A Comparative Study on the Effectiveness of Multimedia Technology and Traditional Method for the Instruction of Computer Programming - 1

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***Abstract** – The research article presents a comparative study to establish the effectiveness of the teaching methods used in teaching Computer Programming - 1: the traditional method and the use of a multimedia projector. Specifically, the study sought to determine the profile of the respondents, the perceptions of the students and the professors who are using the multimedia projector and the difference between the two aforementioned methods.*

***Keywords** – Multimedia Projector, Traditional Teaching, Technology, Computer Programming*

INTRODUCTION

With the introduction of modern technology towards the beginning of twenty first century, there is no doubt that the field of education has become one of those who benefited its advantages. Discussion of lessons has been better thanks to the utilization of those multimedia projectors that makes teaching and learning compared to the past. And even in the field of Information Technology education, this testament runs true considering that use of multimedia technology as a teaching strategy enables student to fully understand different topics, primarily on Computer Programming.

The of multimedia technology in presenting topics in Computer Programming allows the students to directly see the actual simulation with regards to coding, compiling, and running a program. Thus, live coding as a part of the instructor's teaching strategy has become an option for a better delivery of the said subject.

In the Philippines' education setting, however, not all schools were well - equipped with the technology and still resort to teach implementing the traditional instructional method using the pen and board approach. The way of teaching Computer Programming topics under this teaching method has always been a challenge for the instructor. But most of all, it has always been a challenge on how students can appreciate and absorb the concepts and applications that are being taught under this topic.

This research intends to present a comparative study between the use of multimedia technology over the traditional method of teaching the subject Computer Programming - 1.

OBJECTIVES OF THE STUDY

The aim of the study is to evaluate the effectiveness of using multimedia technology thru projectors in teaching Computer Programming - 1to the Bachelor of Science in Information Technology students in Pangasinan State University - Lingayen Campus. Specifically, the study sought to answer the following problems: (1) What are the general characteristics of the students taking up Computer Programming - 1 concerning their; a.) Gender, and b.) Final Rating, (2) what is the perception of students and teachers regarding the use of as multimedia projector, and (3) is there a significant difference on the ratings of the students in Computer Programming - 1 using a multimedia projector and traditional teaching method.

The null hypothesis was tested at the .05 level of significance.

"There is no significant difference on the ratings of the students in Computer Programming - 1 using the multimedia projector and the traditional method."

METHODOLOGY

Research Design

In this study, the descriptive research design was used to measure the effectiveness of the use of multimedia projector and the traditional method of teaching through the use of a whiteboard in teaching Computer Programming - 1. The research design has two purposes: to provide an answer to the problems and to control the validity of the subjects to be considered. Events were recorded, described, interpreted, analyzed and compared.

The research subjects of this study are the BSIT students who enrolled Computer Programming - 1 (Fundamentals of Programming) during the 1st Semester of A.Y. 2017 - 2018 who passed through the use of a multimedia projector and the traditional method of teaching.

The researchers used the questionnaire in drawing the information needed in this study. Two sets of questionnaire were formulated for the instructors and students under the study. The first part of the questionnaire concerns the profile of the respondents, while the second part contained the perceptions of the students and instructors regarding the use of a multimedia projector.

The study also utilized the Likert scale, designed to measure the attitudes or perceptions of students and instructors about the use of multimedia projectors in teaching Computer Programming - 1.

Statistical Treatment of Data

For this study, the data management and computational work, relevant data of the students and their ratings were considered.

RESULTS AND DISCUSSION

Profile of the Respondents taking up Computer Programming - 1

With a total number of respondents at 38, the study revealed that majority of the respondents at 57.89% (22) of 38 belong to the female group while 42.11% (16) belong to the male group.

Perception of Students and Instructors regarding the use of Multimedia Projector

Table 1 showed the perception of students regarding the use of multimedia projector, the estimated mean equivalent of the respondents' responses on the stated perceptions and their descriptive equivalents that were based from the Likert scale.

Table 1. Table on the Perception of Students Regarding the Use of a Multimedia Projector
n = 38

PERCEPTIONS	Mean	Descriptive Equivalent
I. Acquisition of Knowledge		
I acquired more knowledge on my subject	2	Agree
Increased my skill in learning and helped broaden my knowledge	2.1	Agree
I can easily recall the topic being discussed	2.6	Uncertain
Provides clear and understandable explanation	2.5	Agree
Stresses important materials	2.3	Agree
Overall Mean	**2.2**	**Agree**
II. Comfortability		
I am comfortable with a multimedia projector	2.1	Agree
I can focus more on our topic	2.3	Agree
The output produced by the multimedia projector catches my interest about the subject	2.3	Agree
Overall Mean	**2.2**	**Agree**
III. Agreeability		
Makes good use of example and illustration	1.9	Agree
I do agree in the utilization of a multimedia projector	1.8	Strongly Agree
Overall Mean	**1.9**	**Agree**

Scale: 1 - 1.8   **Strongly Agree**
        1.9 - 2.6   **Agree**

2.7 - 3.4	**Uncertain**
3.5 - 4.2	**Disagree**
4.3 - 5.0	**Strongly Disagree**

Table 2 showed the perception of instructors regarding the use of multimedia projector, the estimated mean equivalent of the respondents' responses on the stated perceptions and their descriptive equivalents that were based from the Likert scale.

Table 2. Table on the Perception of Instructors Regarding the Use of a Multimedia Projector
n = 38

PERCEPTIONS	Mean	Descriptive Equivalent
I. Acquisition of Knowledge		
I can sense that my students acquired more knowledge on their computer subject	2.3	Agree
It helped increase my skills in teaching	1.7	Strongly Agree
I can easily recall the topic being discussed	1.7	Strongly Agree
It is easy for me to provide my students with clear and understandable explanation	1.2	Strongly Agree
It is easy for me to point out the important concepts within the topic	1.3	Strongly Agree
Overall Mean	**1.64**	**Strongly Agree**
II. Comfortability		
I am comfortable with a multimedia projector	1.7	Strongly Agree
I can sense that my students can focus more on the topic	1.7	Strongly Agree
I observed that my students' interest and attention are easy to hold	1.3	Strongly Agree
Overall Mean	**1.57**	**Strongly Agree**
III. Agreeability		
I can make good use of examples and illustration	1.7	Strongly Agree
I do agree in the utilization of a multimedia projector	1.7	Strongly Agree
Overall Mean	**1.9**	**Strongly Agree**

Scale:

1 - 1.8	**Strongly Agree**
1.9 - 2.6	**Agree**
2.7 - 3.4	**Uncertain**
3.5 - 4.2	**Disagree**
4.3 - 5.0	

Strongly Disagree
Two - Way Analysis of Variance

Table 3 showed the distribution of the respondents as to gender and the method of teaching used. Of the 154 students taking Computer Programming - 1, 56 males and 35 females utilized the multimedia technology with a projector, while 37 males and 26 females used the traditional method of teaching through the use of whiteboard.

Table 3. Table on the Distribution of Students According to the Method Used and Gender
N = 154

Dependent Variable: Final Rating (Method Used * Gender)

Method Used	Gender	N
MULTIMEDIA PROJECTOR	male	56
	female	35
TRADITIONAL METHOD (Whiteboard)	male	37
	female	26

Table 4. Descriptive Statistics Table for Method Used and Gender
N = 154

Dependent Variable: Final Rating (Method Used * Gender)

Method Used	Gender	Mean	Std. Deviation
MULTIMEDIA PROJECTOR	male	2.3000	.46098
	female	2.5089	.39302
	Total	2.4286	.43025
TRADITIONAL METHOD (Whiteboard)	male	2.6923	.35572
	female	2.7162	.32362
	Total	2.7063	.33463
Total	male	2.4672	.45979
	female	2.5914	.37912
	Total	2.5422	.41598

Table 4 showed the descriptive statistics of the two dependent variables: method used and the gender of the respondents. Of the total mean of the gender under the two teaching methods used, the table revealed that male students performed better on their Computer Programming - 1 subject than the female students.

Subsequently, students under the multimedia projector teaching method performed better than those students went through traditional method.

Table 5 showed the sum of squares and mean square of the two dependent variables: methods used and gender. At α = .05 level of significance, the computed F - value for the method used is highly significant. Thus a significant difference on the ratings of the students in Computer Programming - 1 using the multimedia projector and traditional method.

Table 5. Two - Way Analysis of Variance Table for Method Used and Gender
N = 154

Dependent Variable: Final Rating (Method Used * Gender)

Source of Variation	Sum of Squares	dF	Mean Square	F	Sig.
Method	3.212	1	3.212	21.270*	.000
Gender	.484	1	.484	3.207	.075
Method * Gender	.306	1	.306	2.025	.157
Error	22.654	150	.151		
Total	26.476	153			

CONCLUSION AND RECOMMENDATION

Based from the findings of the study, the following conclusions were drawn: (1) Majority of the respondents enrolled in the subject Computer Programming - 1 are male. (2) Student respondents agreed with the use of the LCD, they've acquired more knowledge on the said subject, they are comfortable and they agree on the usage of the multimedia projector. As to the instructor respondents, they strongly agreed that they acquired more knowledge on their Computer Programming - 1, they are comfortable with the use of the multimedia projector and that they strongly agree on the usage of the said technology. And (3) Computer Programming - 1 students under the multimedia projector teaching method approach performed better than those students enrolled under the traditional method. Relatively, there is a significant difference on the ratings of the students in Computer Programming - 1 using the multimedia projector and the traditional method.

Subsequently, the following recommendations are recommended based on the conclusions made in this study: (1) It is highly recommended that the institution should provide assistance for the procurement of additional projectors that would indeed aid the instructors with regards to the professional development of the instructors with the respect to their specialization. And (2) further studies on the combination of the two aforementioned teaching methods.

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