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Relevance of Computer Assisted Instruction (CAI) for Effective Skill Development among Technology Education Students in Nigeria

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Abstract
The main purpose of the study reported is to show how computer assisted instruction (CAI) has significantly impacted on all aspects of our live particularly on education, it has radically influenced the way knowledge and information are generated, developed and transmitted in technology education. Every technology teacher must be acquainted with how to apply CAI in teaching technology education programme since teachers have a vital role in trainees skill development. Therefore, this study was designed to determine relevance of computer assisted instruction for effective skill development among technology education students in Nigeria. A descriptive survey research design was adopted. The study was guided by two research questions and two hypotheses, tested at 0.05% level of significance. The respondents for the study comprised of 310 technology vocational teachers. Mean and standard deviation were used to analyse the research questions, while t-test statistics was employed to test the hypotheses. The findings of the study among others revealed that technology vocational teachers should be skilful in using CAI in the production of teaching materials that can be used in developing appropriate skills, incorporate the use of media and technology for teaching where appropriate and technology vocational teachers teaching and managing courses through web-based system. It was recommended that Federal government should ensure that her policy statement regarding the provision of necessary infrastructure and training for use of computer in the school system is effectively implemented and making it mandatory for technology vocational teachers in developing computer skills needed in classroom environment. This could be achieved through adequate financial provision for tools and resources.
Key words: Computer assisted instruction, Technology education, Technical vocational teachers, and Skill development.

1. Introduction

Information Communication Technology (ICT) is one technology that is revolutionising today's classroom activities. Tremendous growth is being witnessed in the use of information technology for teaching and learning, and in no doubt, the trend will continue and will change the ways teachers view teaching. It is important for every technology teacher to acknowledge and appreciate the use of computer in teaching. Information Communication Technology according to Adewoyin (2009) is the new communication and computing technology used for creating, storing, selecting, changing, developing, receiving and displaying many kind of information. According to Adewoyin (2009) ICT is classified into three groups namely: (i) those that process information e.g. computer (ii) those that disseminate information e.g. communication i.e. electromagnetic devices and system and (iii) those for presentation of information e.g. multimedia. Obi (2005) in her view describe ICT as a technological tools and resources used to communicate, create, organize, disseminate, store, retrieve and manage information. In this study ICT does not only mean computers, it has to do with technological tools. These technological tools according to Chika (2008) include computers, the internet, broadcasting technologies (radio and television) and telephone.

Chika (2008) in her research finding shows that the quality of learning and teaching can be significantly enhanced when ICT is approached and utilised as an intellectual muti-tool. Teaching is an attempt to assist someone to acquire skills, attitudes, ideas, appreciation and change behaviour (Ogwo and Oranu, 2006). The teacher's job therefore is to influence desirable changes in the behaviour in learners through the use of hardware and software such as video, computer, internet, radio. Learning on the other way is a process of gaining knowledge or acquiring skills or having understanding a new thing and have a better way of carrying it out. In view of the significance of technology education program and it place in the national development. Technology teachers should possess relevant ICT skills that will aid effective instructional delivery.

It is important for every teacher to know that no two individuals are exactly alike. In classroom, each student will have different needs that the teacher is required to meet. The learning style of different students may not be the same; what motivates them may be different, their understanding level may not be the same. Computer assisted

facilities can take care of this.(Awotua-Efebo,1999) though computer cannot solve all the problem of education but Computer Assisted Instruction can make teaching that is tailored towards an individual students' needs more practical. Computer Assisted Instruction (CAI) as defined by Ukoha and Eneogwe, (1996) is a learning process whereby a learner interacts with and is directed by computer through a course of study or learning task aimed at achieving specific instructional objectives (skill development). The efficiency of CAI in technology education according to Ukoha and Eneogwe are hinged on the three levels of interactions possible between a learner and the computer. The levels are (i) drill and practice (ii) tutorial and (iii) dialogue. Through CAI, learners may work independently by interacting with the computer. By this, learner at a particular time in skill development may be at different levels. Fundamentally, a computer in a CAI session, instructs learners by displaying symbols, or pictures on the screen, learners respond by typing their responses on the tele-typewriter keyboard.

Computer Assisted Instruction provides immediate feedback and accurate information processing for learners; it can handle large number of students at a time provided the accessories needed are available, learning materials using CAI can be presented in various forms. Also, computer can be used to manage the teaching and learning process. The term used for this is computer managed instruction (CMI). Computer managed instruction is a method of testing, recordkeeping, and decision making that assists effective administration, classroom and individual students' learning management. The application of computers in classroom has just started, but it is developing very fast. New applications are being developed resulting in new teaching and training technology (Harum, 2003). Technology teachers should start thinking about the future classroom and become computer literate; Teachers, teacher trainer and educationists who are not familiar with CAI will find themselves threatened by professional obsolescence. For technology education teacher to meet up with the demands of the global world, they must be dynamic to innovations in the educational system. This will enable technology subjects to achieve the objectives for which it was established. The modern technology teacher is one who can source for information locally and globally as the entire world has become a global village. Materials acquired in ones environment can be used to solve problems in another environment.

Chika (2008) succinctly state that CAI can provide access to information source, enable communication, create interacting learning environment and promote change in methods of instruction. Quality and access to up-to-date materials can be improved while offsetting some cost of text books. Furthermore, CAI brings with it several potentials as a teaching/learning medium. These include self-spaced learning, self-directed learning, the exercising of various senses and the ability to represent content in variety of media. With self-spaced learning, learners can decide what they want to learn and in what order. CAI encourages learning as they provide a stimulating environment and promote enthusiasm, it can help the shy student who is afraid to make mistake in a classroom situation and provide quicker (and perhaps more directed) feedback. It emphasis active learning, enrichment of learning, encouragement of greater students independence and task-based teaching.

Skill development is a learned sequence of movements that combines to produce a smooth, efficient action in order to master a particular task. It is the ability to make the purposeful movements that are necessary to complete or master a prescribed task (Ogwo and Oranu, 2006). New skills can be reinforced through practice in order to become stronger and more coordinated. The stages to skill development are the cognitive phase, the associative phase, and the autonomous phase. Cognitive Phase: When a learner is new to a specific task, the primary thought process starts with, what needs to be done. The learner determines appropriate strategies to adequately achieve the desired goal. Good strategies are retained and inefficient strategies are discarded. The performance is greatly improved in a short amount of time. Associative Phase: the learner has determined the most effective way to do the task and starts to make subtle adjustments in performance. Improvements are more gradual and movements become more consistent. This phase can last for a long time. Autonomous Phase: this phase may take several months to years. The phase is dubbed because the performer can now automatically complete the task without having to pay any attention to (Lee Donald and Richard, 1999).

Effective skill development results in the students developing maximally what teacher has presented to him. Effectiveness is an indication of the impact of a group of activities performed on the achievement of intended learning outcome(skill development).To achieve effectiveness in skill development, teacher must first determine the skill needs of his students, and then prepare the learning experience that best match students skills need (Olabiyi and Ologban (1999). Also, the preparation, strategies and medium through which the learning experiences are developed in students according to Olabiyi and Ologban must be in line with the skill needs of students, it is in this regard that one could say skill development is effective. CAI when properly deployed will render effective skill transfer to the learner/students.

2. Statement of the Problem

The conventional instruction process of developing skills among technology students have failed to yield its desired result. Evidence has shown that students are performing poorly in skill projects. The poor performance was blamed on poor quality technical teachers, overcrowded classroom, and lack of adequate and suitable

technology equipment, materials and hand tools (Jegede, 1992 and Nwoji, 2000). According to Uzeochi (2004) students do not only perform poorly at cognitive level, they also perform badly at the affective and psychomotor domains respectively. This is invariably jeopardizing the fundamental objectives of technology education's vision, mission and policy of ICT as stated in the National Policy of ICT (2001). Oranu (2003) remarked that these conventional methods are teacher centred, content driven, certainly not students centred and students are not given enough opportunities to participate in the classroom / workshop instructions. Students taught with these conventional methods are unable to retain their learning and apply it to new situation. Consequently, students lose interest, perform poorly, promote negative attitude and encourage poor retention of learned materials. The conventional method of instruction has really failed, we need a change in instruction, but we can't throw away the traditional instruction method, we just have to supplement it with another technique that is acceptable to the world. Computer assisted instruction package is the proposed technique to supplement the conventional method of instruction, the study therefore find it worthwhile to determine the relevance of CAI on development of skills among technology education students in Nigeria.

3. Purpose of the Study

The major purpose of this study was to determine the relevance of Computer Assisted Instruction for effective skill development among technology education students in Nigeria. Specifically, the study sought to use CAI for designing and developing instructional materials needed for developing appropriate skills; selecting and utilising instructional materials and teaching and managing courses through web-based towards effective skill development.

3.1 Research Questions

In line with the purpose of this study, the following are the research questions formulated for this study:

1. What are the guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria?
2. What are the principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria?
3. What are the skills required by technology teachers in teaching and managing courses through web-based system towards skill development?

3.2 Research Hypotheses

This study was guided by the following hypotheses tested at 0.05% level of significance.

Ho_1: There is no significant mean difference between the responses of technology teachers in secondary and post-secondary TVE (Technical and vocational Education) institutions on the guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria

$Ho_{2:}$ There is no significant mean difference between the responses of technical teachers in secondary and post-secondary TVE institutions on the principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria.

$Ho_{3:}$ There is no significant mean difference between the responses of technology teachers in secondary and post-secondary TVE institutions on the skills required by technology teachers in teaching and managing courses through web-based system towards skill development.

4. Research Methodology

The study adopted descriptive survey research design to determine the relevance of computer assisted instruction for effective skill development among technology education students in Nigeria. It was conducted in south-west, Nigeria. This zone has many technical institutions whose technical teachers served as participants for the study. The population for this study consisted of all technology vocational teachers teaching in secondary and post secondary TVE institutions in south-west Nigeria. A total number of 310 participants which included 230 technology vocational teachers teaching in post-secondary TVE institutions such as polytechnics, colleges of education (Technical) and university and 80 technical vocational teachers teaching in technical colleges was used as sample for the study. A simple random sampling technique was employed to select the sample for this study. The instrument for data collection was a questionnaire designed for the study. The questionnaire had four sections A to D. Section 'A' sought information on personal data of the respondents; section 'B' 'C' and 'D, sought answers to research questions 1,2 and 3 respectively. The items were structured on a Likert scale. The questionnaire was subjected to face validation by three experts from TVE institutions. The internal consistency of the instruments was determined using Cronbach Alpha. The reliability coefficient established were as in Table I

The instrument was administered by the researchers through research assistant, and personal contact. Out of 310 questionnaires administered, 265 were duly filled and returned by the participants. These represented 85% rate of

return. SPSS was used in the data computation. Mean was used to answer the two research questions. Any item with mean of 3.50 and above was considered agreed upon while less than 3.50 were considered disagreed upon. t-test statistics was used to test the four hypotheses at 0.05% level of significance.

5. Results

Research Question 1

What are the guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria?

Ho_1: There is no significant mean difference between the responses of technology teachers in secondary and post-secondary TVE institutions on the guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria.

The result in Table 2 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the guidelines for using CAI for designing and developing instruction for technology education students.

Research Question 2: What are the principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria?

Ho_2: There is no significant mean difference between the responses of technology teachers in post-secondary TVE institutions and vocational technical teachers in technical colleges on the guidelines for using CAI for designing and developing instruction for technology education students

The result in Table 3 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the principles for selecting and utilizing CAI for skill development in technology education program.

Research Question 3:

What are the skills required by technology teachers in teaching and managing courses through web-based system towards skill development?

Ho_3: There is no significant mean difference between the responses of technology teachers in secondary and post-secondary TVE institutions on the skills required

The result in Table 4 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the skills required by technology teachers in using CAI for teaching and managing courses through web-based system.

6. Summary of Findings

Table 5 shows the findings that emerged from the study based on the data collected and analyzed.

7. Discussion of findings

The findings of this study are substantiated by some conceptual framework of scholars with precedence to research questions and purpose of the study.

The data presented in Table 2 provided answer to research question and hypothesis one, the findings revealed that guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria among others is that CAI can be used in defining the clear goals and objectives for the outline teaching; detailed instruction should be provided for students through CAI including their roles and responsibilities before lesson; teacher should have a backup plan in case of equipment failure during instructional programme; teacher has to set clear expectations and standard for assessing student performance before lesson stated; these findings have empirical support in literature as Harun (2003) and Uzeochi (2004) who reveal that teacher set a clear starting and ending time for each discussion period and teacher has to set clear expectations and standard for assessing student performance before lesson stated. Also, Mumeu and Ushel (2011) emphases that there is need to have clear idea of features to use and reasons for using them by teachers and students; encourage students active participation in discussion; CAI can be used to strengthen the online discussion through role play, simulation when encourage to use web resources; trainer should select and create learning experiences required for attaining TVET(Technical and Vocational Education Training) curriculum goals, and teacher's need to choose learning experience based upon relevant principle of effective teaching and appropriate to students experience. These views are well supported in literature (Jegede, 1992 and Nwoji, 2000). The result in Table 1 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the guidelines for using CAI for designing and developing instruction for technology education students.

Analysis to Table 3 provided answer to research question and hypothesis two, Findings revealed that the

principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria includes availability of the instructional amenities should be considered e.g. electricity; the objectives of the instruction must be directly related to media materials; attributes of the instrument must be considered before deciding on their uses; media that can easily operate should be used during instruction; instructional media selected should be suitable to developmental level of the students; teacher should posses require competencies for effective utilization and management devices; teacher's knowledge of types of learning and relevant activities equips him better in utilization of electronic devices; have a backup plan in case of a power outage or equipment failure; the whole process (holistic approach) must be taken into consideration not just a piecemeal approach; and having the CAI will assist in determining the time planning and preparation for the course. This view is well supported in literature (Jegede, (1992), Adewoyin (2009) and Nwoji, (2000). The result in Table 3 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the principles for selecting and utilizing CAI for skill development in technology education program.

The data presented in Table 4 provided answer to research question and hypothesis three. Findings shows the skills required by technology teachers in using CAI for teaching and managing courses through web-based system include ability of teachers to create module of courses for technology students; skill in preparation of lecture notes for student through CAI; teachers' ability to create forum for students and teacher interactions. This is view is supported in literatures (Awotua-Efebo (1999) and Lee Donald and Richard (1999)). This finding could be interpreted that technology teacher's need to be skills in making backup courses and quiz for grading students; competent in making access for students to uploading course materials; ability of teachers to carry out tasks in workshop with CAI; connect to internet in an online service; ability to connect video output devices and other presentation system to computer and video source for large screen play; ability to make room for discussion on grading system and restoring backup quiz; competent in designing drill/practice and tutorials for students and skill in directing students to training classes on online tutorials and any other assistance when necessary. The result in Table 4 shows that all the items had their calculated significant (2-tailed) values greater than 0.05. This implied that there was no significant mean difference between the responses of respondents on the skills required by technology teachers in using CAI for teaching and managing courses through web-based system.

8. Conclusions

The findings of this study have shown that CAI can be used in defining the clear goals and objectives for the outline teaching, detailed instruction has to be provided for students through CAI including their roles and responsibilities before lesson. In view of this, it is recommended that technology teachers should select learning experience based upon relevant principle of effective teaching and appropriateness to students experience and have clear idea of features to use and reasons for using them by teachers and students.

Technology teachers need develop appropriate principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria. In view of this it is recommended that availability of the instructional amenities should be considered e.g. electricity; the objectives of the instruction must be directly related to media materials and attributes of the instrument must be considered before deciding on their uses. Findings also shows that technology teachers need to adequately skilled in using CAI for teaching and managing courses through web-based system. In view of this it is recommended that technology teacher should be skilled to create module of courses for technology students; preparation of lecture notes for student through; teachers' to create forum for students and teacher interactions.

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Autobiography

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Table 1: Reliability coefficient

Sections	Reliability coefficient
B – α	0.79
C – α	0.74
D – α	0.76
Overall - α	0.88

Table 2

Mean and t-test Analysis of the responses of respondents on the guidelines for using CAI for designing and developing instruction for technology education students N=265

S/N	***Guidelines for using CAI for designing and developing instruction for technology education students***	$\overline{X}_1$	$\overline{X}_2$	$\overline{X}_G$	**Remark**	**t-cal**	**Sig(2-tailed)**
1.	CAI can be used in defining the clear goals and objectives for the outline teaching.	3.78	3.79	3.79	Agree	-1.13	.260
2.	Detailed instruction should be provided for students through CAI including their roles and responsibilities before lesson.	3.57	3.59	3.58	Agree	-1.06	.915
3.	Teacher should have a backup plan in case of equipment failure during instructional programme.	3.85	3.77	3.82	Agree	-.106	.915
4.	Teacher need to prepare students for the use of the system and arrange for their training session.	3.99	3.89	3.95	Agree	-.175	.861
5.	Teacher has to set clear expectations and standard for assessing student performance before lesson stated.	4.04	4.01	4.03	Agree	.800	.425*
6.	There is need to have clear idea of features to use and reasons for using them by teachers and students.	3.98	3.95	3.97	Agree	.946	.354*
7.	Set a clear starting and ending time for each discussion period.	4.00	4.00	4.00	Agree	.325	.745
8.	Encourage students active participation in discussion	3.82	3.81	3.82	Agree	.310	.756
9.	Teacher need to set and ask questions at different levels of (knowledge, application, analysis, synthesis and evaluation.) as lesson progress.	3.69	3.68	3.69	Agree	-.106	.915
10.	CAI can be used to Strength the online discussion through role play, simulation when encourage to use web resources.	3.81	3.75	3.79	Agree	.558	.57
11.	Teacher must set rules and make them clear for students to encourage appropriate and check inappropriate behaviour before starting discussion.	3.81	3.79	3.80	Disagree	-.322	.747
12	Trainer should select and create learning experiences required for attaining TVET curriculum goals.	3.89	3.83	3.87	Agree	-.169	.866
13	Teacher need to choose learning experience based upon relevant principle of effective teaching and appropriate to students experience.	4.00	3.98	3.99	Agree	.086	.932

$\overline{X}_1$ = vocational teachers in post TVE institutions; $\overline{X}_2$ = vocational teachers in technical colleges $\overline{X}$ G= ground mean

Table 3

Mean and t-test Analysis of the responses of respondents on the principles for selecting and *utilizing CAI for skill development in technology education programme N=265*

S/N	***Principles for selecting and utilizing CAI for skill development in technology education programme***	$\overline{X}_1$	$\overline{X}_2$	$\overline{X}_G$	**Remark**	**t-cal**	**Sig(2-tailed)**
1.	Availability of the instructional amenities should be considered e.g. electricity	4.01	4.03	4.02	Agree	-.009	.993
2.	The objectives of the instruction must be directly related to media materials	3.77	3.73	3.75	Agree	-1.609	.109
3.	Attributes of the instrument must be considered before deciding on their uses.	3.78	3.79	3.79	Agree	.568	.571
4.	Different individuals have different needs and learning style must be taken into consideration.	3.81	3.79	3.80	Agree	.396	.693
5.	Media that can easily operate should be used during instruction.	3.80	3.81	3.81	Disagree	-3.22	.747
6.	Teacher need to ensure the availability of computer support staff or personnel e.g. technician or colleague.	3.87	3.86	3.87	Agree	.492	.623
7.	Instructional media selected should be suitable to developmental level of the students.	4.00	4.00	4.00	Agree	.738	.462
8.	Teacher should posses require competencies for effective utilization and management devices.	3.79	3.79	3.79	Agree	-.109	.913
9.	Number of learners in class and physical dimension of classroom should be considered.	3.58	3.59	3.58	Agree	.025	.980
10.	Teacher's knowledge of types of learning and relevant activities equips him better in utilization of electronic devices.	3.92	3.79	3.87	Agree	-.908	.365
11.	Have a backup plan in case of a power outage or equipment failure.	3.92	3.79	3.87	Disagree	-.322	.747
12	The whole process (holistic approach) must be taken into consideration not just a piecemeal approach.	3.62	3.78	3.68	Agree	.203	.468
13	Having the CAI will assist in determining the time planning and preparation for the course.	3.78	3.79	3.79	Agree	-3.41	.510

$\overline{X}_1$ = vocational teachers in post TVE institutions; $\overline{X}_2$ = vocational teachers in technical colleges $\overline{X}$ G= ground mean

Table 4

Mean and t-test Analysis of the responses of respondents on the skills required by technology Teachers in using CAI for teaching and managing courses through web-based system N=265

S/N	***Skills required by technology teachers in using CAI for teaching and managing courses through web-based system***	$\overline{X}_1$	$\overline{X}_2$	$\overline{X}_G$	**Remark**	**t-cal**	**Sig(2-tailed)**
1.	Ability of teachers to create module of courses for technology students.	3.79	3.78	3.79	Agree	-.106	.915
2.	Skill in preparation of lecture notes for student through CAI	3.75	3.65	3.71	Agree	-1.86	.852
3.	Teachers' ability to create forum for students and teacher interactions.	3.60	3.61	3.60	Agree	.734	.862
4.	Teachers skilled in preparation of examination questions.	3.81	3.83	3.81	Agree	-.175	.861
5.	Skills in making backup courses and quiz for grading students.	3.57	3.59	3.58	Disagree	-1.75	.861
6.	Competent in making access for students to uploading course materials.	3.57	3.59	3.58	Agree	-1.18	.237
7.	Ability of teachers to carry out tasks in workshop with CAI.	3.69	3.68	3.69	Agree	.131	.896
8.	Skills in editing and offline courses.	3.50	3.50	3.50	Agree	.025	.980
9.	Connect to internet in an online service.	3.79	3..79	3.79	Agree	.030	.976
10.	Ability to connect video output devices and other presentation system to computer and video source for large screen play.	3.79	3.78	3.79	Agree	.159	.874
11.	Ability to make room for discussion on grading system and restoring backup quiz.	3.52	3.50	3.51	Agree	-.322	.747
12	Competent in designing drill/practice and tutorials for students.	3.86	3.86	3.86	Agree	.203	.468
13	Skill in directing students to training classes on online tutorials and any other assistance when necessary.	4.08	4.09	4.08	Agree	-3.41	.510

$\overline{X}_1$ = vocational teachers in post TVE institutions; $\overline{X}_2$ = vocational teachers in technical colleges $\overline{X}$ G= ground mean

Table 5: Emerged finding from study

The guidelines in using CAI for designing and developing instructional materials for effective skill development among technology education student in Nigeria are:	
1.	CAI can be used in defining the clear goals and objectives for the outline teaching.
2.	Teacher should have a backup plan in case of equipment failure during instructional programme.
3.	Teacher has to set clear expectations and standard for assessing student performance before lesson stated.
4.	There is need to have clear idea of features to use and reasons for using them by teachers and students.
5.	Set a clear starting and ending time for each discussion period.
6.	Encourage students active participation in discussion
7.	Teacher need to set and ask questions at different levels of (knowledge, application, analysis, synthesis and evaluation.) as lesson progress.
8.	CAI can be used to Strength the online discussion through role play, simulation when encourage to use web resources.
9.	Teacher must set rules and make them clear for students to encourage appropriate and check inappropriate behaviour before starting discussion.
10.	Trainer should select and create learning experiences required for attaining TVET curriculum goals.
11	Teacher need to choose learning experience based upon relevant principle of effective teaching and appropriate to students experience.
The principles for selecting and utilising instructional materials using CAI for skill development among technology education students in Nigeria includes:	
1.	Availability of the instructional amenities should be considered e.g. electricity
2.	The objectives of the instruction must be directly related to media materials
3.	Teacher should have a backup plan in case of equipment failure during instructional programme.
4.	Teacher need to prepare students for the use of the system and arrange for their training session.
5.	Teacher has to set clear expectations and standard for assessing student performance before lesson stated.
6.	There is need to have clear idea of features to use and reasons for using them by teachers and students.
7.	Instructional media selected should be suitable to developmental level of the students.
8.	Teacher should posses require competencies for effective utilization and management devices.
9.	Number of learners in class and physical dimension of classroom should be considered
10.	Teacher's knowledge of types of learning and relevant activities equips him better in utilization of electronic devices.
11.	Have a backup plan in case of a power outage or equipment failure.
12.	The whole process (holistic approach) must be taken into consideration not just a piecemeal approach.
Skills required by technology teachers in teaching and managing courses through web-based system towards skill development among others include:	
1.	Ability of teachers to create module of courses for technology students.
2.	Skill in preparation of lecture notes for student through CAI
3.	Teachers' ability to create forum for students and teacher interactions.
4.	Teachers skilled in preparation of examination questions.
5.	Skills in making backup courses and quiz for grading students.
6.	Competent in making access for students to uploading course materials.
7.	Ability of teachers to carry out tasks in workshop with CAI.
8.	Skills in editing and offline courses.
9.	Connect to internet in an online service.
10.	Ability to connect video output devices and other presentation system to computer
11.	Ability to make room for discussion on grading system and restoring backup quiz.
12.	Competent in designing drill/practice and tutorials for students.
13.	Skill in directing students to training classes on online tutorials and any other assistance when necessary.