

Evaluation of Teachers' Activities in the use of Animated Instructional Resource Materials in Biology Teaching in Senior Secondary Schools in Bauchi State Nigeria

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Abstract

This paper presents a profile on how teachers in senior secondary schools in Bauchi state Nigeria utilise animated instructional resource (AIR) in the teaching of biology. A structured questioner used to generate data on the availability, accessibility and application of the AIR for classroom instruction by teachers. The instrument for data collection was piloted in the three senatorial zones, which include Bauchi, Ningi and Katagum zones. The result indicated low awareness of biology teachers to the existence of AIR in senior secondary schools. Analysis of availability and utilization of animated instructional resource by teachers showed sharp contrast between the affirmative and the null, 3% shows 'yes' while 97% was 'no', indicating that there is no availability and utilization of AIR in senior secondary school. With regards to teachers' opinion on the need for AIR in schools, the teachers' overwhelmingly indicated great need. However 100% voted in favour of the need for the package. The teachers also indicated willingness to buy AIR if sold, because AIR is found to be very useful in classroom instruction.

Introduction

Nigeria being one of the most populous countries in Africa, a country blessed with large human resources yet, is still ranked low in education and technological advancement. With the Nigeria geographical spread out to especially the remote location with modern technology and educational resources can be very challenging, particularly, in some northern state of Nigeria. A way out in addressing this problem could be the explosion of animated instructional resources in senior secondary schools. It is discovered that not many teachers appear to be aware of the trend in development and utilizing learning technology that meet the conventional 21st century need of Nigeria.

Teachers' knowledge and skills in using animated instructional materials

Without any doubt the teacher is pivotal to the nature of use and level of success of animated instructional materials in any teaching and learning situation. Newton (2004) explained that very competent teachers would integrate broad, deep and creative sets of knowledge and skills to enhance understanding and capture attention of the learners. The teachers can supplement the learning materials intellectually and, or physically in creative but competent ways to achieve the instructional goals. Such creative and competent ways include the followings:

- (a) Accompanying commentaries
- (b) Discussion
- (c) Tutorials
- (d) Demonstrations and illustration
- (e) Excursions

Emphasis on the teachers' knowledge and skills in the use of animated instructional materials should not be focused primarily on technical (technology) skills but also on the concept competencies. Regrettably, these competencies have been largely ignored in the teacher training programmes of Nigerian Institutions of learning, virtually all faculties of education in Nigerian universities simply require single educational technology course to certify and to satisfy their accreditation and graduation requirements. Very little attention is paid to the practicals which would provide the needed experiences for the teachers. Based on such lapses the teachers fail to be well informed on the types of instructional materials and technologies, the principles and practices guiding their usage to enable appropriate selection of relevant materials methods and equipment relevant for the lesson, level of students and the instructional contents.

It is not just enough to acquire new knowledge about a new materials and, or technology in teaching, he or she must weave this together with the demands of the curriculum, classroom management, and existing instructional skills. The teacher, according to Clark (2009) need to know the “how” and “why” of meaningful ways to use the new material and or machine. Lack of knowledge and skills regarding either elements (nature and application) can significantly limit the impact that such powerful resources like animated instructional materials could have on students learning.

Educational psychologists over the years have expressed very strong beliefs that there is a very strong relationship between teachers’ beliefs and their instructional materials and activities. Self-efficacy according to Martins (2005) is a major factor in understanding the frequency and level of success with which teachers and students use instructional materials and technology.

Barriers to the use of Animated Materials in teaching and learning

Barriers to the use of animation concepts and practices in teaching and learning situations are varied and numerous. As clearly stated by Ema (2010) these barriers fall into two main categories, and they are: Extrinsic and Intrinsic barriers.

Extrinsic has to do with the following:

Access, time, support services, resources and training.

Intrinsic has to do with the followings:

Attitudes, beliefs, practices and resistance. These concepts and practices impact is in one way or the other on the level and frequency of use of instructional materials in the classroom. Inadequate level of understanding animation concept and practices may lead to rejection and discontinuance of its use because of the stress, strain and frustration likely to be encountered. It is highly recommended that flyers or booklet serving as guides should accompany any animated instructional material to provided information dealing with the functioning principles underlying how the material works in the teaching and learning process. Every technology or material used in class is subject to the teacher’s control. The level of the teachers’ creativity and performance skills will determine the level of success or failure of the activities.

The type of animation to be used should vary according to the grade level of the learners and the subject matter to be studied. In whatsoever form and level of usage the teacher must know “how” and “why” they should be used.

Using Animated Instructional Materials in Post-Primary Schools in Bauchi

Using animation concepts as a model of instruction in schools in Bauchi is virtually non-existent. The use of motion pictures in instruction has been in existence even before the state was created. The Federal Government of Nigerian (2004) had in its policy on educational services considered the use of motion pictures and related services to include the following:

1. To develop, assess and improve educational programmes.
2. To enhance teaching and improve teachers’ competence.
3. To make learning more meaningful.
4. To develop and promote effective use of innovative materials in schools.
5. To make education more cost effective.

According to Bassey (2006) government bureaucracy, teachers attitude and lack of access to the materials account for the total lack of animated instructional materials in most schools in Bauchi State. The use of instructional technology has much to do with technical and personal competence. Technical competence has to do with knowing what to do, while personal competence possesses the commitment to use the technical competence already required. Teachers are perceived as change agents in any teaching and learning situation. This role as agents of change should negates their resistance to change in the use of instructional materials and machines. Perhaps the principles guiding the use of these materials even at their schools, level may explain their resistance to using instructional materials and technology. They according to Peterson (2004) tend to see these materials and technologies as threats to their self esteem. Teachers cannot effectively use instructional technology if they lack adequate knowledge of how, where, why and when, which and what philosophies and practices of application of instructional materials and technology.

The goal of animation in the educational system is to enhance teaching and to improve the competence of teachers making learning experiences more meaningful. It was observed that teachers who continued to use

the conventional methods to teach all subjects including Biology did that as a result of their lack of knowledge or very limited exposure to Animation concept and how to apply it to teaching. To effectively apply Animation to teaching, the teachers and learners beliefs and knowledge about Animation should be considered. Teachers need specific knowledge about how to use Animation clips to achieve meaningful outcome under normal classroom situations (conditions). A good knowledge on information and communication dealing with the different types of Animation and the functioning principles underlying how Animation works in teaching-learning process are of great importance. This is because inadequate knowledge and experience could lead to poor skills in using it. Even when teachers have adequate knowledge and skills in using Animation, the availability and accessibility of this technology in the classroom is also of great importance. Teachers are more likely to use instructional materials when they are available and accessible to them.

It is against this background that this study is set to evaluate the availability and accessibility of Animation resources for use in teaching Biology concepts in senior secondary schools in Bauchi State. The knowledge and skills of teachers of Biology in the use of Animation clips shall be examined based on their qualifications, years of teaching experience and school type (government, community or private). The task of determining the level and manner of usage of animation in teaching prompted this study.

The study of science subjects in schools in Bauchi State faces the challenge of low enrollment of students and downward trend in performance of both teachers and the students. Several scholars have attributed this failure rate to non-utilization of appropriate and relevant instructional materials. Biology is a science course that deals with life and the environment and is the hardest hit of all the science courses. According to Olukoya (2001) teachers in senior secondary schools in Northern Nigeria (of which Bauchi is included) use the teacher centred method to teach even the sciences which in most cases is the “chalk and talk” method and rote learning thereby making the students passive learners. This often leads to boredom and the lack of understanding and loss of interest in the subject. Okon (2008) explained that students of Biology perceive the subject as “dry” because teachers do not use appropriate instructional aids to make their lessons more practical, realistic and meaningful to the students.

This lapse has the tendency to continue to create gap; in classroom communication that will greatly affect the performance of both teachers and the students. The study therefore determined the extent to which application of Animation can facilitate instructions in Biology classes in senior secondary schools in Bauchi State.

This study is a survey of the application of Animation resources in teaching Biology in senior secondary schools in Bauchi State. In order to achieve this, the study is set out to address the following objectives;

1. To determine the extent teachers of biology use Animation resources in teaching Biology concepts in senior secondary schools in Bauchi State.
2. To find out the teachers’ level of awareness and competence in the use of Animation in Teaching.
3. To find out the level of accessibility to Animation resources in senior secondary schools in Bauchi State.
4. To determine the influence of teachers’ years of experience and qualifications have on their use of Animation resources.

Methodology

The survey and experimental designs were used for this study. These were considered appropriate because the study sought the views and abilities of a representation of the population on concerning the use of animated instructional material in teaching concepts in Biology in Senior Secondary Schools in Bauchi State. This is in agreement with Nelson (2001) who explained that survey and experimental designs are methods by which a group of people or items are closely studied by collecting and analyzing data from a few people or items considered as being representative of the entire group. The research was designed to find out how teachers of Biology classes would use animated instructional materials to impact on the students and thereby enhance their performance.

Bauchi State is selected for this study, the three senatorial zones of Bauchi, Katagum and Ningi are the areas considered for this study, with particular focus on the study of Biology in Senior Secondary Schools. The target population for this study was made up of all teachers of Biology in the chosen schools.

The areas sampled for the study comprised Ningi, Bauchi and Katagum zones of Bauchi State, the sampled population was derived from a total of 26 teachers. A total number of teachers were sampled from the three zones.

The proportionate stratified random sampling was used in the sampling process for this study. The researcher used balloting to randomly select the schools to be sampled. This method was used because it has less risk. According Nwana (2007) stratified random sampling technique ensure equal representation of the sample relative to the population and it guarantees that minority constituent of the population are represented in the sample

The sampled population consisted of 26 teachers for all the three zones. Bauchi zone had nine (9) teachers respondents representing 35% Ningi zone had four (9) teacher representing 35% , while Katagum zone had eight (8) teachers representing 30% of the population of teachers of Biology that were observed randomly sampled from both public and private schools.

Instruments for Data Collection

Two instruments were used for data collection. These comprise structured questionnaire and observation schedule. The two instruments were developed to supplement and complement each other in the process of data collection.

Teachers of Biology questionnaire on the use of animation (TEHIOUA) is structured into six sections namely sectioned A – F section A focused on the demographic information (DI) of the respondents which contains items that would provide adequate, information on the type of school, location of the school, teachers qualification and years of teaching experience. Section B contained statement on the development of animation materials section C contained statements on the process of animation teachers of Biology classes apply in teaching. Section D contained statements on teachers’ awareness of animated materials for the teaching of Biology. Section E contained items to determine the perceived benefits of using animated materials in teaching Biology concepts. Section F contained items to determine the availability of animated instructional materials on Biology. Section G also contained items to find out the level of accessibility of animated instructional materials that are available in the schools under study. The questionnaire consisted of a total of seven (7) items. The required responses to the items vary from choosing among alternatives to indication of the position of the respondents in accepting or rejecting the statements or items provided.

The data collection on the secondary school teachers of Biology comprised teachers’ bio-data, the research locations, teachers’ teaching profiles on availability, accessibility and utilization of animated instructional visual aids used by secondary schools teachers in Bauchi state.

Data presentation and analysis

Table 1: distribution of collection of teachers’ questionnaires

Name of Location	No. of Respondents	Percentages
Bauchi Location 1	3	12
Bauchi Location 2	4	15
Bauchi Location 3	2	8
Katagum Location 1	5	19
Katagum Location 2	3	12
Ningi Location 1	5	19
Ningi Location 2	4	15
Total No. of Respondents	26	100
Questionnaire Administered	26	
Number collected	26	
Percentage collected	100	

Data on age range from the teachers reveals the age ranges of the teachers and indicates a reasonable level of maturity among them.

Ages 20-30 shows 31%

31-40 shows 25%

40 and above shows 44

Data on educational status of the teachers show as follows:

Teachers with NCE shows 19%

Teachers with ND shows 0%

Teachers with HND/Degree shows 81%

The teachers’ data on teaching experiences as presented above shows a reasonable coverage of the State under study. The teachers’ ages ranges from 27 to 40 years and above. This indicates maturity among the teachers and

sound education since 81% of the teachers has HND/Degree and 19% NCE. Good profiles of teaching experience gathered from the study are as follows:

1 – 5 years teaching experience = 19%
 6 – 10 years = 39%
 11 – 20years and above = 42%

All of these implied that the teachers in this study have reasonable and or all round teaching skills, experiences and exposures needed in their profession.

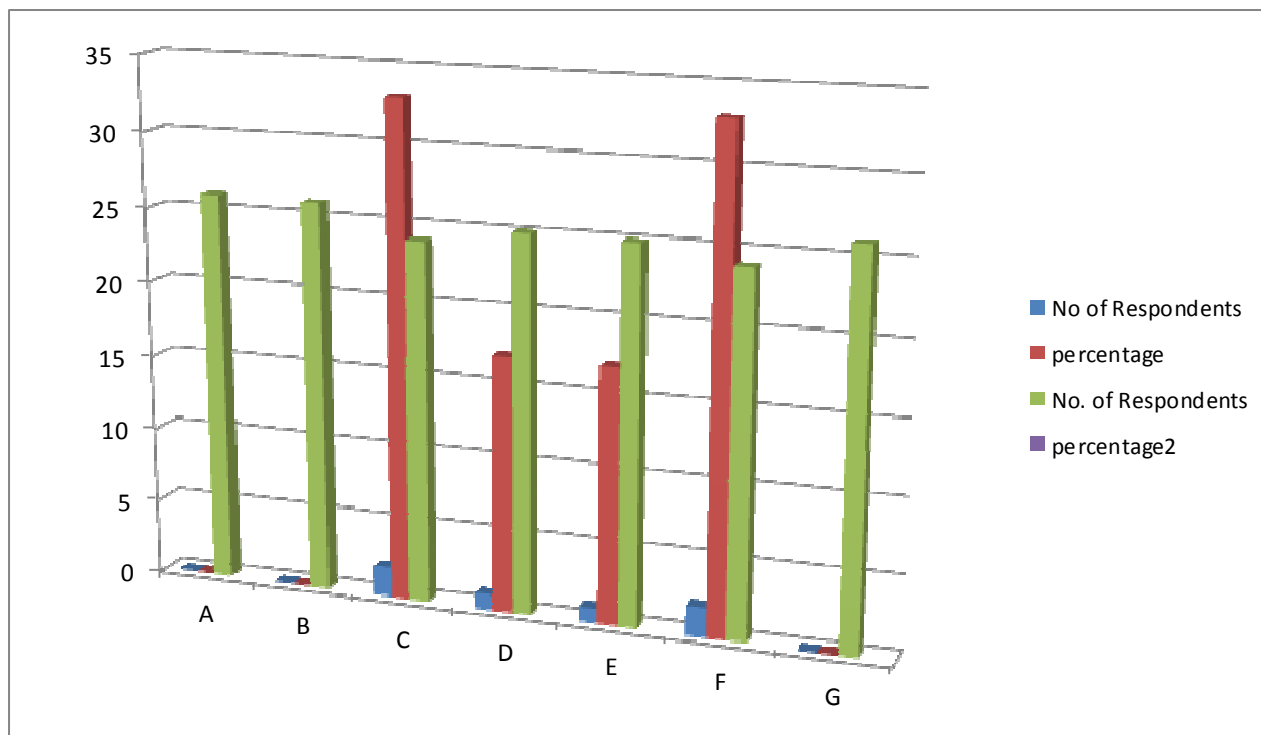


Figure 1: Data on availability and utilization of animated resource materials by teachers

The chart above shows the analysis of responses gathered from teachers' questionnaire which indicated a sharp contrast between the affirmative and the null. 5% was "yes" while 95% was "no" pointing to the fact that there were no availability and or utilization of Animated Instructional Visual Aid. (AIVA) DVD in Senior Secondary Schools in Bauchi State.

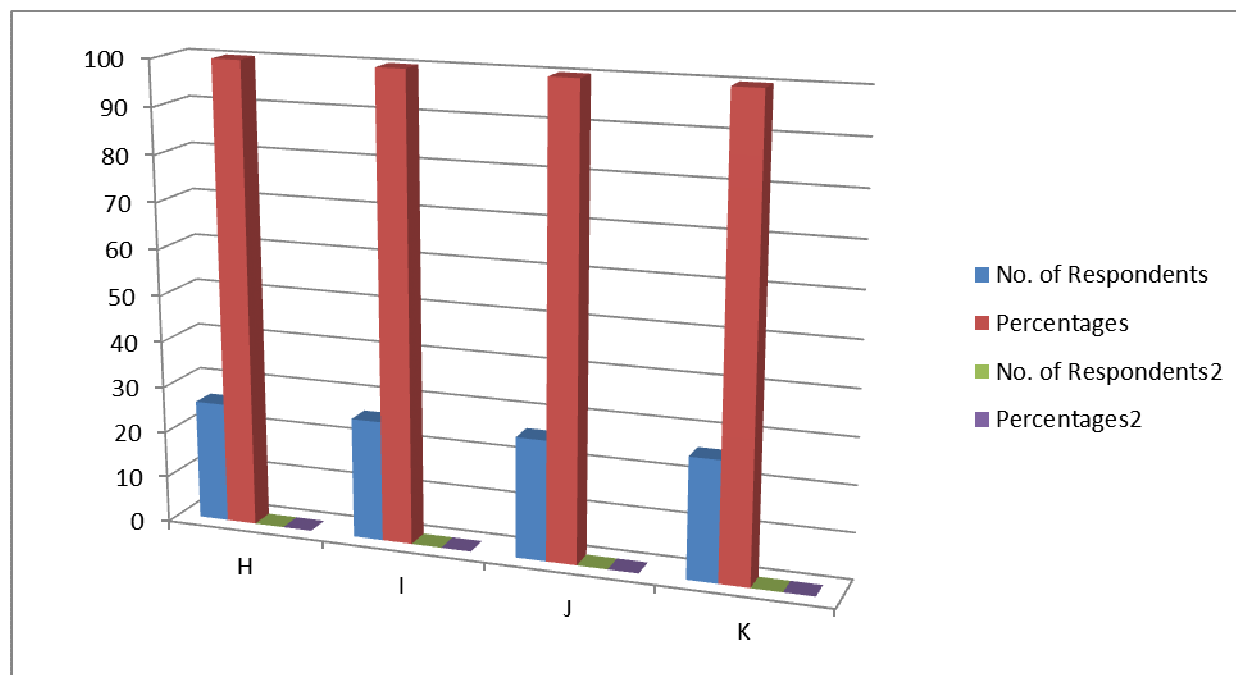


Figure 2: Data on teachers' opinion on whether there's need for animated instructional visual aids in schools

The chart above showed the responses from teachers on the need for animated instructional visual aid in senior secondary schools. However 100% voted in favour of the great need for the package while 0% responded on the negative. Teachers' willingness to buy the animated instructional visual aid if sold is a clear indication that the AIVA DVD is highly accepted.

In summary, there tends to be a serious needs for Animated Instructional Visual Aid in the Senior Secondary Schools in Bauchi State, considering the fact that the availability of and teachers' exposure to the package in question is very low. Looking at the data and the accompanied charts above, there is a wide disparity between the compared values. Teachers' exposure to and utilization of animated instructional visual aid rated at 5% while the non availability of the package otherwise rated at 95%. The implication of this low rate is that animated instructional visual aid are not available, neither are teachers using them in classroom teaching.

Summary

The teachers studied bio-data indicated a reasonable level of maturity with ages range of 20-30 rating 38%, 31-40 rating 35% while 40 and above shows 27% alongside with their educational status with NCE 31% while HND/ Degree shows 69% indicating maturity and good education based. The teachers teaching experience places them at advantage of being capable of applying resource material with 42% having 11-20 years teaching experience followed by 39% of 6-10 years and lastly with 19% for beginner of 1-5 years

Analysis of availability and utilization of animated resource by teachers indicated a sharp contrast between the affirmative and the null 3% was yes while 97% was 'no' pointing to the fact that there were no availability and utilization of animated resource material in senior secondary schools in Bauchi state. With regards to teachers' opinion on whether there's need for animated instructional resource in school, overwhelmingly indicated great need. However, 100% voted in favour of great need for the package while 0% responded on the negative. The teachers willingness to buy animated resource if sold is a clear indication that animated resource materials are grossly needed in senior secondary school for teachers in class room teaching.

Conclusion and Recommendations

As the study of science subjects in schools in Bauchi faces the challenges of low enrollment of students and downward trend in performance of both teachers and the students several scholars have attributed this failure rate to non-utilisation of appropriate and relevant instructional material. Biological science that deals with life and environment is the hardest hit of all the sciences. According to Olukoya (2001) teachers in senior secondary schools in northern Nigeria (of which Bauchi is included) use the teachers centered method to teach even the sciences which in most cases is the chalk and talk method and rote learning thereby making the students passive learners. As animation is found to have several roles when applied to teaching learning as indicated Sorensen

(2004) include making information and instruction more productive and more individualistic, entertaining thought provoking. The following recommendations are made:

Recommendations

Having examined the availability and utilization of animated instructional media in schools in Bauchi, Ningi and Katagum senatorial zones of Bauchi State, several issues have been raised and they include the following:

- There is the need (dire need) to make learning dynamic and concrete.
- There is the need to introduce variegated media system to address the different course contents and teaching methods.
- Educational Resource Centres in the states should acquire modern instructional materials and organize Workshops and seminars from time to time to upgrade teachers' skills.
- Classrooms should be made conducive for learning. Facilities for both projected and non-projected media of instruction should be installed.
- Where there is no supply of electricity from a central ground, generators should be provided to such schools, to enable them use projected instructional materials.

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