



## Assessing Student Teacher's Academic Performance: Exploring The Use of Graphic Organisers

Dr.Indu,H

Associate Professor, Department of Education, Avinashilingam  
Institute for Home Science and Higher Education for Women,Co-  
imbatore-29

### ABSTRACT

The aim of this research was to find out the effectiveness of Graphic organizers on the academic achievement of student teachers. Quasi experimental research was employed and Non-equivalent pre and post test design was used. The sample comprised of 168 respondents distributed across two treatment groups 84 in Experimental group and 84 in Control group. The experimental group was taught using the graphic organiser while the control group was taught using lecture method. The results of the analysis indicated that (i) the experimental group performed better than the control group (ii) the achievement of humanities and science stream students taught using graphic organizers were not statistically significant.

### KEYWORDS

Graphic organizers, lecture method, academic stream.

### Introduction

The most important aim of education is to make the students independent in their thoughts and deeds. When appropriate methods of teaching are used by the teachers the learners develop interest in learning and this may lead to the improvement in the quality of education. Improving educational quality requires, at the least, placing learners in active rather than passive roles (Moore, 1989). Knowledge that empowers and increases the learner's self-confidence is that which results from the coming together of individual actions, feelings, and conscious thoughts (Novak, 1998). Thus, the goal of education should be to develop educational experiences that facilitate meaningful learning and reduce the need for rote learning.

But it is a truth that students really find difficulty in understanding content information, especially if the lesson and its presentation seem to be insufficient in practical substance and if no innovation has been conceptualized by the teacher to invite students in the meaningful learning. Here comes graphic organizers which make the learners learn independently and that can facilitate cognitive processing and communicate the logical structure of the instructional material. Graphic organizers are a set of learning strategies which translates the words expressed in linear form into visual structures. They are visual representation of written text or a topic. When written material or difficult concepts are expressed graphically, the students can develop alternative structures for understanding the course concepts (McElroy & Coughlin, 2009). In addition to being an established cognitive tool promote learning; they also aid students with differing learning styles in their quest to master the content area. More specifically, Graphic organizers may help students learn analysis because they visualize relationships, steps or chronology by showing the spatial relationship between the ideas.

### Research Questions

The following research questions formed the basis of this study:

1. Whether the academic achievement of pre- service teachers who are taught through graphic organizers would be statistically different from that of those who taught using lecture method?
2. Will there be any significant difference between the pre test and post-test achievement scores of science stream and humanities stream of pre- service teachers exposed

to Graphic organizers?

### Hypotheses of the Study

1. There is no statistically significant difference between pre-test achievement scores of the total sample.
2. There is no statistically significant difference between post-test achievement scores of the total sample.
3. There is no statistically significant difference between pre-test and post-test scores for control group of pre-service teachers belonging to science and humanities academic stream.
4. There is no statistically significant difference between pre-test and post-test scores for experimental group of pre- service teachers belonging to science and humanities academic stream.

### Research design

Based on the nature of the problem the investigator decided to use Pre test-Post test Non-Equivalent Group Quasi experimental design. Non -equivalent group design is often used in class room experiments when experimental and control groups are such naturally assembled groups as intact classes, which may be similar.

### Sample and sampling procedure

The study was conducted on pre- service teachers of Avinashilingam University, Coimbatore. The sample of the present study consisted of 168 pre- services teacher. Convenience sampling technique was used to select the participants as the sample was from the institution where the investigator is employed. The 168 pre- service teachers were divided into two groups of eighty four pre- service teachers and then assigned randomly into an experimental and control group.

### Selection of Content

In order to study the efficacy of using graphic organizers, the investigator selected the topic on "Individualized Instruction". In the module, 2 types of Individualized Instruction namely, Programmed Instruction and Computer Assisted Instruction were considered. The graphic organizers were prepared for different concepts related to the two types of Individualized Instruction.

### Instrumentation

The tools used for the study were constructed by the inves-

tigator and it comprises of Personal Data Sheet, Graphic Organizers Package and Achievement Test. The Achievement test consisted of objective type questions. There were 25 items in the test and it was prepared based on the blue print. The reliability and validity was also established. The reliability co-efficient was calculated by split-half method and it was found to be 0.74. Content validity and face validity was established by giving the tool to two teacher educators. The investigator prepared the graphic organizers package with the help of the selected contents. Based on the content, the investigator selected the graphic organizers namely, sequence chart, and fishbone diagram. Sequence Chart can be used in variety of subjects which have events occurring in a sequence. To explain the different types of programmed instruction and computer assisted instruction and the steps involved in the construction of these types a sequence chart was used. The fish bone diagram is a graphic organizer which can be used to analyze the cause effect relationship. It helps the student to make sense of the problem and find the relationship between the causes and the outcomes. Habits of thinking can be enhanced to higher order thinking when this is judiciously used in the class. In this study the merits and demerits of different individualized instruction were taught with the help of fish bone diagram.

**Procedure**

All the 84 students of the control group were taught through regular method (lecture) of teaching. Before taking the class, pre-test was conducted to check the knowledge of the pre-service teachers. The time taken to teach the topics was kept strictly as 45 minutes. After teaching the topic for 3 days, the topic was reviewed and finally test was administered.

All the 84 pre- service teachers of the experimental group were assembled in a convenient hall and the pre-test was conducted. Then the investigator used the graphic organizers package to teach the experimental group. The concepts were taught one by one and the time taken for the class was 45 minutes. After teaching the topic for 3 days, the topic was reviewed and finally the post-test was conducted by the investigator. The items in the pre-test instrument were rearranged and re-administered on both groups. The post-test was administered on both groups. The investigator scored the pre-test and post-test and generated quantitative data, which were used for analysis.

**Scoring and Tabulation**

All the responses sheets were systematically scored using scoring keys. The responses for 25 items in achievement test were scored. A score of 1 was given for the right response and 0 for the wrong response. After scoring, pre-test and post-test marks were tabulated for each pre- service teacher and the scores were analyzed for the results.

**Results**

**Analysis of test of significance of pre-test scores of total sample:**

The analysis of the pre-test scores of total sample was done with t-test and the results obtained are given in Table.1.

**Table 1. Comparison of pre-service teacher's Pre-test achievement Scores**

Group	N	Mean	Standard Deviation	SEM	t - value
Experimental	84	3.2381	2.0919	0.2282	0.71
Control	84	3.2143	2.1625	0.2359	

**Note: N= Number of pre-service teachers, SEM=Standard Error of Mean**

From the above table, the 't' value 0.71 brings out the fact that there is no significant difference between the pre-test scores of the control group and the experimental group.

Hence the hypothesis stated that **"There is no statistically**

**significant difference in pre test achievement scores of pre-service teachers taught using graphic organizers and lecture method"** is accepted.

**Analysis of post-test scores of total sample:**

An attempt was made to analyze the post-test scores of total sample and the results obtained are given in Table 2.

**Table 2 Comparison of pre-service teacher's Post-test achievement Scores**

Group	N	Mean	Standard Deviation	SEM	't' value
Control	84	3.23	1.18	0.12	47.43**
Experimental	84	18.28	2.69	0.29	

**Note: N= Number of pre-service teachers, SEM=Standard Error of Mean**

\*\*p< .01

From Table 2, the 't' value 47.43 brings out the fact that there is highly significant difference between the post-test scores of the control group and the experimental group. The mean values indicate that the experimental group performed better than the control group which implies that pre-service teachers taught with Graphic organizers achieve better than the pre- service teacher taught by lecture method. Hence the hypothesis stated that **"There is no statistically significant difference in post test achievement scores of pre-service teachers taught using graphic organizers and lecture method"** is rejected.

**Analysis of pre-test scores of control group with respect to academic stream:**

The analyzed pre-test scores of control group with respect to the two academic streams namely science and humanities are given in Table 3

**Table 3 Pre-Test Scores of Control and Experimental Group With Respect to Academic Stream**

Academic stream	N	Mean	Standard Deviation	Std. Error of Mean	't' value
Control group					
Science	43	3.04	2.22	0.33	0.26
Humanities	41	2.92	1.96	0.30	
Experimental group					
Science	46	3.02	2.25	0.33	0.97
Humanities	38	3.46	1.86	0.29	

**Note: N= Number of pre-service teachers**

From Table 3, the 't' value 0.26 and 0.97 brings out the fact that there is no significant difference between the pre-test scores of control group as well as experimental group with respect to the two academic streams. Hence the hypothesis stated that **"There is no statistically significant difference between the pre-test achievement scores of the control group as well as experimental with respect to academic stream"** is accepted.

**Comparison of post-test scores of control group with respect to academic stream:**

An attempt was made to compare the post-test scores of con-

trol group and experimental group with respect to science and Humanities streams and the results obtained are given in Table 4.

**Table 4.**  
**Post-Test Scores of Control and Experimental Group With Respect to Academic Stream**

Academic stream	N	Mean	Std. Deviation	Std. Error Mean	't' value
Control group					
Science	43	3.16	1.13	0.17	0.59
Humanities	41	3.31	1.254	0.19	
Experimental group					
Science	46	17.96	2.92	0.43	1.31
Humanities	38	18.72	2.34	0.31	

**Note: N= Number of pre-service teachers**

From Table 4, the t-values suggest that there is no statistically significant difference between the post-test scores of control group and also experimental group of pre- service teachers belonging to science and humanities stream of study.

### Discussion

The findings of this study suggested that graphic organisers resulted in the improvement of academic achievement of pre-service teachers. The non significant effect of graphic organiser based on academic stream reveals that both science and humanities group of pre-service teachers benefitted almost equally from the use of graphic organisers in teaching.

### References

1. Bromley, K. D. (1999). *Graphic organizers for reading, writing & more*. New York: Scholastic Professional Books.
2. McElroy, L. T., & Coughlin, C. N. (2009). The other side of the story: Using graphic organizer as cognitive learning tools to teach students to construct effective counter-analysis. Unpublished thesis, University of Baltimore Law Review.
3. Moore, J. (1989). Tooling up for the 21st century. *Journal of Chemical Education*, 66, 15-19.
4. Novak, J. (1998). *Learning, creating, and using knowledge: concept maps as facilitative tools in schools and corporations*. New Jersey: Erlbaum.