

The Usefulness of Computer Assisted Instructions to the Students' Academic Achievement in Radio Television and Electronic Works (Rtview) In Technical Colleges in Lagos State

Professor K. R. E. Okoye, Olubunmi Margaret OBE,
Nnaemeka Martin AGBO (PhD), Satilehin John AGBEJOYE
(PhD)

Department of Technology and Vocational Education, Nnamdi Azikiwe University, Awka

Department of Technology and Vocational Education, Nnamdi Azikiwe University, Awka

Department of Technology and Vocational Education, Nnamdi Azikiwe University, Awka

Department of Electrical/ Electronics Technology Education, Federal College of Education (Technical) Akoka, Yaba, Lagos. Nigeria

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ABSTRACT

The study investigated the usefulness of Computer-Assisted Instruction to the students' academic achievement in Radio Television and Electronic Works in Technical Colleges in Lagos State. Three research questions guided the study. The study adopted descriptive survey research design. The instrument used for data collection are Radio Television Electronic Works Assessment Sheet (RTVEWAS) developed for the study whose reliability was obtained using Cronbach Alpha Coefficient whose coefficient value was 0.957. And the sample of the study comprises of one hundred and eleven (111) students which were drawn from three Technical Colleges as follows: Government Technical College (GTC) Agidingbi- thirty (33), Government Technical College (GTC) Adosoba- thirty- five (35) and Federal Science and Technical College (FSTC), Yaba- forty- three (43) students. The data collected was analysed using mean and standard deviation in order to answer the research questions. The research findings revealed that the academic achievement of the students were enhanced by using computer tutorial, drill and practice method and demonstration method in RTVEW in Technical colleges in Lagos State. It was recommended that the students should be encouraged to learn through the use of computer tutorial, drill and practice for better academic

achievement thereby enhancing the learning of the various concepts in the trade.

Key words: Technical Colleges, RTVEW, Computer tutorial, Drill and practice, Achievement

I. BACKGROUND OF THE STUDY

Technical colleges are the institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the world of work. According to Federal Republic of Nigeria (FRN, 2013), Technical college is a segment of Technical and Vocational Education (TVE) designed to produce craftsmen at the secondary school level and master craftsmen at the advanced craft. The goals of Technical colleges are to provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technician levels; provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and give training and impart the necessary skill to individual who shall be self-reliant economically (FRN, 2013). Technical colleges are, therefore, schools or training institutions where trade or trades are taught including Radio Television and Electronic Works as a trade subject.

Radio Television and Electronics Works (RTVEW) is one of the trade whose syllabus have

been implemented with a wide variety of teaching methods, which fit different roles in the teaching of its practical aspects. Some of these methods of teaching ought to be phased out or complemented with innovative instructional methods such as demonstration, lecture method, discussion method and host of others that needed complement of computer assisted instruction in order to achieve the expected goal. In this instance, the usage of computers for teaching and learning in the classrooms has become inevitable and the ratio of the usage of Computer Assisted Instruction (CAI) has been on the increase.

One of the reason for continual persistent poor performance of technical colleges' students in the final NABTEB examination has been poor teaching arising from the use of traditional teaching methods such as lecture and demonstration to implement the curriculum (Owoso, 2012).

Traditional teaching methods such as lecture and demonstration methods are teacher-centered and placed emphasis on knowledge transmission from the teacher to passive students and encourage rote learning. It was this that give rise to the usage of Computer Assisted Instruction (CAI) in the forms of tutorial, drill and practice.

Computer tutorial model contains an organized body of knowledge or one or more pathways through the knowledge, specific learning objectives, and built-in tests of the learner's performance. CAI tutorial have advantages of questions, adjusting content presentation order according to the learner's responses to the questions, dynamism of presentation and record keeping. CAI tutorial gives immediate feedback, create proficiency in computer usage, and gives students a sense of control over learning, calls for using sight, hearing and touch (Kaur, 2013). Drill and practice application are designed to help learners master already introduced skill or knowledge through repetitive work. For instance, the computer could present an exercise to which the learner is required to type in a response. Drill and practice involve a sequence of tasks, exercises, or words repeated over and over until they can be performed faultlessly. Computer tutorial model, drill and practice are interactive and help students remember the concepts they have been taught previously (Lesteri, 2015). And they can be of help in determining the students' achievement in RTVEW.

Achievement is the total outcome of the learner's performance and success. Academic achievement is a measure of cognitive skill possessed by a student. Igbo and Ihejiene (2014)

view academic achievement as the successful result of interaction between a teacher and a student. It is designed to measure an individual's level of skill accomplishment or knowledge in a specific area. Academic achievement represents the outcome that indicates the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in schools. Eze, Ezenwa for and Molokwu (2015) posited that academic achievement is used to measure student's success in educational institutions or how well students meet standard set out by examining bodies or the institution.

Statement of the Problem

Today, educators are facing the challenge of instructional paradigm shift in public Technical colleges in Nigeria. Parents and the general public have criticized the public technical colleges and classroom environments, that they are not ready to meet learner's needs and the demands of the industrial society in this 21st century information society. Some complained about current educational practices, raising questions about the inability of Nigerian students to perform creative thinking as well as problem solving tasks when compared to other advanced countries. In the same vein, the influence of technology has rendered traditional skills inadequate for the world of work. Technical college graduates upon graduation are supposed to have three options. These options according to the National Policy on Education (FRN, 2004) is to either secure employment in the industries, pursue further education in advance craft in a higher technical institutions or set up their own business and become self-employed. Unfortunately, this seems not to be yielding the desired result in Radio Television and Electronic work trade in Technical colleges. This demands that teachers in Technical colleges would adopt instructional methods that would improve the academic achievement of students in Radio Television and Electronic work technology in Technical colleges. There is urgent need to bridge the existing gap between the teaching methods used at school and the ways students are getting information outside school through contact with computers, iPad, internet, face book, websites learning, cell phones and other technological devices. Therefore, could this problem of persistent poor academic achievement among Radio Television and Electronic work students in Technical colleges be solved by the use of computer Assisted Instruction (CAI)?

Purpose of the Study

Specifically, the study determines:

1. The usefulness of computer tutorial method to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State
2. The usefulness of computer drill and practice to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State
3. The role of demonstration method on the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State

Research Questions

1. What are the usefulness of computer tutorial method to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?
2. What are the usefulness of computer drill and practice to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?
3. What are the role of demonstration method on the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?

II. METHODOLOGY

The descriptive survey design was adopted for the study. The targeted population of the study

comprised of 111 respondents offering Radio Television and Electronic works trade from three Technical colleges in Lagos State, precisely Government Technical College (GTC) Adosoba- 35 students; Federal Science and Technical College (FSTC), Yaba- 43 students and Government Technical College (GTC), Agidingbi- 33 students, which was purposively selected from these schools. There was no sampling of subjects as the entire population from the three Technical colleges offering the trade was involved in the study. Three purpose of the study and three research questions guided the study. The instrument used for data collection was Radio Television Electronic Works Assessment Sheet (RTVEWAS) developed for the study. The instrument was validated by three experts in the school of Technical Education. The reliability of the instrument was obtained from Cronbach’s Alpha whose coefficient value was 0.957. The data collected was analysed using mean and standard deviation in order to answer the research questions.

III. RESULTS PRESENTATION

Research Question One: What are the usefulness of computer tutorial method to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?

Data for answering the research question one are presented below

Table 1

Showing usefulness of computer tutorial method to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State

S/N	Computer tutorial method on academic performance of students in RTVEW	Mean	SD	Remark
1.	Data on computerized tutorial can enhance better academic performance of students	4.24	0.965	Required
2.	Systems substantiated model of learning for students’ academic performance in RTVEW	3.60	0.993	Required
3.	Computer tutor provides precise information for improve academic performance	4.08	0.974	Required
4.	Model formulation should be preceded by protocol analysis for better academic performance	3.93	1.024	Required
5.	Sufficient information provided through the computer tutorial can enhance better academic performance	4.07	0.979	Required
6.	CAI, the expert knowledge is contained in blocks or chunks called "frames." The system presents frames for better academic performance	3.66	1.187	Required
7.	Language uses java programming language to enhance better academic performance in RTVEW	3.29	1.358	Required
8.	The computer tutorial language are simplify for better academic performance	4.07	1.015	Required

9.	Finally create artificial intelligence data based to ease the academic performance of the students	4.00	1.070	Required
10.	Develop desktop application process for the tutorial are to make academic performance better in RTVEW	4.00	0.991	Required
11.	Determined the student's responses to previous frames presentation order for proper monitoring of the academic performance of the students	4.05	1.013	Required
12.	If the student answers a set of test questions correctly, the system presents the next frame in a sequence for easy academic performance of the students.	4.28	0.833	Required
13.	If the students answer incorrectly, alternative frames are presented to determine their academic performance.	3.78	1.209	Required
14.	Expert dimension is that the representation of the subject matter is not merely a set of static frames, but is a dynamic model of the domain knowledge and a set of rules by which the system can "reason to predict academic performance."	3.64	1.158	Required
15.	System can generate multiple correct sets of solutions rather than a single expert solution to enhance academic performance	3.91	1.116	Required
16.	Student modeling remains at the core of information technology system (ITS) research to respond to the individual student learning style to deliver customized instruction	4.07	1.006	Required
17.	Model learner and the teacher-learner interaction promote academic performance	4.13	1.045	Required
18.	Demonstrating that this is still a fruitful and active area of research to improve academic performance.	4.18	0.907	Required
19.	Asking the student to solve specific problems -- or implicit -- tracking the students navigation other interactions and comparing learner responses to determine their academic performance	3.86	1.140	Required
20.	They must use data to create a representation of the students' knowledge and learning process for better academic performance.	3.85	0.983	Required
21.	The system uses the model to predict what type of response the student will make in subsequent situations, compares that prediction to the students' actual response and uses that information to refine the model of the student for academic placement.	3.77	1.136	Required
22.	The students' model must account for the data by performing some diagnosis, both the state of the students' knowledge and regarding selecting optimal pedagogical strategies for presenting subsequent domain information to the student for academic improvement of the students.	3.68	1.105	Required
23.	Students' learning style to deliver customized instruction for better academic performance in RTVEW	4.05	1.039	Required
24.	Provide learners and the system-learner interaction for better academic performance in RTVEW	3.96	1.078	Required
25.	Student modeling remains at the core of ITS research to respond to the individual student learning style to deliver customized instruction for better academic performance in RTVEW.	3.86	1.031	Required
26.	Model the learner and the tutor-learner interaction for improvement of academic performance in RTVEW	3.97	1.004	Required
27.	Certify students at end of instruction for better academic performance in RTVEW	4.19	1.083	Required

28.	learning is viewed as successive transitions between knowledge states and teaching accordingly better academic improvement	4.09	0.987	Required
29.	Facilitate the student's' traversal of the space of knowledge states to obtainable academic improvement of the students.	3.86	1.040	Required
30.	The ITS must model the current student knowledge and support the transition to a new knowledge state in order to improve academic performance of the students.	3.79	1.169	Required
31.	Diagnostic process supports the "delivery" aspect of teaching through computer tutorial thereby enhancing academic performance in RTVEW.	3.89	1.021	Required
32.	Generally, ITS have concentrated on the modeling and manipulation of the content or domain, with little attention being paid to didactics thereby enhancing academic performance in RTVEW.	3.73	1.070	Required
33.	Modify its teaching strategy by adjusting the production rules, the rules, and their modifications are integrated with the specification of the domain to boost the students' academic performance.	3.78	1.082	Required
34.	Suggests future ITS research to predict students' academic performance in RTVEW.	3.71	1.201	Required
35.	Plans of action to monitor and moderate students' academic performance in RTVEW:	4.23	0.921	Required
36.	Computer tutorial strategic contexts are structured to improve the students' academic performance in RTVEW	4.05	0.961	Required
37.	Discourse model to resolve ambiguities in the students' responses for better academic performance.	3.86	1.004	Required
38.	Knowledge presentation. Such systems place all the responsibility for learning upon the learner, who must navigate through the knowledge using the interface provided for academic improvement.	3.59	1.186	Required
39.	Discourse model to resolve ambiguities in the student responses for better academic performance in RTVEW.	3.81	1.202	Required
40.	Computer tutorial model helps to resolve ambiguities in the students' perception of concepts thereby enhancing academic performance.	3.91	1.066	Required
41.	Learner navigates through the knowledge using the interface provided in the computer tutorial easily.	3.91	1.058	Required
42.	The interface allows communication between the student and the other aspects of the ITS, the human factors and software design disciplines is applicable, to pedagogical implications for academic development	4.04	0.981	Required
43.	Learning is viewed as successive transitions between knowledge states, the purpose of teaching is to facilitate student traverse of the space of knowledge states for better academic performance in RTVEW."	4.01	0.939	Required
44.	Diagnostic and didactic support the delivery aspect of teaching in RTVEW for better academic performance in RTVEW	3.82	1.122	Required
45.	The ITS must model the current student knowledge and support the transition to a new knowledge state, thereby improving academic performance of the students.	4.15	1.072	Required

Table 1 indicates that the students need all the forty- five (45) items on the usefulness of computer tutorial method to the students' academic achievement in Radio Television and Electronic

works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point.

Research Question Two: What are the usefulness of computer drill and practice to the

students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?

Data for answering the research question one are presented below

Table 2
 Showing usefulness of computer drill and practice method to the students’ academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State

S/N	Usage of computer drill and practice on academic achievement	Mean	SD	Remark
46	Ability to identify the tools/require to carry out repairs on radio will enhance academic performance of the students	4.55	0.922	Required
47	Ability to use the tools/to carry out such repairs revealed level of academic performance of the students	4.23	1.061	Required
48	Ability to identify the components/parts of the transistor radio determine academic performance of the students	4.30	0.880	Required
49	Board removal and installation determine the level of the students’ academic performance in RTVEW	3.86	0.939	Required
50	Detecting faults in the connectors determine the level of acquired skills	4.18	0.965	Required
51	Removal and replacement of Integrated circuits (ICs) reveal acquired skill in RTVEW by the students	4.26	0.891	Required
52	Proper removal and installation of speaker in the radio shows level acquired skill by the students	4.32	0.865	Required
53	Power button repairs depend on the acquired skill through academic performance of the students in RTVEW	4.13	1.010	Required
54	Decent soldering of capacitor depends on acquired skills in RTVEW	4.20	0.893	Required
55	Removal and installation of transistor depends of academic performance of the students in RTVEW	4.08	1.129	Required
56	Repairing faults in board demands acquired skills without destroying it	4.40	0.887	Required
57	Removal and replacement of transformer in the power supply unit depends on acquired skills through the academic performance of the students	4.21	1.080	Required
58	Assembling of the radio component parts depend on acquired skills in RTVEW	4.10	0.990	Required
59	Removal and installation of power button depends on the acquired skills in RTVEW	3.96	1.095	Required
60	Removal and replacement of tuning unit depends on the acquired skill through the academic performance in RTVEW	4.19	1.031	Required
61	Repair of faults in the power button depends on the acquired skills in RTVEW	4.20	0.932	Required
62	Fixing AC adapter problems reveal level of academic performance in RTVEW	4.21	1.063	Required
63	Fixing problems in the amplifier unit which depends on the acquired skill in RTVEW	4.22	0.938	Required
66	Fixing faults in the rectification unit which depends on the acquired skills in RTVEW	4.17	0.980	Required
67	Removal and replacement of faulty power unit demands acquired skills in RTVEW through the academic performance	4.32	0.926	Required

68	Checking for the continuity test for the connecting cable depends on acquired skills in RTVEW	4.13	1.045	Required
69	Disassembling of rectifier circuit of the system depends on the acquired skill in RTVEW	4.05	1.021	Required
70	Fixing faults in the tuning assembly which demands acquired skill in RTVEW	4.06	0.993	Required
71	Fixing power board supply depends on the acquired skill for better performance	4.05	1.082	Required
72	Diagnosing of faults in the overall performance of the radio depend on acquired skills in RTVEW	4.29	1.082	Required

Table 2 indicates that the students need all the twenty-five (25) items on the usefulness of computer drill and practice method to the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point.

Research Question Three: What are the role of demonstration method on the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State?

Data for answering the research question one are presented below

Table 3
 Showing the role of demonstration method on the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State

S/N	Role of demonstration method on academic performance	Mean	SD	Remark
73	Ability to identify the tools/equipment required to carry out repairs on transistor radio for academic performance in RTVEW	4.59	0.718	Required
74	Ability to use the tools/equipment required to carry out such repairs on transistor radio	4.40	0.897	Required
75	Ability to identify the components/parts of transistor radio to enhance academic performance	4.24	0.886	Required
76	Ability to remove and replace the main board will determine learning of the skill	4.09	0.977	Required
77	Ability to fix faults relating to no sound distribution in the radio system will encourage academic learning.	4.12	1.059	Required
78	Ability to disassemble radio system in order to evaluate learning of the skills is essential in RTVEW	3.92	1.153	Required
79	Fixing the radio problems of no supply can contribute to learning of the skill	3.93	1.263	Required
80	Removal and installation of transformer in order to determine students' level of learning	4.05	1.069	Required
81	Stereo speaker removal and replacement can enhance academic learning of the students	4.13	0.955	Required
82	Fixing faults in power board can contribute to skill acquisition in RTVEW	4.24	0.927	Required
83	Removal and replacement of power cable will enhance learning of skills	4.19	1.014	Required
84	Fixing no sound distribution will help in trouble shooting for solution	4.08	1.137	Required
85	Dissembling of the transistor radio into different component parts will aid learning	4.06	1.021	Required
86	Resolving speaker sound problems will reveal skill acquired	4.35	0.931	Required
87	Repair of AV receiver reveal acquired skills for academic improvement	4.08	0.992	Required
88	Fixing sticking door problems will enhance academic performance of the students	3.79	1.192	Required

89	Fixing the different compartments together for proper coordination determine academic performance of the students	4.19	0.920	Required
90	Fixing faults with the tuning of the radio reveal learnt skill	4.19	0.900	Required
91	Power board removal and replacement	4.23	0.979	Required
92	Assembling of the different parts determine acquire skills in RTVEW	4.27	0.852	Required
93	Fixing faults in the reactivity section shows acquire skill for better academic performance	4.18	1.029	Required
94	Removing and replacing ICs revealed learnt skill for academic evaluation	4.18	1.055	Required
95	Repair of hum sound and noise in radio reveal that acquired skill have been learnt	4.20	1.016	Required
96	Fixing faults in AC power supply terminal/circuit shows the level of acquire skills as a result of improved academic performance	4.31	0.902	Required

Table 3 indicates that the students need all the twenty- four (24) items on the role of demonstration method on the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point.

IV. DISCUSSION OF THE FINDINGS

The results revealed that the students need all the forty- five (45) items on the usefulness of computer tutorial method to the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point. This study corroborated Miandoab, Mostafaei and Ghaderi (2012) in Galle (2021) who reported that, there was statistically significant difference between the mean achievement gain of students taught Economics using computer-assisted instructional approach (Course-lab 2.4 eLearning Package) and those students taught with conventional instructional method (conventional instructional tools).

Additionally, the study revealed that the students need all the twenty- five (25) items on the usefulness of computer drill and practice method to the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point. The result of this study is in agreement with the findings of Ada, Anyachebelu and Chinyelu (2012); Madjoub (2013) who found and reported that there was significant difference in the performance of students taught by CAI and lecture method.

Conclusively, it was discovered that the students need all the twenty- four (24) items on the

role of demonstration method on the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State are required. The mean scores for each item were above 3.00 cut off point. The results of this study is in accordance with (Onyeka & Okoye, 2023) that the students who were taught with the demonstration teaching method achieved higher, and that there was no significant difference in students' achievement scores based on gender. Giridharan and Raju (2016) in their research work revealed that the demonstration strategy was found to be significantly better than the lecture strategy with regard to students' academic achievement.

V. CONCLUSION

Conclusively, the study attempted to find out how the usefulness of computer assisted instruction to the students' academic achievement in Radio Television and Electronic Works (RTVEW) in Technical colleges in Lagos State. And it was discovered that the usefulness of computer tutorial, computer drill and practice and demonstration method to the students' academic achievement in Radio Television and Electronic works in Technical Colleges in Lagos State.

VI. RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made for positive academic achievement of the students in RTVEW:

- The students should be courage to learn through the use of computer tutorial for better academic achievement thereby enhancing the learning of the various concepts in the trade.
- The students should be ready to learn through the usage of computer drill and practice packages available for students' learning in the school in order to be relevant in the 21st

- century thereby making themselves relevant to the Technical Colleges and the world of work;
- The demonstration method of teaching and learning practical lessons should be supported with the computer- aided instruction in order to strengthened the networking of learning from the schools to the industries where the students marry what learnt in the school to the world of work, thereby, providing feedback on areas where adjustment needed to be made in order to prepare students toward the needs out there in the society.

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