



Comparative Analysis Of Projected And Non-Projected Teaching Aids On Students' Academic Performance In Computer Studies In Government Day Secondary School (GDSS), Minannata Sokoto-Nigeria

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ABSTRACT

This research work was based on the comparative analysis of projected and non-projected teaching aids on students' academic performance in Computer Studies in Government Day Secondary School, Minannata Sokoto. The study which adopted quasi-experimental design made use of 150 participants who were selected from 641 students using purposive sampling. Descriptive statistics and analysis of covariance were used in analyzing the data. Findings of the study indicate that the dominant teaching aids used by Computer Studies Teachers are non-projected teaching aids. The findings also indicate significant difference in the academic performance of students taught with projected teaching aids and those taught with non-projected teaching aids when scores on pre-test were controlled for. Based on this, the study recommends that, Computer teachers in the school under study should endeavor to use projected teaching aids available in the computer laboratory to teach their students, the government should provide more projected teaching aids to schools and school principals should conduct frequent supervision on teachers' utilization of teaching aids in the school.

Keywords: projected teaching aids, non-projected teaching aids, academic performance.

INTRODUCTION

Teaching aids are important catalysts of social re-engineering and change in learners. The role of teaching aids or instructional materials to enhance teaching for desired social and behavioral changes cannot be over-emphasized since it is a pre requisite in affecting behavior of learners of every field. Effective instruction cannot be fully accomplished without the use of teaching aids (Iwu, 2011). The reason for this cannot be far-fetched; they include advances in technology which ushered in teaching aids especially the projected and electronic materials as the most radical tools of globalization and social development. This has affected the classroom teaching-learning process positively (Iwu, 2011). The technological breakthroughs include projected and non-projected, audio, visual and audiovisual electronic materials which are important landmarks in knowledge transfer (Iwu, 2011). Teaching aids provide the teacher with interesting and compelling platforms for conveying information since they motivate learners to learn more and more. Also it provides opportunities for private study and at the same time stimulate learners'

interest and curiosity. It goes further in helping the teacher to overcome physical difficulties that could have hindered his effective presentation of a given topic (Iwu, 2011).

The term teaching aid has been defined by Dike (1993) as materials which do not depend solely upon reading to convey meaning. However, Bolick (2003) maintained that teaching aids are integral components of teaching-learning situations and not just a supplement but a complement to the teaching-learning process. Thus, if there must be an effective teaching-learning activity, the utilization of teaching aids will be necessary. According to Ema & Ajayi (2004), teaching equipment and materials have changed over the years not only to facilitate teaching-learning situation but also to address the instructional needs of individuals and groups. Teaching aids are therefore objects or things the teacher uses in the classroom while teaching to ease off his teaching activities. Though not all the problems in teaching-learning are solved but it goes a long way in influencing the reality of teaching and learning activities. Teaching aids eliminate the abstract nature of science by concretizing the facts in the lesson content.

Different teaching aids are available to be used in teaching any subject effectively, but not all topics require the same type and quality of materials. These materials can be purchased, locally made, or improvised or even imported when necessary for effective instructional delivery. Teaching aids are classified based on technical skills for production, nature of the material used, physiological parameter or sensory modality and miscellaneous characteristics. In his classification, Adekeye (2008) classified teaching aids as:

Projected teaching aids

Non-projected teaching aids, and

Phenomenal/manipulative teaching aids

While all the three (3) groups of teaching aids might be considerable, however, the study adopted projected and non-projected teaching aids as the salient ones.

Projected teaching aids are forms of teaching aids which could be audio, visual, and audio-visual teaching aids in nature that requires projection and electricity in their use for teaching and learning situation. This can be categorized into tape recorders, radio, slide projectors, overhead projectors, episcopes videocassette/video disc machine and computer system. Projected teaching aids are also media format which require a projector to present information. Information presented using projected teaching aids include visual such as diagrams, charts, maps among others. Formats in this group of media also include motion pictures or films, slides microforms, filmstrips, transparencies and projected video among others (Sampath & Santhan, 1998). Projected media are usually suitable for large groups but can also be used for small groups to enrich teaching and learning. In using projected media, attention should be paid to creating a suitable learning environment. For example, attention should be given to the distance that would allow comfortable viewing of the teaching aid projected for the students. This refers to the distance of the front seats from the projection screen and the distance from the back seats in the class Anyawu (2003).

Objectives

This paper has the following objectives:

To find out the usage of projected and non-projected teaching aids in Government Day Secondary School Minannata, Sokoto.

1. To find out the dominant teaching aids used by teachers of Computer Studies in Government Day Secondary School Minannata, Sokoto.
2. To determine the if there is significant difference in academic performance between students taught with projected teaching aid and those taught with non-projected teaching aid after post-test intervention while controlling for pre-test treatment.

Literature Review

As much as possible, teachers should make sure that the instructional materials selected can be used to achieve the objective of a particular lesson. In this case, the instructional materials can be relied upon to achieve the objective of the lesson. Care must be taken to ensure that only instructional materials that relate to the topic are used during teaching process. Such instructional materials should be within the reach of the teacher or the school. The cost of the instructional materials will determine whether it can be bought and used or not; otherwise the teacher might select only that instructional materials that cost less thought might be in effective. In the case of the inability of the teacher to purchase many instructional materials, it is therefore wrong to buy and bring into the class instructional materials that cannot be easily used to convey meaningful facts, ideas and concept to the pupils according to the age limit of the pupils. A primary one school child may not be interested in a lesson in which a telescope is used to present facts. This means that the teaching instructional materials are not just selected on the basis of their attractiveness but on the basis of certain criteria that will ensure their effectiveness in the teaching and learning processes. An important advantage of teacher produced materials is contextualization. A key criticism of commercial materials, particularly those produced for the world-wide market is that they are necessarily generic but not aimed at any specific group of learners or any particular cultural context. The possible lack of adequacy between teaching context and course book has been expressed thus modern course books are full of speech acts and functions based on situations which most students' academic performance will never encounter. Urzon (2009) argues that using instructional technology such as video in classrooms extends the channel of communication between teachers and student.

Another aspect of context is the resources available. Some teaching contexts are rich in resources such as course books, supplementary texts, readers, computers, audio-visual equipment and consumables such as paper, pens and so on. Other contexts may be extremely impoverished with little more than an old blackboard and a few pieces of chalk; a lack of commercial materials force teachers to fall back to their own resources thereby designing their own teaching materials to use when teaching. A further aspect that is not often mentioned in the literature is the cost of commercially produced resources. For many schools, teacher produced materials can be the best option in terms of resourcefulness for both school and student budget. In this case most of the teacher made resources or teaching aids are likely to be in the category on non-projected teaching and then non-projected teaching aids (Urzon, 2009).

Modern teaching methodology increasingly emphasizes the importance of identifying the individual needs of learners. History classrooms are diverse places not only in terms of where they are situated, but also in terms of the individual learners within each context. Teacher-designed materials can be responsive to the heterogeneity inherent in the classroom. This approach encompasses the learners' first languages and cultures, their learning needs and their experiences. Few course books deliberately incorporate opportunities for learners to build on the first language skills already acquired, despite researches suggestion that bilingual approaches are most successful in developing second language competence. A teacher can develop materials that incorporate elements of the learners' first language and culture, or at least provide the first language opportunities for acknowledgement and use alongside English (Urzon , 2009).

In addition, teacher-prepared teaching aids provide the opportunity to select texts and activities at exactly the right level for particular learners, to ensure overcoming challenge and reaching appropriate levels of success. Many schools have rooms or mobile carts that are equipped with the technology that is required for any instructor to display information in this manner which can be taken to be non-projected teaching aids. Furthermore, some administrations are pushing for instructors to use this technology (Diem, 2000). This will imply that the support use of projected teaching aids which might not necessary be adequate to teach the students.

In designing their own materials teachers can also make decisions about the most appropriate way of organizing principle or focus for the teaching aids and activities. And this can be changed over the course of the program if necessary. Most course books remain organized around grammar elements and the PPP (presentation, practice, production) model of teaching, often with an unrelenting format which can be deeply un-engaging. By taking more control over teaching aids production, teachers can choose from the

range of possibilities; topics, situations, notions, functions, skills etc. or a combination of these subjects, as starting points to develop a variety of teaching aids that focus on the developing needs of their particular group of learners.

Many schools have rooms or mobile carts that are equipped with the technology that is required for any instructor to display information in this manner. Furthermore, some administrations are pushing for instructors to use this technology. Diem (2000) asserts that effective teaching can only be achieved, by the use of instructional teaching aids such as video among others. If projected teaching aids used effectively in the elementary level then required objectives can be achieved. Urzon (2009) argues that using instructional technology such as video in classrooms extends the channel of communication between teachers and student. This statement wider he view that projected teaching really have a greater impact on the teaching and learning in schools.

Another advantage of teacher-designed materials is personalization. Block (1991) argued in favor of 'home-made' materials saying that they add a personal touch to teaching that students appreciate. Tapping into the interests and taking account of the learning styles of students is likely to increase motivation and engagement in learning. Lambert & Balder stone, (2002) further suggested that there is also greater choice, freedom and scope for spontaneity when teachers develop their own teaching aids. Teachers designing their own teaching aids can help in responding to local and international events with up-to-date relevant and high interest topics and tasks. The teachable moment can be more readily seized. In conclusion, the advantages of teacher-designed teaching aids can be summed up in the idea that they avoid the 'one-size-fits-all' approach of most commercial teaching (Sampath, 1998).when teachers make their own teaching aids they decide on the best teaching aids which can bring about the best academic performance among students, whether projected or non-projected.

An empirical study was conducted by Gopal (2010) stressing the effectiveness of teaching aids in leaning, it is estimated that about 40% of our concepts are based upon visual experience, 25% upon auditory, 17% on tactile, 15% upon 54` miscellaneous organic sensation and 3% upon taste smell. With the above assertion, it is clear why teaching aids are important in the teaching and learning processes. This is because; they bring the different senses contributions together to get 100% clarity. Gopal (2010) also mentioned that teaching aids that include chart help the teacher to overcome physical difficulties of presenting subject matter. That is to say, with the teaching aids materials like chart, the barrier of communication and distance is broken. The culture and climatic conditions of other countries can be brought into the classroom with the aid of slides, films, filmstrips and projectors.

The study was on the comparative analysis of effectiveness of projected and non-projected teaching aids on students' academic performance in Computer Studies in Government Day Secondary School Minannata, Sokoto. The aims of the study were to find out the usage of project and non-projected teaching aids in teaching Computer Studies in the area of study. The area of study was selected for the fact that it is well known for the academic excellence. This prompted the researcher to look into the comparative analysis of the projected and non-projected teachings on academic performance of the students. It is for this that the researchers pose questions like: What is the usage of projected and non-projected teaching aids in teaching students in Government Day Secondary School, Minannata. Related literature has been reviewed that covers a wide range of areas related to the topic. For instance Ema and Ajayi (2006) argued that for teaching to be effectiveness the teacher should know the best use of instructional technology in teaching learning process, simple use of instructional materials cannot create change and progress in the motivation, interest and learning of the students.

Another empirical study by Bennett and Pye (2003) believe that with the use of computer-based instructional strategies we can increase interest motivation and learning of the students at elementary and secondary level. In computer-based instructional technology the competency of the teacher is necessary because in this way the presentation was effective. Bolick (2003) opined that instructional technology put reform in the way of teaching and learning. Researcher pointed good relationship between teachings and the instructional technology materials. He argued that due to the use of instructional materials teaching and learning can be improved and teachers can motivate the students by using instructional materials during teaching process.

This study is unique from other empirical studies reviewed in many ways. First, while other studies were conducted across Europe, America other parts or regions of Nigeria, the scope of this covers Government Day Secondary School Minannata, Sokoto State in northern Nigeria. It is also unique in the sense that other studies conducted in this area were mostly related to primary schools, for instance the study conducted on Teaching Aids on Mathematics achievement in Ogun State Nigeria 2011 is only on a single subject; whereas this study deals with secondary school. The type of population and even research design in the study, that is a combination of qualitative and quantitative instruments also serves as another uniqueness of this study from other studies reviewed.

RESEARCH METHODOLOGY

The research design employed for this study is a quasi-experimental research design. Pre-test, post-test, non-randomized approach was embedded in this design. This design was employed due to non-randomized nature of the participants. Intact groups were used for the study as randomization of the students could distort their academic activities.

Table 1: Age Distribution of the Participants

Age	Frequency	Percentage
11-13	47	31.3
14-15	78	52
16-18	25	16.7
Total	150	100.0

Source: Field data (2022)

Table 1 shows the age of the participants. From the table, it could be observed that 31.3% of the participants were in the range of 11-13 years of age, 52% in the range of 14-15 years of age while 16.7% were in the range of 16-18 years of age. This shows that data were collected from different age groups of the participants, which represent the true age of secondary school students in Sokoto state.

Table 2: Gender Distribution of the Participants

Gender	Frequency	Percentage
Male	82	54.7
Female	68	45.3
Total	150	100.0

Source: Field data (2022)

Table 2 shows the gender distribution of the participants. From the result presented in the table, 54.7% of the respondents represented the male participants while 45.3% represented the female participants. This shows that data were collected from different gender group, which could contribute in the validity of the study findings.

Table 3: Dominant Teaching Aids used by Computer Teachers

S/N	I often use the following Teaching Aids during my classroom instruction:	Yes F (%)	No F (%)
1	Projector	0	4 (100)
2	Slide	0	4 (100)
3	Motion pictures	0	4 (100)
4	Single charts	4 (100)	0
5	Maps	0	4 (100)
6	Pictures	4 (100)	0

Result presented in table 3 shows the dominant teaching aids used by Computer Studies teachers in Government Day Secondary School, Minannata. From the result, it could be observed that the dominant Teaching Aids used by the teachers are Single Charts (100% Yes) and Pictures (100%).

Table 4: Tests of Between-Subjects Effects^b

Source	Type III Sum of Squares	df	F	Sig.	Partial Eta Squared
Corrected Model	44.417 ^a	2	17.868	.000	.413
Intercept	45.510	1	14.210	.000	.661
Pre-Test	34.775	1	84.18	.000	.509
TeachingAids	11.010	1	15.853	.000	.412

a. R Squared = .913 (Adjusted R Squared = .912)

b. Dependent Variable: AcademicPerformance

Table 5: Estimated Marginal Means

Teaching Aids	Mean	Std. Error
Projected	25.35	1.76
Non-Projected	17.12	.62

From the results presented in tables 4 and 5, a one-way between-groups Analysis of Covariance was conducted to compare the academic performance of students taught with Projected and Non-Projected Teaching Aids. Subjects were grouped according to the type of intervention; group1= Experimental Group (Projected Teaching Aid); group2= Control Group (Non-Projected Teaching Aids). The dependent variable was Academic Performance of the students derived from Student Achievement Test. Participants' scores on the pre-intervention were used as the covariate. There was a statistical significant difference (see Table 4) between the two intervention group on post intervention scores of Student Achievement Test [$F(1)=15.85$; $p=.000$; $partial\ eta\ squared=.412$]. There was also a significant relationship between the pre-intervention and post intervention scores on Student Academic Performance [$F(1)=84.18$; $p=.000$; $partial\ eta\ squared=.509$]. An inspection of the mean scores shows that the participants taught with Projected Teaching Aids got a higher mean score of 25.35 while those taught with Non-Projected Teaching Aids got a lower mean score of 17.12.

CONCLUSION

Based on the findings of the study, it was concluded that while charts, pictures and maps could foster teaching and learning process, the projecting effect of projected teaching aids could capture and sustain students' attention, infuse more interest in the students and enhance more active participation than non-projected teaching aids. In addition to this, teaching aids in general act as media to facilitate learning. For this reason, care must be taken when selecting them for effective classroom instruction. Furthermore, despite the effectiveness of projected teaching aids in teaching computer in the school under study, differentiated instruction that will accommodate different learning opportunities is equally needed. Projected media are not end themselves; rather they are means to reach an end. Indeed, they can help teachers to break the cycle of failure.

RECOMMENDATIONS

In view of the findings of the study, the following were recommended:

1. Computer teachers in the school under study should endeavor to use projected teaching aids available in the computer laboratory to teach their students.
2. The government should provide more projected teaching aids to schools.
3. School principals should conduct frequent supervision on teachers' utilization of teaching aids in the school.

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