



## Effectiveness of E- Learning Modules in Science at the Higher Secondary School Level in India

### KEYWORDS

**Dr. A. Edward William Benjamin**

Associate professor, Dept.of Education, Bharathidasan University, Tiruchirappalli - 620 024 Tamil Nadu

**ABSTRACT** *The world is undergoing numerous transformations due to rapid development and diffusion of information and communication technologies (ICT) in all walks of life. ICT is a medium of teaching and learning an assisting tool for making assignments, collecting data and documentation communicating and conducting research. It has opened new avenues like on-line learning, e-learning, virtual learning etc. This piece of research work is an attempt to verify scientifically on the effectiveness of e-learning modules in science at the school level. In order to proceed the study, the researcher has used the experimental design. The study has chosen 40 students of science from a school on simple random technique. By applying the descriptive and differential analysis techniques the framed hypotheses were proved to be effective. This study had strongly proved that e-learning modules in science was effective at the school level. This has been from all over the world. Hence it is recommended by adopting an electronic media; any nation can fulfill the aim of education of their schedule time.*

### INTRODUCTION

E learning module is the effective teaching and learning package created by combining e-digital content with local community engagement. It is the part and parcel of education and training in the western world for many years now. In recent times, since the Internet took the world by storm online learning has become accessible to people in various parts of the world. Now, the e-learning module has found its way into the educational system of developing nations as well. Advancement in technology and communication has made teaching and learning possible anywhere, anytime. So it is an appropriate attempt to justify this kind of learning styles does on par with equalization or not.

### NEED AND SIGNIFICANCE OF THE STUDY

Computer based and assisted presentations are very common throughout advanced higher education institutions around the world. Electronic technology has paved the way for the students to learn through the use of computers anytime and anywhere. Integrating technology in teaching has been a challenge to teachers. Since they need to make effective use of it in order to develop student's independent learning skills. In the words of more (1986). Teachers who do not use the computer in their teaching are not only doing a disservice to their pupils but are rejecting a teaching tool which is limited in the use by the imagination of the teacher".

- ❖ Provide access to a range of resources and materials which may not otherwise be available such as graphics, sound, animation, multimedia etc.
- ❖ Provide control to students over when and where they study at their own pace.
- ❖ Provide frequent and timely individual feedback
- ❖ Encouraging students to take responsibility for their own learning
- ❖ Supporting economic reuse of high quality, expensive researches.

### OBJECTIVES OF THE STUDY

The aim of the study is to find out the effectiveness of e-learning module in science at the school level.

### MAJOR OBJECTIVE

To study the effectiveness of e-learning modules in science at the school level.

### SPECIFIC OBJECTIVES

1. To find out the significant difference, if any between the pre and post test scores in e-learning modules in science at the high school level in the experimental group.
2. To find out the significant difference, if any between the pre and post test scores in science at the high school level in the control group.
3. To identify the effect size for the difference between the means of pre and post test scores means in e learning modules in science at the high school level.

### EXPERIMENTAL DESIGN

Experimental design is the blue prints the produces of experiments. Pre test post test control groups design was used. The control group was taken as the reference which was used to compare the experimental groups. The control group was taught through the conventional methods and the experimental group was exposed to the e-learning modules.

### SAMPLE OF THE STUDY

The investigator chose XI standard students of science group from Shri Hindocha Government aided higher secondary school Ariyur Pondicherry, India for the investigation. From the 96 students the investigator selected 40 students based on their scores in the performance test. The students who had scored average were selected for this study and the homogeneity was established.

### RESEARCH TOOLS

The present study used the following tools;

1. Elearning modules in science
2. Achievement test

### STATISTICAL USED

The following are the statistical techniques used to test the hypotheses framed.

### ANALYSIS AND INTERPRETATION

#### Hypothesis: 1

E-learning modules in science at the higher secondary level are not effective

#### Table -1

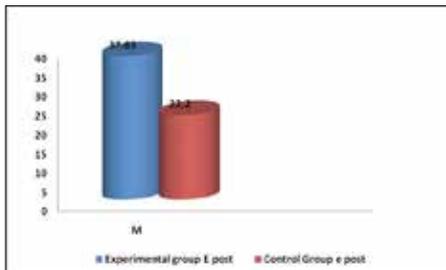
**The post test scores of the experimental groups and control group through e learning modules and conventional method do not differ**

Variable	Test	N	M	SD	Mean difference	T value	Df	Level of significance (0.01)
Experimental group	E post	20	37.65	2.89	15.45	7.79	38	0.01
Control Group	e post	20	22.20	3.04				

The mean of the post test scores of the experimental group taught through e-learning modules is found to be 37.65 with an SD 2.89. The mean of post test scores of control group taught through conventional method is found to be 22.20 with an SD 3.04. The mean difference 15.45 is found to be significant at 0.01 level for 38 df with a 't' of 7.79 Therefore the hypothesis is rejected.

So, it is concluded that the e learning modules in science at the higher secondary level is effective as compared to that of the control group.

**Fig 1 Comparison of the mean score of the post tests of the experimental and control group**



**Hypothesis: 2**

The post test means scores will be higher than pre test mean scores of the experimental group Table -2

Variable	Test	N	M	SD	Mean difference	T value	Df	Level of significance (0.01)
Experimental group	E post	20	37.65	2.89	19	8.60	38	0.01
	E pre test	20	18.7	3.67				

And From the table, the mean difference is 19 and it is significant for the t value 8.60 which is significant at 0.01 levels therefore the hypothesis is rejected.

So, it is concluded that there is a significant difference between the post and pre test scores of the experimental groups taught through e learning modules in science at the higher secondary level.

**Fig 1 Comparison of the mean score of the post tests of the experimental group**

**Hypothesis: 3**

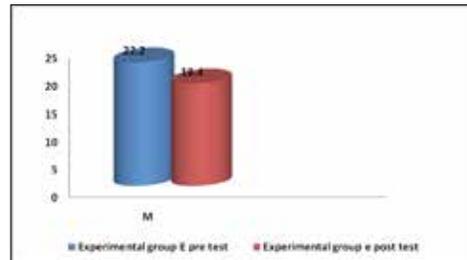
The post test means scores will be higher than pre test mean scores of the control group Table -3

Variable	Test	N	M	SD	Mean difference	T value	Df	Level of significance (0.01)
Control group	E post	20	22.2	3.04	3.8	1.73	38	NS
	E pre test	20	18.4	3.5				

From the table, the mean difference is 38 is found to be not significant for the t value 1.73 for 38 df therefore this hypothesis is accepted.

So, it is concluded that there is a significant difference between the post and pre test scores of the control groups taught through conventional method in science at the higher secondary level.

**Fig 1 Comparison of the mean score of the post tests of the control group**



**Hypothesis: 4**

The effect size for the difference between the means of pre test and post test mean scores in e learning modules in science at the higher secondary level is not large Table 4

Variable	Test	N	M	SD	$\Sigma = S1 + S2/2$	E SCD'
Experimental group	E -post	20	37.65	2.89	3.28	5.79
	E pre	20	3.67	3.67		
Control group	E -post	20	22.22	3.04	3.27	1.22
	E pre	20	18.4	3.50		

The effect size in the experimental group is found to be 5.74 and the control group is 1.22. Both are higher than 0.8, a level given by Cohen (1988) gave larger effect size.

It is concluded that the effect size differences are not easily perceived and large enough to show that the difference between the means of pre and post scores through e learning modules in science at the higher secondary level and it is more for the experimental group than the control groups.

**Findings of the study**

1. It is found that there is a significant difference between post test scores of the experimental and control group.
2. It is found that there is no significant difference between the pre test and post test score of the control group.
3. It is found that there is a significant difference between the pre test and post test scores of the experimental group.
4. It is found that there is a significant difference between pre and post test scores of the experimental groups in the e learning modules in science at the higher secondary level.
5. It is found that the gain ratio obtained through e learning modules in science at the higher secondary level for the control group is 12.3 t the experimental it is 60.54

**EDUCATIONAL IMPLICATIONS**

On the basis of the qualitative analysis of the data, the educational implications have been evolved here under

1. As e learning modules are found to be effective these modules can be used to helps students to concretize ideas in science.
2. The results of the study have paved that e learning mod-

ules in science are more effective than the conventional method; it is suggested to utilize this technological innovation in teaching a learning process of science at the higher secondary level.

3. Since the use of e learning module enhanced the retention paves of the students, it would help then to score high marks in mathematics.
4. Since the use of e –learning modules enhanced the achievement they will diminish wastage and stagnations in the schools.
5. Teachers of high school and higher secondary schools can be given orientation to develop e learning module so that they can adopt new technology to teach science subjects at the school levels and other levels too.

### Conclusion

In this age of globalization, technology has become a powerful pedagogical tool in education. Computer and internet based technologies hold great promise, both for increasing access to knowledge and as a means of promoting learning. In order to survive in a digital economy, teachers need digital age proficiencies. The main purpose of this study is to develop e- learning modules in science and to study its effectiveness. The statistical analysis indicates that post test results gained a significant achievement in behavioral term after the treatment and printed at the superiority of the e-learning module in improving the achievement among school students. Hence the attempt has been fulfilled by its basic focus.

### REFERENCE

1. Anita Rastogi and Babita Parashar (2009), "Effectiveness of e learning content in learning concept and teaching skills", Indian journal of Teacher Education ANWESHKA, NCTE, New Delhi, vol. 6 No.2 p.57-74. | 2. Lin, SH.Lian.Pratt, JA (2009), "Impact of media richness and flow on e-learning technology acceptance", computers and education vol. 52 no.3 p.599-609. | 3. Mohammed Madullh Alhabahba et al (2012), "E learning the new paradigm of education. Factorial analysis", International Journal of Humandial and social science vol. 2 no.4 (special issue Feb 2012). | 4. Aravindan S and Ramganes E (2010), "Effectiveness of e content in concretizing the concept of physics among the heterogenous teacher education", international conference on e researcher in higher education Feb 2010 Bharathidasan University Publication p.298-300. | 5. Rossit A (2002) The ASTD e –learning handbook New York, Mc Garw Hill. | 6. Nocol M (2003) A Theory of learning Educational technology and society, 6 (2) 1-10 available at [http://www.ifets.info/journals/6\\_2/1.html](http://www.ifets.info/journals/6_2/1.html). | 7. Waller Vad Wilson J (2001) "open learning Today" Accessed may 2004 [http://www.baol.co.uk/pdf/OLT/Issue/2058\\_wilson.pdf](http://www.baol.co.uk/pdf/OLT/Issue/2058_wilson.pdf).