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**EFFECTS OF COMPUTER TUTORIAL AND DRILL ON SENIOR
SECONDARY SCHOOL STUDENTS' INTEREST IN ECONOMICS IN
PANKSHIN LOCAL GOVERNMENT AREA OF PLATEAU STATE**

JOSEPH C. ONUOHA PHD
DEPARTMENT OF SOCIAL SCIENCE EDUCATION
UNIVERSITY OF NIGERIA, NSUKKA
JOSEPH.ONUOHA@UNN.EDU.NG

NEHEMIAH WOKJI GOTIP
DEPARTMENT OF SOCIAL SCIENCE EDUCATION
FACULTY OF EDUCATION
UNIVERSITY OF ABUJA
08067035467
GWOKJI@GMAIL.COM

Abstract

This study determined the effects of Computer Tutorial and Drill on Senior Secondary Schools Students interest in Pankshin Local Government Area of Plateau State. Two research questions were posed and two hypotheses were formulated and tested. A quasi experimental design was used. The population of the study was 4, 121 Economics students from 21 private Senior Secondary Schools in Pankshin Local Government Area of Plateau State. The sample of the study consist of 144 senior secondary school two (SSII) Economics students from two private owned secondary schools drawn using simple random sampling technique from 21 private Senior Secondary Schools in Pankshin Local Government Area of Plateau State that offer Economics. United Tongfom Fellowship College Mile 8 Pankshin with 98 students, 53 male and 45 females were tagged the control group while Baptist High School (BHS) Bakwar-Longkat Pankshin with 46 students, 25 male and 21 females the experimental group. The

instrument used for data collection was the Economics Interest Inventory (EIT). The instrument was a 20 items Likert type scale designed to measure students' interest in Economics was developed and validated. Means and standard deviations were used to answer the research questions. Hypotheses were tested using t-test) at 0.05 level of significance. The result of the analysis indicated that Computer tutorial and drill had significant effects on students' interest in Economics, where students in the Computer tutorial and drill group achieved more. Thus, it is recommended among others, that principals of Senior Secondary Schools in Pankshin Local Government Area of Plateau State should organize seminars, conferences and workshops to sensitize Economics teachers on the use of Computer Tutorial and Drill as means for teaching Economics in Senior Secondary Schools and that Economics teachers should adopt the use of the Computer Tutorial and Drill to teach Economics.

Keywords: Computer, Drill, Economics, Effects, Interest, Tutorial

Introduction

Methods and instructional techniques of teaching Economics in schools have been changing and are greatly influenced by advancement in technology. Development in the field of education, gradually gave rise to the introduction of technology in the teaching and learning process which makes teaching and learning more effective, interesting and meaningful. The advancement in technology led to the invention of computer which today is one of the vital instructional aids used in the teaching and learning Economics. The effect of technological development in education has rendered conventional (traditional) methods of teaching inadequate for teaching and learning Economics while creating the need for new and sophisticated methods of teaching like Computer Tutorial and Drill. Research has shown that use of visual media via the use of computer for teaching helps the students to understand the subject better and also helps students to memorize the concept for longer time.

A computer is an electronic machine that accepts, stores, processes and outputs data result according to a set of given instructions (Ajileye, 2017). Computer Tutorial and Drill (CTD) is a computer – teaching method in which a sequence of organized problems or exercises with immediate feedback to student responses. Students answer a question and get instant feedback (Suwanmani, 2020).

Tutorial is a technique of transferring knowledge from a tutor (teacher) to learners through teaching and learning process which is more detailed than a lecture or a book. Tutorials try to teach by example and provide the information to learners so that they can carry out a given task. It is well personalized remedial teaching.

Tutorials usually have the following features which include a; demonstration of a given task by and large interpreting and displaying; presentation of a lesson using illustrations to demonstrate how a given task is carried out, frequently broken up into separate units. Tutorial has several ways of appraisal which include: a presentation of

the view of a lesson usually explaining and showing data or information on the screen of a computer; a demonstration of a process using examples to show how a workflow or process is completed, often broken up into discrete modules or sections like some methods of review that reinforces or tests understanding of the subject content in the related module or section and a transition to additional modules or sections that builds on the instructions already provided.

Drill and Practice is a computer instructional strategy; It "enhances the attainment of knowledge or skill through repetitive exercise." It refers to small tasks such as the memorization of concepts, or the practicing of mathematical and statistical tools. In a Computer Assisted Instruction Drill and Practice Design (CAIDPD) the computer display screen present learners with questions to respond to or a problem(s) to solve, the students responds, the computer informs the learners whether the answer is correct or incorrect, and if the learner is right he/she is given another problem to solve, but if the learner responds with an incorrect answer, he/she is corrected by the computer ((Mudasiru & Adedeji in Igweh 2012). Drill and Practice activities help learners master materials at their own pace. Drills are usually repetitive and are used as a reinforcement tool. It helps learners recall the concepts they have been taught previously (Callutheran, 2020)

Computer Tutorial and Drill is based on question and answer interactions which gives the learners appropriate feedback. Drill and practice may sometimes use games to increase motivation. Teachers can use computers to provide tutorial and drill in knowledge and basic skills to promote learning because tutorial and drill increases learner acquisition of basic knowledge and skills. With computer tutorial and drill learners are motivated to answer questions quickly and accurately with the inclusion of a games as well as colourful and animated graphics. Computer Tutorial and Drill provides feedback to learners, explains how to get the correct answer, and contains a management system to keep track of all learners' progress. Computer Tutorial and Drill provides a good stand for learners to work at their own pace with immediate feedback (Carlson & Schodt in Alasoluyi, 2015). Animated graphs, tables, figures and charts help the learners to better understand the change, movement, shift of the curves or the relationship between different concepts or sectors of the economy (Welford in Alasoluyi, 2015). Therefore, Computer Tutorial and Drill provides rich opportunities for learners to move beyond being "problem-set smart" to "thinking like economists". Computer Tutorial and Drill help sustain learners' interest in learning and consequently improves learners' achievement and retention of learning.

Interest refers to a feeling of curiosity or concern about something that makes the attention turn toward it. If students have or develop interest in the subject Economics, the subject will attract their attention; they will enjoy learning the subject and be involve in the teaching and learning of the subject which in turns enhances their knowledge in the subject matter. Interests are defined as relatively stable preferences

Corresponding author: Nehemiah Gotip Wokji

that are focused on objects, activities, or experiences (Hidi in Yakubu, 2016). Greater congruence between one's interests and one's environment leads to greater satisfaction, performance, and persistence in activities (Yakubu, 2016).

Academic interest in one domain is correlated with achievement in that domain. Interest is a commonly used expression in day-to-day life, it has a great influence on human behavior. Interest a persisting tendency to pay attention and enjoy some activities. Interest has been viewed as emotionally oriented behavioural trait which determines a student's vim and vigour in tackling educational programmes or other activities (Chukwu, 2002). Interest involves a particular relation between a person and the environment and is sustained through interaction (Barron, in Yakubu, 2016). The potential for interest is in the genetic makeup of an individual while the content and the environment determine the direction of interest development. Interest guides students' attention, facilitates learning in different content areas for students of all ages, and develops through experience. Computer tutorial and drill as a strategy or teaching method is one of the factors that affect interest in learning. Dupigny-Giroux (2010) noted that educators can stimulate students' interest and begin their process of lifelong learning.

Economics as a subject was introduced into the Nigerian Secondary School curriculum in late 1960s. Specifically the acceptability of the introduction of the subject at Great Britain necessitated its introduction in Nigerian Secondary School curriculum in 1966 and was first taken in West African School Certificate Examination as a school subject in Nigeria in 1967 (Adu in Ede, Oleabhie & Modebelu, 2016). Economics is "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses".

The Federal Republic of Nigeria (FRN, 2012) stated that in National Policy on Education that Economics is a non-vocational elective Social Science subject to be taught in Senior Secondary Schools in the country to provide trained manpower who shall be well-equipped with critical knowledge, skills and abilities to analyze economic problems and provide solutions for solving personal and societal economic problems and policies. But the way topics in Economics are taught in Nigeria's Senior Secondary Schools appears to lack appropriate instructional procedure that creates interactive style. The implication is that the instructions are not logically sequenced to fit the ability of the learners as teachers could provide teacher-led practice to engage in reciprocal teaching (Berryman in Igweh, 2012). The methods are based on behavioral learning theory and that the emphasize knowledge transmission from teachers to passive students and that this encourage rote memorization. When students are passive in Economics class, they become apathetic and are repulsive to learning. The consequence is that students tend to lose interest in Economics (Campbell; Roegge, Wentling & Bragg in Igweh, 2012).

The increasing effects of globalization and the rapid rate of technological advancements as noted by United Nations Educational Scientific and Cultural

Organization (UNESCO) that education in the 21st century should be geared towards lifelong learning. This requires that all schools should in addition to academic knowledge; inculcate essential basic skills as learning to learn, creativity, problem solving skills, collaborative skills and higher order thinking skills in order to increase students' flexibility and job mobility which will make them adaptable to the present and envisaged future changes (Hallak & Poisson; Paris in Igweh 2012). In this context a shift from teacher-centered method of teaching Economics is needed to enable students acquire the new 21st century knowledge, skills and abilities. In order to attain to students centered method of teaching Economics, Computer Tutorial and Drill. It is against this background the present research examined the effects of Computer Tutorial and Drill on Senior Secondary School students Interest in Economics in Pankshin Local Government Area of Plateau State.

Statement of the Problem

Interest and learning outcome of students in Economics mainly depends on teaching methodology. Philosophical or old traditional methods of teaching such as discussion, question and answer, lecture, demonstration, field trip, debate and play-way adopted for teaching Economics in senior secondary school by Economics teachers are teacher centered instead of students centered (Sonola, 2007). These methods of teaching Economics discouraged creativity and disallowed students from thinking beyond what is presented to them by their teachers. It makes the class dull and the lesson uninteresting. It limits students' active participation in the lesson. The teacher does much of the talking; it limits the reality or concreteness of the lesson because instructional materials are rarely used. The students are reduced to passive learners and as a result become apathetic and repulsive to learning.

The researcher, an Economics teacher observed from personal experience that Senior Secondary Schools in Plateau State were identified by the lack of application of effective methodology which is one of the major reasons why students lose interest in Economics. The researcher also observed that traditional methods used in teaching Economics do not adequately equip Economics teachers with contemporary students' intelligences and their vast learning abilities, Hence, the Sustainable Development Goal of quality education in the 21st century cannot be achieved by traditional teaching methods use by the teachers of senior secondary school to teach Economics. In view of this, the need to use computer technology (Computer Tutorial and Drill) to provide student centered and interactive knowledge environment.

Purpose of the Study

The purpose of the study is to examine the effects of Computer Tutorial and Drill on Senior Secondary Schools Students interest in Pankshin Local Government Area of Plateau State. Specifically, the study sought to;

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- i. determine the difference between the mean interest scores of students taught Economics with Computer Tutorial and Drill and those taught using the conventional teaching method.
- ii. find out the difference between the mean the interest scores of male and female students taught Economics using Computer Tutorial and Drill.

Research Questions

The following research questions were formulated and guided the study:

- i. What is the difference between the mean interest scores of students taught Economics with Computer Tutorial and Drill and those taught using the conventional teaching method?
- ii. What is the difference between the mean interest score of male and female students taught Economics using Computer Tutorial and Drill?

Hypotheses

The following hypotheses were used as guide for study.

Ho₁: There is no significant difference between the mean interest score of students taught Economics with Computer Tutorial and Drill and those taught using conventional teaching method.

Ho₂: There is no significant difference between the mean interest score of male and female students taught Economics using Computer Tutorial and Drill.

Methodology

The study was conducted using quasi-experimental design. Specifically, the pre - test post – test non-equivalent control group design was used. This implies that intact classes (non-randomized groups) were used in the study. According to Ofo in Igweh (2012) quasi experimental research design permits the use of intact classes. This design was adopted because it was not possible for the researcher to randomly sample the subjects and assign them to groups without disrupting the academic programme and the timetable of the secondary schools involved in the study. Hence, the design was considered quite suitable for conducting this study.

The population of the study was 4, 121 Economics students from 21 private Senior Secondary Schools in Pankshin Local Government Area of Plateau State. This comprised 2012 male students and 2109 female students (Pankshin Directorate Office of Education, 2020).

The sample size of the study was 144 Economics Students'. Two (2) private Senior Secondary Schools offering Economics at Senior School Certificate Examination (SSCE) level; Baptist High School (BHS) Bakwar-Longkat and United Tongfom Fellowship College (UTFC) Mile 8, Pankshin were randomly selected using random sampling technique from the area of the study. In each school selected intact class of Senior Secondary Schools II students offering Economics were used and these two schools were randomly assigned into experimental and control groups using "odd and even number method where the odd number school United Tongfom Fellowship College Mile 8, Pankshin with 98 students, 53 male and 45 females was tagged the

control group while the even number school Baptist High School (BHS) Bakwar-Longkat, Pankshin 46 students, 25 male and 21 females the experimental group.

The instrument used for data collection was the Economics Interest Inventory (EII). The instrument was a 20 items Likert type scale to measure students' interest in Economics. The instrument was a 4 – point Likert scale: Strongly Agree (SA) 4 points, Agree (A) 3 points, Disagree (D) 2 points and Strongly Disagree (SD) 1 point. The Economics Interest Inventory was face and content validated by 3 experts, two from Senior Economics Teachers in Trinity Mission College Pankshin and one from measurement and evaluation, Faculty of Education, University of Abuja. This was done to ensure appropriateness of the language used and the content to measure accurately what it intends to measure. All corrections and recommendations were noted and implemented to standardize the instrument.

To determine the reliability of the instrument, a trail test was conducted at Government Secondary School (GSS) Pankshin, Plateau State which is outside the population of the study to ensure the instrument was consistent. A test retest method was employed within two weeks interval in line with Jibrin, Zayum & Mohammed (2017) recommendations. The test re-test was correlated using Pearson Product Moment Correlation Coefficient (PPMC) statistics and the Kuder Richardson 20 (K-R20) approach. The test retest reliability coefficient was found to be 0.81 using Pearson Product Moment Correlation Coefficient while the use of KR20 in assessing the test of internal consistency yielded a reliability index of 0.84. According to Jibrin, et al (2017), a reliability coefficient of at least 0.55 is acceptable for the study of this type. Hence, this shows that the test was reliable for data collection.

Computer Tutorial and Drill Instructional Package (CTDIP) developed by the researcher was used for the experimental group, while control group use conventional teaching methods to teach the theory of demand and supply for the period of eight weeks. Economics instructional package was used for teaching the experimental group while conventional lesson plan and chalk-talk approach were used for the control group. Economics instructional package lesson plan was identical to the conventional lesson plan in terms of content to be taught, instructional objectives and method of evaluation. The only difference between them was in the instructional activities (teacher's performance and student's performance activities). This was where the Economics instructional package employed practical illustrations and activities during the instruction whereas the conventional approach proceeded normally without employing the use of the Economics instructional package in teaching during the class instructions.

Computer Tutorial and Drill (CTD) in the form of a form of Computer Assisted Instruction (CAI) made use of a computer to provide tests, facilitate and present instruction in the form of tutorials and drill and sometimes simulations and instructional games. Computer tutorials in the form of a computer screen recording, a

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written manuscript display on a computer screen where the researcher give detailed instructions on how to differentiate between demand and supply; individual demand and market demand; individual supply and market supply. The computer screen also present students with questions to respond to or a problem(s) to solve, the students responded.

The test scores generated from the test were collected using Economics Interest Test (EIT) and were scored over one hundred (100). Two marks were awarded to each correct answer to the Economics Interest Test (EIT).

The data collected for this study were analysed using various statistical methods among which were summary statistics of means and standard deviations (descriptive statistics) used to answer the research questions. The t-test was used to test the two hypotheses at 0.05 level of significance.

Research Question 1: What is the difference between the mean interest scores of students taught Economics with computer tutorial and drill and those taught using the conventional teaching methods?

Table 1: Mean Interest Scores of Experimental and Control Group in Economics

Group	N	X	SD	SE	Mean difference
Computer Tutorial and Drill	46	67.78	7.33	1.08	
Conventional Teaching Method	98	55.55	10.29	1.04	12.23

Data in Table 1 shows that the students taught with computer tutorial and drill have more interest in learning Economics than those taught using the conventional teaching methods as indicated by the mean interest scores of 67.78(computer tutorial and drill), 55.55(conventional teaching methods) with the mean difference scores of 12.23.

Research Question 2: What is the difference between the mean interest scores of male and female students taught Economics using Computer Tutorial and Drill?

Table 2: Mean Interest Scores of Male and Female Students' taught Economics using Computer Tutorial and Drill.

Gender	N	X	SD	SE	Mean difference
Male	25	67.08	8.19	1.64	0.08
Female	21	67.00	7.07	1.54	

The mean score of the male students (67.08) is almost the same with that of the female (67.00) with only 0.08 as the observed variability in the mean interest score. This indicates that the mean interest score of male and female students' taught Economics using Computer Tutorial and Drill was practically the same. This means that the mean interest scores of male and female students taught Economics using Computer Tutorial and Drill was not seriously influenced by students' gender. In other words, the male and female students did not perform differently in the mean interest scores when exposed to the use of the Computer Tutorial and Drill method of teaching Economics

Hypotheses

All hypotheses were tested at 0.05 level of significance.

H₀₁: There is no significant difference between the mean academic interest scores of students taught Economics with Computer Tutorial and Drill and those taught using conventional teaching methods.

Table 3: t-test Analysis showing mean difference between Interest Scores of Experimental and Control Group.

Responses	N	X	SD	df	t-value	Sig.(P)	Decision
Experimental	46	67.78	7.33	143	58.08	.000	Rejected
Control	98	55.55	10.29				

The data presented in table 3 shows t-value for test of significant difference in the mean interest score of students' taught Economics with Tutorial and Drill and those taught using conventional teaching methods. A significant value of .000 (less than the 0.05 level of significance) was recorded. This shows that there was a significant difference. The null hypothesis was therefore rejected in favour of the alternative hypothesis. This implies that there was a significant difference in the mean interest

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scores of students taught Economics with Computer Tutorial and Drill and those taught using conventional teaching methods.

H₀₂: There is no significant difference between the mean interest scores of male and female students taught Economics using Computer Tutorial and Drill.

Table 4: t-test Analysis showing mean difference between Academic Achievement Scores of Male and Female Students taught Economics using Computer Tutorial and Drill.

Gender	N	X	SD	df	t-value	Sig.(P)	Decision
Male	25	67.08	8.19	44	41.54	.090	Not Rejected
Female	21	67.00	7.07				

***=insignificant at 0.05 level (p>0.05)**

The analysis on table 4 was carried out to determine whether the mean interest scores of male students taught Economics using Computer Tutorial and Drill differed significantly from the female students' taught Economics using Computer Tutorial and Drill. An insignificant value of .090 (greater than the 0.05 level of significance) was recorded. This shows that there was no significant difference. The null hypothesis was retained since there is not sufficient evidence to reject the null hypothesis. This implies that the mean interest score of students taught Economics using Computer Tutorial and Drill does not differ with regards to gender of the students.

Discussion

The implication of this finding is that computer tutorial and drill is more effective than conventional teaching method in enhancing students' interest in Economics. This finding is in line with that of Nwanne & Agommuoh (2017) that Computer Assistant Instruction had significant effects on students' interest in physics. This finding is similar to the finding of Singh (2005) who found that there was a significant difference in interest in mathematics of experimental group taught with computer assisted Instruction and control group taught with conventional teaching methods in favour of the experimental group. The difference in the interest of students in Economics is similar with the studies carried out in other fields of learning on students' interest by Meera (2000). Kadiravan (2009) in his study found that the

adoption of any treatment as an instructional framework greatly improves students' academic interest. The result could be explained by the fact that teachers' adoption of computer appeal to the students' various intelligence address their diverse learning styles and consequently increase their motivation to learning Economics.

The finding indicates that a computer tutorial and drill is more effective in stimulating students' interest in Economics than the conventional teaching methods. Active engagement of students and frequent interaction through the use of computers make the classroom instruction student-centred, and focused on the cognitive development and construction of knowledge in the students' Nwanne & Agommuoh (2017). They also stated that human/computer interface has a direct relationship to students' cognitive ability. Hence, the obvious implication of the use of computer in the classroom is to facilitate students' interaction with the learning environment so as to sustain students' direct interest which increases the strength of involvement of the learners and which does not allow the learners to be distracted by trivial extraneous events in the perceptual environment.

Further findings revealed that the effect of treatment on gender was not found to be significant. This implies that the effectiveness of treatments on students' interest in Economics does not depend on gender. These findings on gender agree with the earlier findings of Mudasiru & Adedeji (2010) in their study found out that gender had no influence on the performance of students whether they were taught with Computer Aided Instruction in individualized or cooperative setting. Spence (2004) in his study found out that the use of Computer Assisted Instruction enhanced the performance of both male and female students.

Conclusion

Application of computer tutorial and drill technology to teach Economics engage students' in their leaning tasks and improve students' in Economics. This study has found out that computer tutorial and drill improved students' interest in Economics than the conventional teaching methods. The study revealed that computer tutorial and drill is a viable alternative to the conventional lecture teaching methods in teaching Economics. Moreover, computer tutorial and drill provides powerful tools to support the shift to student-centred learning and is capable of creating a more interactive and engaging learning environment for teachers and learners.

Recommendations

Based on the findings of this study, the following recommendations were made;

- i. Principals of Senior Secondary Schools in Pankshin Local Government Area of Plateau State should organize seminars, conferences and workshops to sensitize Economics teachers on the use of Computer Tutorial and Drill as means for teaching Economics in Senior Secondary Schools.

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- ii. Economics teachers should adopt the use of the Computer Tutorial and Drill to teach Economics.

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