	Control group		Experimental group		Calculated 't' value	Remark at 5% level
	Mean	S.D	Mean	S.D		
Pre-test	8.85	2.64	8.53	2.02	0.33	*Not Sig.
Post-test	15.31	2.46	18.46	1.66	3.83	*Sig.

(At 5% level of significance the table value of 't' is 2.06)

It is inferred from the above table that there is no significant difference between pre-test scores of control group and experimental group students. But there is significant difference between post-test scores of control group students and experimental group students.

MAJOR FINDINGS

The major findings which have emerged from the study are as follows:

1. There was significant difference between control and experimental group students in their gain scores. That is, the experimental group students are better than the control group students in their gain scores.
2. There was significant difference between control and experimental group students in their gain scores for attainment of the knowledge, understanding, and application objectives. That is, the experimental group is better than control group in attainment of their objectives.
3. There was no significant difference between pre test scores of control group and experimental group students. But there is significant difference between post-test scores of control group students and experimental group students, experimental group students having more marks than the control group students in their post test.

INTERPRETATION

The 't' test result shows that the experimental group students are better than the control group students in the gain scores. This may be due to the fact that the e-content package is effective in teaching Mathematics Education for the secondary teacher trainees. Since the e-content package is developed by using html, power point and media player, the presentation is attractive. So the student's attention is drawn to the topic to be learnt.

The 't' test result also shows that the experimental group students are better than the control group students in attainment of knowledge, understanding and application level objectives. This may be due to the fact that the e-content package has helped the students understand the

to Government and Aided Colleges to strengthen their technology resource bases so as to enable the trainees to develop positive attitude towards ICT and greater application of technology in the learning process. Greater opportunities may be provided to the male trainees and trainees of Science subjects regarding the dynamic functioning of ICT and its importance in the teaching learning process.

REFERENCE

1. Abu Samak and Zeinab (2006), "An exploration of Jordanian English language teachers' attitudes, skills, and access as indicator of information and communication technology integration in Jordan", Ph.D. thesis, The Florida State University, Dissertation Abstracts International, AAT 3252190.
2. Albirini, A., (2006), "Teachers' attitudes towards information and communication technologies: the case of Syrian EFL teachers", *Computers and Education*, Volume 47, Issue 4, December 2006, pages 373-398, ISSN: 03601315.
3. Anbuezhian, M., (2006), "A Study of Information and Communication Technology in Colleges of Education in Tamilnadu", Ph.D. thesis, Alagappa University, Karaikudi, Tamilnadu.
4. Archambault and Helene (2007), "Integration des technologies de l'information et des communications en milieu scolaire autochtone", Ph.D. thesis, Universite de Montreal (Canada), Dissertation Abstracts International, AAT NR36638.
5. Liu and Che-Hao (2008), "A study to analyze the attitudes towards online learning of international students at University of Arkansas" Ed.D., thesis, University of Arkansas, Dissertation Abstracts International, AAT 3341243.
6. Martin and Laura Kathleen, M.S (2009), "Understanding Oklahoma agricultural teachers' use of and attitudes toward using the internet in the classroom", Oklahoma State University, Dissertation Abstracts International, AAT 1465217.

concepts of Mathematical Education. Since the pictures and explanations of the e-content package are designed by HTML and media player, they attracted the minds of the experimental group students very sharply. So the experimental group is better than the control group in the attainment of the knowledge, understanding and application objectives.

CONCLUSION

The rise of e-learning and an electronic content (e-learning material) is a new paradigm for education and training in the knowledge society. The development of educational content in time with the changing times has become a major responsibility of the modern teacher who has to face new learners in a new environment. The role of qualitative e-learning material like e-module assumes critical necessity and value. However, the development of e-learning material like the e-module is not an easy task. It calls forth the coming together of both the educationists and the technologists. Simply, the development of an e-learning material is not enough. We should keep an eye on the various stages of the e-learning material development to ensure whether the developed content is valid and suits the needs of the learner. Effectiveness of e-learning material is meant not only for the current generation but also for posterity.

REFERENCE

1. Aggarwal, Y.P, *Statistical methods: Concept application and computation*, New Delhi: Sterling Publishers Pvt. Ltd., 1990.
2. Anil Madaan, *Computer encyclopedia*, New Delhi: Dreamland Publication J. 128, Kirti Nagar, 1998.
3. Annie James, *Teaching of mathematics*, New Delhi: Neel Kamal Publications Pvt. Ltd. 2005.
4. Aswal, G.S, "Intelligence as a Correlate of Achievement in Mathematics across Different Levels of SES", *Psycho Lingua*, Vol. 31(2), 2001, pp.127-130.
5. Deepak K. Srivastava and Anval, "E-Learning: A New Way of Education", *University News*, Vol.43, No.26, 2008, p.12.
6. Harley Hatin, *Teachers: The Internet*, New Delhi: Prentice Hall of India Pvt., Ltd., 1999.
7. Krishna Sagar, *Digital Technology in Education*, New Delhi: Authors Press, 2005.

* * * *