

TEACHERS PROFICIENCY WITH RESPECT TO THE USAGE OF ICT FOR TEACHING SENIOR SCHOOL BIOLOGY IN ILORIN, NIGERIA

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ABSTRACT

The study examines the teachers' proficiency with respect to the usage of ICT for teaching senior school Biology in Ilorin Nigeria.

Three research questions were formulated in achieving the objective of the study, the research instruments used was questionnaire, 80 respondents were randomly selected among biology teachers in secondary schools. Frequency and simple percentage were used to analyze the data.

The study among others revealed that proliferation of technologies has complicated the teaching-learning process and finding the best ways of integrating technology into classroom practices is one of the challenges the 21st century teachers face and also in this respect, biology teachers should be able to identify and articulate a vision, provide an appropriate model, provide individualized support, provide intellectual stimulation, foster acceptance of group goals, and achieve high performance.

The following recommendations were made among others; governments should improve the training of principals, teachers and computer personnel on the use of computers and other ICT equipment through seminars, workshops and in-service training and also emphasis should be aimed at developing a long term program effective for continuous commitment to training and use of instructional technologies.

Keywords: *ICT, Usage, proficiency, learning process*

Introduction

Information Communication and Technology (ICT) has become an important part of most organizations and businesses these days. There is substantial evidence that if in the right hands and used appropriately for specific purposes in specific contexts; ICT can be an effective tool in positively impacting the quality of human life. Hodge and Miller (1997) confirm the positive impact of ICT on people's lives by indicating that: "Information and communication technologies are rapidly changing the way of individual's live, businesses, governments' administration and nations' interaction". Education has been identified as one of the public sectors most influenced by technological developments (Kombo and Tromp, 2006). New technologies have the potential to support education across the curriculum and provide

opportunities for effective communication between teachers and students in ways that have not been possible before (Dawes, 2001). According to white paper on e-Education (2004), ICT can enhance educational reform by enabling teachers and learners to move away from traditional approaches to transformed teaching and learning.

In a transformed teaching and learning environment, there is a shift from teacher-centered, task-oriented, memory-based education, to an inclusive and integrated practice where learners work collaboratively, develop shared practices, engage in meaningful contexts and develop creative thinking and problem-solving skills (White Paper on e-Education 2004). This further points out that technology can play a part in supporting face-to-face teaching and learning in the classroom. There has been a national concern in Nigeria due to the relatively to the performance in Biology in the national examination.

Hardman et al., (2008) observes that many African countries continue to use teaching methods that are over four decades old in which teaching is teacher-centered, and typically encourages passive learning styles. According to Meredith (1996), the traditional approach to teaching, as ancient as formal teaching itself, involves the directed flow of information from the teacher as sage to the student as receptacle. This is further confirmed by Dawson and Rakes (2003) who defines teacher centered teaching style as: A style of instruction that is formal controlled and autocratic in which the instructor directs how, what, and when students learn.

The traditional teaching methods used by most of the teachers continue to face a global resistance due to changing level of technology. This is because the changing level of technology has made learners more inquisitive, critical, and informed. This, in turn, puts pressure on the education sector to embrace modern technology in its various undertakings.

The government of Nigeria, however, recognizes the importance of ICT in teaching and learning. This is evidenced by its effort to address the issue of ICT integration in classroom teaching and learning. In 2007, the Nigeria government, through the Ministry of Information and Communication, adopted the National Information and Communications Technology (ICT) Policy. Aside the government, other indigenous and non-indigenous non-governmental organizations have engaged great effort in the endeavour of promoting ICT usage in teaching and learning. According to Gioko (2007), use of computer technology can improve teaching and learning.

In Nigeria, the biology syllabus in secondary schools is greatly compressed to include many topics that require more time allocation to be learner at higher cognitive skill while the

time for syllabus coverage has always been shortened due to over increasing school program. Thus, the need to ensure proficient of biology teacher in usage of ICT is needed to allow possible achievement of educational aims and objectives of biology in secondary schools.

Statement of the Problem

Government and many non-governmental organizations encourage and facilitate ICT usage in teaching and learning of biology, there is very little usage, especially in science subjects like biology in educational institutions (Hardman et al., 2008).

If there is to be effective ICT usage in teaching and learning of biology, the teacher must be prepared both intrinsically (sufficient ICT usage skills and positive attitude towards ICT usage) and extrinsically (be provided with sufficient ICT resources and be accorded the necessary support by the administration). It is against this background that the researcher found it useful to investigate teachers' proficiency with respect to the usage of ICT for teaching senior school Biology in Ilorin-Nigeria, considering that the teacher is a key player in the success of any educational program.

Significance of the Study

The findings of this research will be significant to teacher training institutions in the designing of their curriculum so as to thoroughly prepare the teacher-trainees to be able to be relevant to the learners in this information age. The findings will also be of great significance to bodies that design and revise the curriculum such as the Nigeria Institute of Education (NIE) in that the findings will look into details on whether or not the current curriculum allows the teachers to use ICT effectively in teaching and learning.

Methods of Teaching Biology

A teaching method comprises the principles and methods used for instruction. There are many factors that determine the selection of a teaching method. Some of these factors are; the teacher, the content to be taught, the entry behavior of the learners, the size of the class and the teaching/learning resources available. The most commonly used methods in teaching Biology include lecture method, discussions, demonstration, Field Trips, class experiments, and project work.

Usage of ICT in Teaching Biology

The concepts of ICT integration blossoms from the knowledge that despite the fact that there is continual poor performance when conventional teaching methods are used. ICT by itself cannot improve performance. Technologies by themselves have little stable or sustained

impact on learning in schools. It needs to be used alongside the conventional methods, a process known as ICT integration.

The impact of ICT on teaching and learning of Biology Technology is developed to solve problems associated with human need. If there is no problem to solve, the technology is not developed and not adopted. While theoretical arguments can be put forward to justify ICT integration in teaching and learning of Biology, the only true rationale should be based on whether or not it has a positive impact on the process of teaching and learning of Biology.

The Impact of ICT on Teachers' Pedagogy

The integration of computers in teaching does not substitute the role of teachers but rather; it enhances the quality of their work. Technology can play a part in supporting face-to-face teaching and learning in the classroom. When the computer is integrated into the classroom the role of the teacher changes from that of the information provider to that of a facilitator of learning. This leads to mere meaningful learning because the learner gains most of the knowledge through discovery rather than through teacher's exposition leads to deep learning.

Biology just like any other science is a dynamic discipline whose content is tentative. This, therefore, implies that effective Biology pedagogy requires continuous access to the most recent information, ICT gives teachers access to information to support them in trying new strategies, thinking, reflecting on proactive, and engaging with new material (Committee on Developments in the science of learning, 2009). This access to information leads to increased interest in teaching and experimentation which in turn improves the quality of teacher's pedagogy.

Methodology

This study employed the use of descriptive survey design to help obtain more information about the research based on the necessity of the instrument (questionnaire) which is expected to cover a large population (secondary schools in Ilorin) with respect to the study from which a sample of eighty (80) respondents who are randomly selected from within the population of the study.

Research Question One: Do Biology teachers have necessary ICT skill and ability for effective teaching of Biology?

Table 1: Opinion of the respondents on the ICT skill and ability for effective teaching of Biology

Teachers Proficiency with Respect to The Usage of ICT for Teaching Senior School Biology in Ilorin, Nigeria

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S/N	Items	SA (%)	A (%)	D (%)	SD (%)
1.	Biology teacher can operate computer	13 (16.25)	04 (5)	21 (26.25)	42 (52.5)
2.	Biology teacher can connect to the internet to browse for information for the student	59 (73.75)	08 (10)	10 (12.5)	03 (3.75)
3.	Biology teacher can use computer application software	04 (5)	05 (6.25)	32 (40)	39 (48.75)
4.	Biology teachers can use printer to print out tasks for the students to aid their teaching and learning process	11 (13.75)	54 (67.5)	12 (15)	3 (3.75)

Source (field survey 2019)

Research Question Two: Do Biology teachers promote usage of teaching Biology with ICT?

Table 2: Opinion of the respondents on promotion of usage of ICT in teaching of Biology

S/N	Item	SA (%)	A (%)	D (%)	SD (%)
5.	Biology teacher uses ICT to improve learning performance	06 (7.5)	05 (62.25)	11 (13.75)	58 (72.5)
6.	The teachers use ICT to carry out instruction in classroom learning situation	07 (8.75)	10 (12.5)	02 (2.5)	61 (76.25)
7.	The teacher allow the students to attempt questions via the internet	43 (53.75)	24 (30)	08 (10)	5 (6.25)
8.	The teacher relates biology text book information to the internet for further explanation	20(25)	45 (56.25)	8 (10)	7 (8.75)

Source (field survey 2019)

Summary of Findings

The study revealed that most of the biology teachers cannot operate computer though they can connect to the internet to browse out information for the student, this could be the availability and affordability of browsing phone. Biology teachers cannot use computer application software, Biology teachers cannot use printer to print out tasks for the students to aid their teaching and learning process.

The study also revealed that biology teachers do not use ICT to improve learners' performance, teachers do not use ICT to carry out instruction in classroom learning situation, teachers do not allow the students to attempt questions via the internet, teachers do not relate biology textbook information to the internet for further explanation.

The study also revealed that teacher attitude pose difficulty in usage of ICT to teaching of biology, biology teachers' attitude to teaching method do not allow for usage of ICT to teach biology, nonchalant attitude to teachers result to non-usage of ICT to teach biology and also attitude of biology teacher to ICT make ICT facilities difficult to utilize for teaching and learning of biology. This is in line with Becker and Riel (2000) that effective utilization depends largely on the attitude of teacher who ultimately decide the way in which it is implemented in classroom

Conclusions

The proliferation of technologies has complicated the teaching-learning process and finding the best ways of integrating technology into classroom practices is one of the challenges the 21st century teachers face. Effectively using ICT in learning systems is much more complicated than providing computers and securing a connection to the Internet. In fact, the use of ICT is associated with a shift from instructivist to constructivist philosophies of teaching and learning (Ertmer, 1999). So, technology integration takes time; time to learn about the innovation, time to be adequately prepared to use it.

In this respect, biology teachers should be able to identify and articulate a vision, provide an appropriate model, provide individualized support, provide intellectual stimulation, foster acceptance of group goals, and achieve high performance expectations. They should have knowledge, skills and positive attitudes toward the implementation of ICT in schools. In this way, they can create changes in their schools by focusing on action and by converting their teachers to be leaders who will eventually become agents of change. Therefore, teachers can play a role as a leader when they are committed to a cause and are self-managing.

Recommendations

Based on the findings and conclusions the study made the following recommendations that;

- i. Governments should improve the training of principals, teachers and computer personnel on the use of computers and other ICT equipment through seminars, workshops and in-service training.
- ii. Emphasis should be aimed at developing a long term program effective for continuous commitment to training and use of instructional technologies like ICT.
- iii. The national and state governments should show more interest in imbibing information communication and technology (ICT) and supply the necessary ICT equipment to all secondary schools through improved funding for the purchase of ICT equipment.
- iv. Delivery of instruction should be site-based over an extended period of time, so that teachers can develop and use materials and methods with their students.
- v. To effectively infuse into the schools' culture, and to be considered relevant by teachers and school administrators, a comprehensive ICT policy should be part of an effort towards improving the equity and quality of an educational system.
- vi. Teachers and administrators must have clear and positive incentives for participating in ICT in-service.

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