

Students' Achievement in Education Policy through Cloud-Computing Powerpoint Presentation for Sustainable Development in Industries

by

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Abstract

The study investigated the students' achievement in education policy through cloud-computing power point presentation for sustainable development in industries. The study adopted a quasi-experimental design involving two non-equivalent groups. Two research questions and two hypotheses were posed and formulated to guide the study. The population of the study was 2460 JSS 3 TVET students in the fifteen co-educational public secondary schools in Orlu Local Government Area. A sample of one hundred students from two co-educational schools was drawn through the use of purposive and simple random sampling techniques. The instruments for data collection were TVET STUDENTS' ACHIEVEMENT TESTS I&2 (TVETSAT I&II) for pre-test and post-test respectively. Cronbach Alpha was used to determine the reliability of the instruments at 0.78 and 0.87 respectively. Mean and standard deviation were used to answer the data gathered from research questions while analysis of covariance (ANCOVA) was used to test the hypotheses. The results of the analysis revealed that students exposed to TVET cloud-computing powerpoint presentation for sustainable development in industries performed and achieved better than those students that were not exposed to TVET cloud-computing powerpoint presentation for sustainable development in industries. It was therefore recommended that teachers should abide by the education policy for teaching-learning processes of TVET through the utilization of cloud-computing powerpoint presentation for training TVET students in the instructional processes for sustainable development of industries.

Keywords: TVET, student' achievement, transformation, education policy, cloud computing, powerpoint presentation, sustainable development.

Introduction

The academic performance of students can be measured through evaluative treatments of tests and observations; thus serving as the major purpose of measuring the level of academic achievement. The strengths, weaknesses and difficulties of the students are realized through the achievement tests given to them. Determinants of relative positions or ranking of students with regards to their academic performances in various fields of endeavour are measured with achievement tests. Technical and Vocational Education and Training (TVET), as a form of education similar

to all others, has the aim of developing the broad range of personal capabilities that characterize an educated person. Thus, the provision of broad based knowledge seeks to ensure critic-creative thinking. TVET also aims at developing capacities for effective communication and effective interpersonal relations (Keevy, 2011). It can also be viewed as a planned programme of courses and learning experiences that begins with exploration of career options, supports basic academic and life skills and enables achievement of high work and advanced continuing education (Dike, 2007). Similarly, Mclean and Herschbach (2009) opined that TVET is concerned with the acquisition of knowledge and skills for the

world of work to increase opportunities for productive empowerment and socio-economic development in knowledge economics and rapidly changing work environment. According to Ogunna (2014), technical and vocational education and training (TVET) is an aspect of education that gives its recipients an opportunity to acquire practical skills as well as some basic scientific knowledge. Federal Republic of Nigeria (2014:24) defined TVET thus;

Technical and Vocational Education and Training is used as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic and social life.

TVET is also recognized to be a crucial vehicle for social equity, inclusion and sustainable development (Marope, Chakroun and Holmes, 2015). According to UNESCO (2017), TVET is education and training which provides knowledge and skills for employment. Supporting the above views, UNESCO (2018) opined that TVET uses formal, non-formal and informal learning. From the above discussions, one can assert that TVET is the type of education that requires the students on course to be acquainted with the prescribed necessary skills, knowledge attitude and ethics for employment in order to achieve desired goals and objectives. The goals of Technical and Vocational Education and Training (TVET) as identified by Federal Republic of Nigeria (2014) are as follows: provision of trained manpower in the applied sciences, technology and business, particularly at craft, advance craft and technical level; provision of technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and giving training and imparting the necessary skills to individuals for economic self-reliance.

The extent to which students of TVET can achieve better results in academic achievement can be determined through TVET achievement. TVET achievement can be seen as

a test for measurement and comparison of skills among TVET students. This highly evident in the rate of knowledge exhibited by a student after learning has taken place (Ofoegbu and Ngwu, 2016). TVET achievement can also be defined as the mode at which a learner accomplishes work in TVET setting and learning experiences attended after learning has taken place. In recent past, there has been poor achievement in TVET by students with special concentration and reference to secondary schools in Orlu Local Government Area of Imo State. It has been observed by researchers that Basic Education Certificate Examination conducted by State Ministry of Education, Imo State in 2015, 2016 and 2017 revealed students' poor achievement and difficulty in crediting TVET subjects. Specifically, schools in Orlu Local Government Area of Imo State in the above mentioned years, 21.4% of students scored credit-pass in TVET subjects (Examination Development Centre (EDC), Owerri, 2018). An important and pertinent factor that has been highlighted as affecting students' achievement in TVET subjects is due to the mode of instruction delivery of TVET subjects by teachers in teaching-learning environment. According to Udousoro (2002) and Udoji (2007), the method of teaching adopted by a teacher affects the level of students' achievement school.

Furthermore, utilization of appropriate method and instructional media thereby following education policy facilitates learning and makes it more meaningful. The learner learns better through effective teaching while poor teaching drastically results to poor learning and poor achievement. Okoye (2003) opined that instructional media for students to interact with becomes necessary as this will provide a first-hand experience which guarantees learning. Students' performance in TVET subjects, Basic Education Certificate Examination (BECE), was unbearably poor as observed by Examination Development Center (EDC) Owerri (2018). Due to this unbearable poor performance by students, the inability of the students to credit scores in TVET subjects roars and evolves in order to usher in transformation of instructional methods of delivery through conventional method of

teaching to innovation – interactive methods of teaching that is ICT-based. This is also referred to as a paradigm shift for transformation to be of utmost relevance to TVET students, and this can be achieved through prescribed principles in education called education policies. What then is education policy?

Policy is viewed as an explicit or implicit single decision or group of decisions which may set out directives for guiding future decisions, initiate or retard action, or guide implementation of previous decisions (UNESCO, 2015). Policy can also be seen as an intentional attempt by members of one group to influence the practice of members of another group (Coburn and Stein, 2006). Educational policy therefore consists of the principles and government policies in the educational sphere as well as the collection of laws and rules that govern the operation of education systems. It can also be seen as a past or up-to-date statement or series of statements which explain recommend or exclude a course of action or actions to be taken to run the system of education (UNESCO, 2015). From the above discussions, one can assert that education policy deal with rules, regulations, principles, processes, procedures as well as modes of operations established by government authorities in the education sector for the smooth running and governing of educational policies of a country.

Through the education policy, modes of teaching can be influenced, improved, enhanced and transformed for better achievements to be recorded by students of TVET in secondary schools. The innovative methods of teaching in recent past, among others, include Computer-Assisted-Instruction (CAI), Computer-Concept-Mapping (CCM), Video conferencing, presentation software, cloud computing. Students remain passive during teaching-learning process when traditional/conventional modes of teaching are used, thereby leading to poor achievement (Alumona, 2012). Supporting the above views, Okoro (2008), Udo and Udosen (2012) and Ali-Okoro (2014) stated that most of our teachers are used to talk-chalk method of teaching thereby rendering the students passive learners. This contradicts the student-centered-learning approach as

recommended by Federal Ministry of Education (FRN, 2004). The student-centered-learning approach can be motivated, encouraged and activated through the introduction of ICT facilities in the Nigerian educational system.

In all the nations of the world, there is high interest and motivation in the utilization of modern ICT facilities in every discipline; as this interest makes countries to strive very high to provide various educational technological innovative techniques (Ofoegbu and Ngwu, 2016). Accommodation of educational technology competence should be allowed in educational institutions as through educational technology, students would be prepared to meet the challenges of the present and future trends in the new millennium. Through this, there would be increase in academic achievement in TVET subjects in secondary schools. One of the innovative techniques utilized and readily available in teaching-learning environment is the presentation of software. Through this software, teachers and students are allowed to generate many different actions including slides, handouts, overheads, speakers' notes (Ofoegbu and Ngwu, 2016). Through the interaction of both students and teachers with this type of technology, learning situation varies and improves as students participate actively in their own learning. There are different presentation software in existence apart from the use of older forms of media. They include Gold Disc Astound, Delta Graph Pro, Adobe Persuasion and Microsoft PowerPoint. Of all these mentioned presentation software, the only presentation software that is user-friendly for both teaching and learning processes is the Microsoft PowerPoint.

Microsoft PowerPoint (also called Microsoft office PowerPoint is seen in this study, as a very pertinent technology used in teaching-learning environment for imparting skills, knowledge and upgrading of competencies for the attainment of desirable objectives. PowerPoint presentation is a complete presentation of graphic package thereby giving the user everything he/she needs to provide for a professional looking presentation. It also offers word processing, outlining, drawing, graphing and presentation management tools – all designed to be easy to

use and learn (Topeka and Shawnee, 2013). PowerPoint presentation is also presentation software that allows the presenters or users to create designs, slides, notes and show coloured text and image with simple animation and sound. It is the software that is used to display information in the form of slide show (Anulobi and Uzoma, 2012). From the foregoing, one can assert that PowerPoint presentation is the professional presentation of data through software packages by the teachers in teaching-learning environment thereby making teaching-learning process interesting, catchy and more meaningful to the students who are the recipients. These software packages can be improved upon by teachers in a teaching-learning environment thereby posting them in the cloud through a means known as cloud-computing.

Cloud-computing is a way of providing computer applications to users without the need to purchase, install or support software on their local computer and/or services (Eteng, Upel, Idagu and Egbara, 2016). Cloud computing also refers to the sources and computer systems available on demand through the internet, which can provide a number of integrated computer services without being bound by local resources in order to make it easier for the users. From the foregoing, cloud-computing is a new trend in technology that depends on computing resources sharing instead of allowing or utilizing local servers as well as personal devices to operate and manipulate applications. According to Chuka-Okonkwo and Ali-Okoro (2018), cloud computing is a general term for delivery of posted services over the internet which relies on sharing resources rather than having local services to handle it alone. It is also the delivery of on-demand computing resources of everything. Through cloud-computing PowerPoint presentation, TVET students' achievement on education policy can be materialized when all practices, skills and techniques have been applied in industries for sustainable development. The recipients of the various skills and techniques needed to be applied in industries for sustainable development are the male and female TVET students.

Male and female TVET students are those students who undergo comprehensive and effective practical works in technical schools and/or programmes from their qualified teachers. The different venues where the practical trainings are held among others include technical colleges, vocational enterprise institutions (VEIs) and National Vocational Qualifications Framework (NVQF). They stay in these institutions and acquire the various skills and techniques through cloud-computing power-point presentation for sustainable development.

Statement of the Problem

Teachers in Nigeria are very conversant with the conventional method of teaching that makes students passive during instructional process in teaching-learning environment. This passive nature of students' learning as well as the utilization of conventional method of teaching by the teachers is highly contradictory to the recommended students-centered-learning approach by the federal ministry of education (FRN, 2014). Observations have shown that TVET students learn effectively and efficiently through the use of ICT in teaching-learning process. There is no way poor teaching method can bring forth good achievement in students of TVET. Succinctly put, appropriate teaching methods pave ways for good students' achievement in an examination. Learning of desired skills and upgrading of knowledge and competence in TVET curriculum related subjects bring about the utilization of effective instructional delivery through ICT-based techniques. It is on this premise, that cloud-computing PowerPoint presentation can be explored on student' achievement in TVET related subjects. Specifically, how can TVET students' achievement be transformed through cloud-computing PowerPoint presentation for sustainable development in industries?

Purpose of the Study

The major purpose of the study was to investigate students' achievement in education policy through cloud-computing PowerPoint presentation for sustainable development in industries. Specifically, the study sought to determine:

1. the mean scores of male and female TVET students' achievement exposed to cloud-computing powerpoint presentation for sustainable development at pre-test and post-test.
2. the mean scores of male and female TVET students' achievement not exposed to cloud-computing powerpoint presentation for sustainable development at pre-test and post-test.

Research Questions

The following research questions guided the study:

1. What are the mean scores of male and female TVET students' achievement at pre-test and post-test exposed to cloud-computing PowerPoint presentation for sustainable development?
2. What are the mean scores of male and female TVET students' achievement at pre-test and post-test not exposed to cloud-computing PowerPoint presentation for sustainable development?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. The mean scores of male and female TVET students' achievement at pre-test and post-test exposed to cloud-computing Power Point presentation for sustainable development do not differ significantly
2. The mean scores of male and female TVET students' achievement at pre-test and post-test not exposed to cloud-computing Power Point presentation for sustainable development do not differ significantly.

Methodology

Results

Table 1: Mean scores of TVET Students Exposed to Cloud-Computing Power Point Presentation in TVETSAT I & II

Group	N	Pre-test		Post-test		Mean Diff.	
		X ₁	SD	X ₂	SD	X ₂ - X ₁	
Male	45	6.81	3.00	19.67	3.54	12.86	
Female	55	5.78	3.01	19.57	3.51	13.79	

The results displayed in table 1 shows the differences in mean scores of male and

The study adopted a quasi-experimental research design involving two non-equivalent groups. The population of the study comprised of all the 2460 JSS 3 TVET students in the fifteen co-educational secondary schools in Orlu Local Government Area of Imo State. The sample of the study was one hundred JS 3 TVET students in two coeducational public secondary schools in Orlu Central Development Council. Purposive and simple random sampling techniques were used for the study. Purposive random sampling technique was used to sample Orlu Central Development Council and the two schools that were used. Simple random sampling technique was used to draw two intact classes in the two schools and assignment of classes to treatment conditions by balloting. The treatment group was exposed to cloud-computing PowerPoint presentation while the control group was not exposed to cloud-computing PowerPoint presentation; rather they were exposed to conventional method of teaching. The instruments for data collection were TVET Students' Achievement Tests I & II respectively (TVETSATI & II). TVETSAT I&II item questions consists of fifty (50) multiple choice questions but was reduced to thirty (30) multiple choice questions with four (4) option as advised by the validates. The validates consist of specialists from TVET education, Educational Technology and Measurement & Evaluation respectively, all from Alvan Ikoku Federal College of Education, Owerri. Cronbach Alpha was used to test the reliability of the instruments that resulted to 0.78 and 0.87 respectively. Mean and standard deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to analyze the hypotheses. The PowerPoint presentation being a free cloud site, was hosted on the cloud using www.datafilehost.com.

female TVET students at pre-test and post-test with 12.86 and 13.79 as mean differences respectively. Male TVET students achieved

better than female TVET students at pre-test and post-test respectively

Table 2: Mean Scores of Male and Female TVET Students' Achievement Exposed to Cloud Computing PowerPoint Presentation Sustainable Development do not differ Significantly at Pre-test and post-test

Source of Variation	DF	SSxSSy	SP	DF	SS ¹ _y	MS ¹ _y	F-ratio
Between	1	6577	1492.67	111145.60	1	11486.34	11486.34/1 MSB ¹ _y /MSW ¹ _y = 11486.34
Within	24	6523	1025.76	11024.70	48	11035.76	11035.76/48 = 229.91
Total	25	13100	2518.43	122170.30	49	22522.10	11486.34/229.91 = 49.96

Now, $F_{0.05}(1,48) = 2.45$; thus $F_{0.05}(1,48) > 49.96$

Table 2 shows that the absolute value of the computed F-ratio is greater than the table value, that is $F_{0.05}(1,48) = 2.45$; thus $F_{0.05}(1,48) > 49.96$; thus we accept the null hypothesis that the mean scores of male and

female TVET student' achievement exposed to cloud-computing PowerPoint presentation for sustainable development do not differ significantly at pre-test and post-test.

Table 3: Mean Scores of TVET Students not Exposed to Cloud-Computing Powerpoint Presentation in TVETSAT I&II

Group	N	Pre-test	Post-test	Mean Diff.
		X_1	X_2	$X_2 - X_1$
Male	45	4.45	10.15	5.70
Female	55	3.12	7.25	4.13

The results displayed in table 3 shows the differences in mean scores of male and female TVET students at pre-test and post-test with 5.70 and 4.13 as mean differences

respectively. Male TVET students achieved better than female TVET students at pre-test and post-test respectively.

Table 4: Mean Scores of Male and Female TVET Students' Achievement not Exposed to Cloud Computing Powerpoint Presentation for Sustainable Development do not differ Significantly at Pre-test and Post-test

Source of Variation	DF	SSxSSy	SP	DF	SS ¹ _y	MS ¹ _y	F-ratio
Between	1	40	200.2	117.6	1	250.6	250.6/1 MSB ¹ _y /MSW ¹ _y = 250.6
Within	24	2142	1244.6	450.7	48	1411.3	1411.3/48 = 29.40
Total	25	2182	1444.8	578.3	49	1661.9	250.6/29.40 = 8.52

Now, $F_{0.05}(1,48) = 2.45$; thus $F_{0.05}(1,48) > 49.96$

Table 2 shows that the absolute value of the computed F-ratio is greater than the table value, that is $F_{0.05}(1,48) = 2.45$; thus $F_{0.05}(1,48) > 8.52$; thus we accept the null hypothesis that the mean scores of male and

female TVET student' achievement not exposed to cloud-computing PowerPoint presentation for

sustainable development do not differ significantly at pre-test and post-test.

Discussion of Findings

The results displayed in table 1 & 3 indicated that TVET students taught using the cloud-computing Powerpoint presentation achieved better than those TVET students who were taught without cloud-computing PowerPoint presentation following education policy. This agrees with the hypotheses displayed in tables 2 & 4, that cloud-computing PowerPoint presentation transforms and enhances TVET students' achievement for sustainable development in industries as identified by Anulobi and Uzoma (2012) and Ofoegbu and Ngwu (2016).

Conclusion

Based on the findings made in this study, utilization of cloud-computing PowerPoint presentation significantly increases the performance and achievement of TVET students in education policy implementation for sustainable development in industries. TVET has an important role to play in technology diffusion through transfer of knowledge and skills. There is crucial understanding and anticipation of changes for designing responsive TVET systems and improved effective skills' policies. The central feature of TVET systems has been the flexibility to adapt the supply of skills to the rapidly, and changing radically, the needs in information technology sector for improved academic achievement of TVET students for sustainable development. The skills, requirements and qualifications for job entry are gradually rising globally. This calls for the need for more knowledgeable and skilled workforce as well as quick adaption to new emerging technologies in the education policy cycle for TVET students' achievement for sustainable development in industries and other sectors of human endeavour.

Recommendations

Based on the findings and conclusion made in this study, the following recommendations were made:

1. TVET teachers should ensure that cloud-computing PowerPoint

presentation is utilized effectively and efficiently in teaching-learning process, teaching – learning situations and teaching-learning environment for adequate instructional planning of lessons and other instructional activities ahead of time for sustainable development in industries

2. Government, school authorities and ministries of education in collaboration with non-governmental professional academic bodies should assist in the effective provision of computers with internet access and services in order to assist teachers and students to explore fervently in the cloud-computing PowerPoint presentation world and other online environmental websites for sustainable development in industries.
3. Professional academic bodies with ministries of education at all levels of education should organize trainings, workshops, seminars, orientation programmes and courses as well as conferences for teachers on the mode and methods of operation of ICT facilities, utilization of good software for presentation as well as designing learning processes; just like in the case of cloud-computing PowerPoint presentation for sustainable development of industries.
4. TVET curriculum planners and designers should utilize cloud-computing for planning and designing curriculum strictly for TVET in order to ensure the implementation of education policy, acquisition of new ideas, knowledge and skills for sustainable development in industries.

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