

## A STUDY OF THE EFFECTIVENESS OF PREZI VISUALIZATION TOOLS ON PUPILS' ACHIEVEMENT IN BIOLOGY AT THE SECONDARY SCHOOL LEVEL

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### ABSTRACT

*The main objective of the present study is to find out the effectiveness of teaching biology through the Prezi visualization tool. An experimental research design was adopted in this study. The population and sample are IX standard students' E.D. Thomas higher secondary, Kudigadu, Papanasam (T.K), Thanjavur district. This group is also called the experimental group. The result shows that there is a significant difference between the experimental group's pre-test and post-test mean scores of achievements in biology. It is concluded that the Prezi visualization tool may change the teaching-learning process. This tool is very effective in teaching biology.*

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**Keywords:** Prezi Visualization Tools, Achievement, Biology, Secondary Level.

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### Introduction

In light of the scientific and technological progress and the enormous cognitive explosion that takes place day after day in the twenty-first century, educational institutions had to cope with this development and the problems resulting from these rapid operations; such as the continuous increase in the number of students, the low achievement, and the presence of individual differences among students. This has been achieved by developing the educational system, computerizing educational programs, finding modern methods and strategies based on integrating technology and computing in teaching and helping learners to learn according to their capabilities, energies and speed of their learning.

This has led to the emergence of what is known as e-learning, through which electronic educational programs and presentations with multiple features in the field of education have been developed to raise the level of educational outcomes. Prezi is a web-based tool for creating presentations (called prizes for short). It's similar to other presentation software like Microsoft PowerPoint, but it offers some unique features that make it a good alternative. In recent years, it has become popular in schools and colleges for the purpose of the teaching-learning process.

### Need for the Study

The development of information technology could also be beneficial to convey information during the teaching-learning process. Therefore, the developed multimedia should be employed as a learning medium. Prezi is one of the presentation programs which make use of digital information development. The appearance of Prezi is in the form of a single-slide zooming presentation. It enables the presenter to design a presentation with a linear and flexible storyline. Just like the traditional presentation software, Prezi can integrate text, images, animation, audio, and video neatly in a single presentation file.

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Students suffer from difficulties in the process of assimilation of scientific concepts in biology, as well as the difficulties that biology labs suffer in the process of teaching and communicating scientific content to students, which leads to low levels of achievement in biology. Prezi presentations offer learner control over content, learning sequence, pace of learning, time and often media, allowing them to tailor the experiences to meet their learning objectives. Hence the researcher is interested in finding out the effectiveness of Prezi on pupils' Achievement in Biology at the secondary level.

### **Scope of the Study**

The scope of this study is restricted to Biology at the secondary level prescribed by the Board of Secondary Education, Government of Tamil Nadu. This study is primarily concerned with how much the Prezi Visualization tool influences achievement in Biology.

### **Objectives of the Study**

- To develop an instructional design for selected topics in biology at the secondary school level.
- To develop a suitable Prezi Visualization tool for the selected topics in biology at the secondary school level.
- To develop a suitable criterion reference test for the selected topics in biology at the secondary school level.
- To validate the Prezi Visualization tool for the selected topics in biology at the secondary school level.
- To validate the criterion reference test for the selected topics in biology at the secondary school level.

### **Hypotheses of the Study**

- There is no significant difference between the pre-test and post-test mean scores of the achievement in biology.
- There is no significant difference between the post-test mean scores of the achievement in biology with respect to sex.
- There is no significant difference between the post-test mean scores of the achievement in biology with respect to parents' educational qualifications.
- There is no significant difference between the post-test mean scores of the achievement in Biology with respect to parents' occupation.
- There is no significant difference between the post-test mean scores of the achievement in Biology with respect to locality.
- There is no significant difference between the post-test mean scores of the achievement in Biology with respect to study habits.

### **Research Procedure**

In the present study, the experimental research design was adopted for its suitability and accuracy. To find out the difference in the effectiveness of learning through the Prezi Visualization tool, the researcher adopts the single group (Pre-test: Treatment: Post-test) experimental design.

### **Samples**

In this study purposive random sampling technique was used for data collection. The present study is concerned only with IX standard students. The researcher selected the 40 students studying IX standard in E.D. Thomas Higher Secondary School, Kudikadu, Pabanasam Taluk, Thanjavur District as a sample for the study. This sample is the experimental group.

### **Tools**

The effectiveness of evaluation largely depends upon the accuracy of measurement. Accuracy of measurement in turn depends on the precision of the instrument or tool. The researcher has selected the Prezi Visualization tool for the unit 'Addiction and Healthy Lifestyle' in Biology of standard IX and used it to collect the data for this study.

### **Statistical Techniques**

The data obtained were then analyzed by using appropriate statistical techniques such as mean, standard deviation and t-test using the SPSS 27.0 version.

## Analysis and Interpretation of Data

### Hypothesis 1

There is no significant difference between the experimental group Pre-test and Post-test mean scores of the achievement in Biology.

**Table 1**

	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>'t' value</b>	<b>Level of Significance</b>
Pre-test	40	50.4750	15.6480	2.0873*	0.05
Post-test	40	81.4000	7.6801		

\* Significant at 0.05 level

It is inferred from the above table that the computed value of 't'(2.0873) is greater than the critical value of 1.97 at a 0.05 level of significance. Hence, it is significant. Consequently, the null hypothesis is to be rejected and it can be said that there is a significant difference between the experimental group Pre-test and Post-test mean scores of the achievement in Biology. It is also inferred that the effectiveness of the Prezi Visualization tool on achievement in Biology is higher compared to the traditional method methods of teaching.

### Hypothesis 2

There is no significant difference between the Post-test mean scores of the achievement in Biology with respect to gender.

**Table 2**

<b>Sex</b>	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>'t' value</b>	<b>Level of significance</b>
Male	21	80.3810	7.9002	0.8577	NS
Female	19	82.5263			

NS – Not Significant

The above table shows that the computed value of 't'(0.8577) is less than the critical values of 2.59 and 1.97 at 0.01 and 0.05 levels respectively. Hence, it is not significant. Consequently, the null hypothesis is not to be rejected and it can be said that there is no significant difference between the experimental group's Post-test mean scores of the achievement in Biology with respect to gender.

### Hypothesis 3

There is no significant difference between the Post-test mean scores of the achievement in Biology with respect to parents' educational qualification.

**Table 3**

<b>Parents' Educational Qualification</b>	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>'t' value</b>	<b>Level of Significance</b>
Below 12 <sup>th</sup> Standard	26	82.6154	7.7932	1.3442	NS
12 <sup>th</sup> Standard and above	12	79.1429			

NS – Not Significant

The above table shows that the computed value of 't'(1.3442) is less than the critical values of 2.59 and 1.97 at 0.01 and 0.05 levels respectively. Hence, it is not significant. Consequently, the null hypothesis is not to be rejected and it can be said that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to parents' educational qualification.

### Hypothesis 4

There is no significant difference between the Post-test mean scores of the achievement in Biology with respect to parents' occupation.

**Table 4**

<b>Parents' Occupation</b>	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>'t' value</b>	<b>Level of Significance</b>
Government	15	78.4	7.6116	1.9309	NS
Non-government	25	83.2			

NS – Not Significant

The above table shows that the computed value of 't'(1.9309) is less than the critical values of 2.59 and 1.97 at 0.01 and 0.05 levels respectively. Hence, it is not significant. Consequently, the null hypothesis is not rejected and it can be said that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to parents' occupation.

**Hypothesis 5**

There is no significant difference between the Post-test mean scores of the achievement in Biology with respect to locality.

**Table 5**

Locality	N	Mean	Standard Deviation	't' value	Level of Significance
Urban	18	81.3333	7.9760	0.0478	NS
Rural	22	81.4545			

NS - Not Significant

The above table shows that the computed value of 't'(0.0478) is less than the critical values of 2.59 and 1.97 at 0.01 and 0.05 levels respectively. Hence, it is not significant. Consequently, the null hypothesis is not to be rejected and it can be said that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to locality.

**Hypothesis 6**

There is no significant difference between the Post-test mean scores of the achievement in Biology with respect to study habits.

**Table 6**

Study Habit	N	Mean	Standard Deviation	't' value	Level of Significance
Self-study	26	81.3846	7.9763	0.0166	NS
Group-study	14	81.4286			

NS - Not Significant

The above table shows that the computed value of 't'(0.0166) is less than the critical values of 2.59 and 1.97 at 0.01 and 0.05 levels respectively. Hence, it is not significant. Consequently, the null hypothesis is not rejected and it can be said that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to study habits.

**Conclusion**

The implementation of Prezi during the learning process can improve students' knowledge and understanding of the concepts in Biology, as Prezi was found to be more effective in improving students' achievement in Biology. Therefore, educators and school authorities may introduce the Prezi as a technique in the teaching-learning process.

**The Findings of the Study**

- It was found that there is a significant difference in scores of secondary school students when taught using the Prize visualization tool.
- It was found that there is no significant difference between the experimental group's Post-test mean scores of the achievement in Biology with respect to gender.
- It was found that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to parents' educational qualification.
- It was found that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to parents' occupation.
- It was found that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to locality.
- It was found that there is no significant difference between the Post-test mean scores of the achievement in Biology of the experimental group with respect to study habits.

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