THE EFFECT OF 3LCD MULTIMEDIA PROJECTOR IN TEACHING PLANT DESIGN MANAGEMENT SYSTEM (PDMS) ON STUDENTS ACADEMIC ACHIEVEMENT IN RIVER STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY.

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ABSTRACT

The study focused on the use of 3LCD multimedia projector to teach plant design management system (PDMS) in Rivers state University of Science and Technology, Port Harcourt. The researcher adopted two Groups, post-test comparison experimental design. Random sampling design is used to assign students to group E and C. Group E students were used as experimental group and they consist of 10 male and 6 female students. While control group C students consist of 11 male and 5 female students.

Two research questions were used for the study. Plant design management system (PDMS) achievement test (POMSAT) was used as instrument for data collection. 25 items were drawn from the instruments and used as post test for the instruments and was subjected to both face and content validity by two experts from mechanical engineering in Nnamdi Azikiwe University Awka,. Using person product moment correlation coefficient, the reliability of the instrument was calculated to be 0.84. From result obtained in research question 1, it was revealed that students taught PDMS with 3LCD projectors, performed better than those taught with traditional lecture method. Also, result from research question 2 revealed that, male student taught PDMS with 3LCD projector performed better than those taught with the traditional method. Therefore, it was recommended that mechanical engineering department should introduce the use of 3LCD projector in teaching PDMS software package in higher institutions.

KEYWORDS: *3LCD, multimedia, projector, PDMS, achievement, and design.*

INTRODUCTION

Plant Design Management system (PMS) as it is known in 3D CAD industry, is a customizable, multitude and multi-discipline, engineer controlled design software package for engineering, design and construction projects in offshore and onshore.

PDMs enables terms of designers from a range of different disciplines to work concurrently to develop a complete digital model of a process or power plant. (Lonadek, 2016) each discipline works within its own specialist 3D environment, but is still able to view all of the design work taking place around them. Course outline for PDMS program are; Equipment works space round, Equipment muddle and tubs, equipment modeling options, piping workspace adherence overview, overview of piping specification, piping setting, piping creation form.

PDMS courses are currently been taught in high institutions and training centers. The method and the technique employed in teaching are; conventional lecture method, discussion, demonstration, the use of projectors, transparency, online tutor, etc. in Nigeria, most institutions use conventional lecture method in teaching.

Malissa (2014) described lecture method as a teaching method where an instructor is the central focus of information transfer.

Typically, an instructor will stand before a class and present information for the students to learn. Sometimes, they will write on a board or use an overhead projector to provide visuals for students. Students are in turn expected to take notes while listening to the lecture. In most expensive and advance higher institution, multimedia projectors are often used in classroom teaching.

In traditional lecture method of teaching, the lecturer is in control of the learning environment. Power and responsibility are held by the lecturer and they play the role of instructor and decision maker (flinder,2015). In shut, the traditional lecture tender views that it is the teacher that causes learning to occur (Novak,1998). Howewer, traditional lecture method can be improved upon by the application of technology.

Most teachers find chalkboards to be almost a thing of the past with the advent of projectors in the classroom.

Rather than writing note on the board, teacher can make use of power point presentation (Csinan (2013). Students will appreciate the use of projectors as they prepare class projects that they can now create in power point or other electronic mediums, (Csinan,2013).

3LCD projector among others commonly used for classroom teaching is highly effective. The 3LCD projectors category includes the latest technology used in home theatre projectors, and business projectors. 3LCD projectors include a solid-state optical design with no moving parts. The panels have been all transitive LCD panels. That is, light passes through the panel (Projector review, 2015).

There is therefore the need to introduce the 3LCD projector technique in the classroom to see its effect on student's academic achievement in plant design management system program.

PURPOSE OF THE STUDY

The purpose of the study is to:

1. Determine the effect of 3LCD multimedia projectors in teaching PDMS in Rivers State University of science and technology Port Harcourt.

2. To find out the difference in academic performance of male students taught PDMS with 3LCD multimedia projector and male students taught with traditional lecture method.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What is the effect of 3LCD multimedia projectors in teaching PDMS in Rivers State University of science and technology Port Harcourt?

2. What is the difference in academic performance of male students taught PDMS with 3LCD multimedia projector and male students taught with traditional lecture method?

THE AREA OF THE STUDY

The study was conducted in Rivers state university of science and technology Port Harcourt. Rivers state is a commercial and Oil producing state in Nigeria. People from the River rime region are occupied by kalabari, Okrika, Opobo, Bornny, etc. the up land region are occupied by people from Ikwerre, Ahoada, Ogoni, Abua, Andoni, etc. River state University of Science and Technology is a state own institution. The school is selected for the study because they have department of mechanical engineering.

DESIGN OF THE STUDY

The research adopted 2 groups, post-test comparison experimental design. The students are randomly assigned to control and experimental group. Moorhead (2015) stated that the main advantage of this design is randomization.

TABLE 1

2Group, post-test comparison

Groups	Treatment	Post-test
Experimental group (using 3LCD multimedia projector)	X	O_1
Control group C. (Traditional lecture method)		O_1

Where x – treatment given to the experimental group

O_1 – post-test given to both control and experimental group.

The students in experimental and control group have prior knowledge of design engineering. They are randomly selected and assigned to control and experimental group. Experimental

group were taught PDMS with 3LCD multimedia projector, while the control group were taught with traditional lecture method.

Sample for the study

Random sampling technique was used to select 32 students from all the population of year three students in mechanical engineering, RSUST.

They were randomly assigned to experimental group E and control group C. experimental group E consist of 10 male students and 6 female students. Control group C consist of 11 male students and 5 female students. Sample distribution table I s shown in table 2 blow.

Table2

Sample distribution for experimental and control group

Group	Male	female	Total
Experimental (using 3LCD projector)	10	6	16
Control group (using traditional lecture method	11	5	16
Total	21	11	32

Instrument for data collection

The instrument for data collection was PDMS achievement test (PDMSAT). The test item was developed by the researcher. Twenty five items were identified and selected in mechanical engineering curriculum. The test area covers topics such as equipment creating nozzles, piping setting, and piping assembly.

The researcher subjected 35 test items for the study to both face and content validation. The test items were validated by a total of two experts from the department of engineering in Nnamdi Azikiwe University Awka , their comment and recommendation were made and the test items reduced to 25.

Pearson product moment conclusion coefficient was used to calculate the reliability of the instrument to be 0.84 which was considered adequate for the study.

Experimental procedures

The following procedures were observed:

1. The researcher trained a research assistant on the operation of 3LCD projector.
2. The research assistant aided in organizing the student's.
3. The students in experimental group E were invited and taught PDMS with 3LCD projectors.
4. The lessons lasted for a period of two weeks.
5. 90 minutes was allocated per day for each topic to be treated.
6. At the end of the treatment for the experimental group, post-test was given to both experimental and control group
7. The scores were converted to percentages and recorded.

Method of Date Analysis

Mean and standard deviation will be used to analyze the post-test scores from the research questions.

Results

Research Question 1

What is the effect of 3LCD multimedia projector on students academic achievement in teaching PDMS design in Rivers state University of Science and Technology?

Table 3

Groups	Mean $\bar{x}$	Standard deviation (SD)
Experimental group taught with 3LCD multimedia projector	73.31	15.24
Control group taught with traditional lecture method	40.69	15.89
Differences	32.62	0.65

Research Question 2

What is the difference in academic performance of male students taught PDMS with 3LCD multimedia projector and male students taught with traditional lecture method?

Groups	Mean $\bar{x}$	Standard deviation
Experimental group taught with 3LCD multimedia projector	75.50	15.65
Control group taught with traditional lecture method	40.69	15.89
Differences	34.81	0.24

Discussion of the Finding of the Study

The following are the findings of the study based on the data collected through the stated research questions

1. The calculated mean from research question of the students taught PDMS with 3LCD projector was higher than those taught with the traditional lecture method with a difference of 32.62. This implies that the use of 3LCD has influenced student's performance in PDMS program.

2. The calculated mean from research question2 also revealed that the mean score of male students taught PDMS with the traditional lecture method with a difference of 34.81. This shows that male students learning PDMS projector must have been greatly influenced by the introduction of ICT.

Conclusion and recommendation

The study has shown that 3LCD projector has significant effect on student's achievement in plant design and management system. This shows that 3LCD projector was more effective than the traditional lecture method as revealed in their performance in table 3 and 4. Therefore higher institution should introduce the use of 3LCD projector in teaching PDMS program for design student's in mechanical engineering.

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