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Edutainment as a Catalyst for Stimulating College of Education Students' Interest and Learning Retention in Technical Education

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Abstract:
The study adopted the Pretest, Posttest, Quasi-experimental research design to determine the effect of edutainment on College of Education students' interest and learning retention in Technical education. Three research questions and two hypotheses were formulated and tested at .05 level of significance. The subjects of the study were 2016/2017 session, NCE II students of Colleges of Education in North central states of Nigeria. The population of this study comprised of the entire 540 students of NCE II from where 225 students were sampled. The instruments used for data collection were: technical education students' interest inventory (TESII), technical education students' learning retention (TESLR) tests and a structured questionnaire. The reliability of the instruments was established using the Pearson product moment correlation coefficient formula and was found to be 0.84. Similarly, the Kuder-Richardson (KR20) formula was used to determine the internal consistency of the instruments and the result obtained was 0.75. The study used mean and standard deviation statistics to answer the research questions while the hypotheses formulated for the study was tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance. Findings from the study revealed among others that the use of edutainment platform was effective in enhancing students' interest and learning retention. The study among others recommends for the provision of high speed internet connectivity and services within the college premises.

Keywords: Edutainment, students' interest, learning retention, colleges of education, technical education

1. Introduction

1.1. Background to the study:
    One of the most important prerequisite for effective learning is whole hearted attention and Keen interest which are products of motivation. To buttress this assertion, Bhatia (2003) opined that once interest is aroused through motivation, learning is facilitated. Scholars have therefore shown renewed interest in motivation as a construct for describing and explaining processes and outcomes of various educational settings (Kumazhege, 2016 & Adamu, 2016). Perhaps, it is in this regard that Scholars have equally been advocating for innovative and motivational teaching methodologies which is not only capable of stimulating the interest of students to learn but equally ensuring effective teaching and learning. One of the most recognized social platforms where the students interest can be effectively stimulated to learn in the present 21st century involved the use of the edutainment instructional platform

    As a concept, edutainment can be defined as entertainment (such as those involving online games, video/audio films or shows as well as the use of YouTube, Skype and other related social media like the facebook, WhatsApp, imo, twitter, and Instagram, to mention but few) that is designed to be educational. The term, according to Jasinski, (2004) was coined and originally used in 1973 by pioneers in the field as entertainment with an educational twist. The medium of edutainment is created with the intention to amuse or engage the viewer/participant while simultaneously imparting knowledge. Perhaps it is in this regard that White (2013) defined edutainment as the act of teaching and learning through a medium that both educate and entertains. In this definition, learning is seen as the key element. On the other hand, the New World Encyclopedia (2008) defined edutainment as a form of entertainment designed to educate as well as to amuse the learner. Thus, from whatever angle one views edutainment as a concept, it simply revolves round the amalgamation of teaching and learning with entertainment at the same time.

    According to Higley (2013), literatures have shown that the use of familiar e-learning medium such as edutainment helps to stimulate attention and maintain students' interest in both theories and concepts under discussion. Thus, the use of edutainment can make the class intrinsically interesting and enjoyable. It also provide a platform that will

stimulate the students' interest in learning as they will be able to interact and review the lectures by going online and watching the video over and over thus ensuring retention of the learned concept.

Retention is the repeat performance of a learner of the behaviour earlier acquired after an interval of time. According to Reinhardt (2007), retention is a process in which a person's memorystores learning so that he or she can locate, identify, and retrieve the learning activity in the future. It can therefore be summed up that retention occurs when a person reprocess learning activity through rehearsal of the activity over and over again. Accordingly, retention can be regarded as the preservative factor of the mind, because, according to Chianson, Kurumeh and Obida (2010) it is the mind that acquires all the materials of knowledge through sensation and perception. Consequently, in recent time, retention of concepts taught to Technical education students has been adjudged as one of the most important factors in the teaching and learning environment. Thus, in the quest to acquire the skills and knowledge of Technical education in today's classroom, learning retention has been closely linked to the usage of appropriate instructional medium such as edutainment.

Consequently, it could be affirmed that the fundamental premise of Edutainment is to educate while being entertained. Sometimes the educational lesson within the medium is hidden; thus, students are often learning without realizing it. Proponents of Edutainment argue that it provides a relevant and tangible learning experience for learners such as Technical skills acquisition, thus appealing to their needs with the aim of encouraging and stimulating their interest to learn and acquire the prerequisite technical skills and knowledge. The idea follows a constructivist view of learning whereby the learner constructs their own meaning as they learn. Thus the use of this innovative teaching methodology is capable of not only sustaining the interest of the students in learning but it is also capable of enhancing their learning retention especially in courses like technical education where the issue of poor performance has been a major challenge over the years.

2. Literature Review

The persistent problem of poor performance of students of technical education has been of serious concern over the years as attested to by Chado (2010), Langa (2013) and Adamu (2016). Studies have identified several factors responsible for students' poor performance in technical education prominent among these factors is the refusal to adopt innovative mode of instructional delivery in the light of the revolution brought about by ICT (Udofia & Udofia, 2013, Elbitar & Umunadi, 2011, Umunadi, 2009). Thus, it is expected that with the adoption of innovative instructional approaches such as the use of edutainment, teaching and learning can be made more flexible, realistic and enjoyable. The innovation is also capable of not only improving the level of academic achievement but also arousing the interest of students in learning.

The positive effect of interest on learning has been reported by several studies according to Fallata (2012). The findings revealed that promoting interest in the classroom is capable of increasing students' intrinsic motivation to learn. On the need to improve students' interest in learning, Harp and Mayer (1997) noted that motivation is important in getting the learner absorbed in the task of learning. They maintained that curiosity and interest can get the learner to resist distractions and to form favourable attitude toward learning and can also keep the learner at work without pressure from the teacher. Thus, Harp and Mayer affirmed that interest is related positively to attention and learning. Other studies such as Flowerday and Schraw (2000) as well as Schraw, Flowerday and Lehman (2001) suggest multiple ways to promote interest; including changing the environment in which students read and study. For instance, transiting from the conventional teaching in the classroom to the use of computer mediated learning such as that of edutainment. Other ways includes: providing better written texts that students find more interesting, and helping students access relevant background knowledge before reading. It can therefore be summed up that the use of e-learning medium such as edutainment helps to stimulate not just the attention and interest of students, but it also helps in retention of both theories and concepts taught.

With the latest advancement in computer science and technology, the use of edutainment in the school environment is being increasingly recognized as a technology for fundamental learning (Kumazhege, 2016). Edutainment software is a hybrid genre that relies heavily on visual materials, narrative or game-like formats and on more informal, less didactic styles of address (Okan, 2003). The process is to attract and holds the attention of the learners by engaging their emotions through a computer monitor, full of vividly coloured animations. It involves an interactive pedagogy and totally depends on an obsessive insistence that learning is inevitably fun (Ito, 2006).

As a form of CAI, edutainment platform have the following additional attributes: motivation, reward (feedback), and interactivity, score and challenge (Kara & Yesilyurt, 2007). Following the constructivist experience, education system should no longer be passive experience for the students, but an active and personal one (Herman & Morrell, 1999). Active and personal student-learning environment according to Herman and Morrell must be: rich guidance, supportive and reinforcement. Thus, according to Duncan and Wallace (2002) the reason behind many failed e-learning programmes is that they do not surround the students with a supportive learning environment.

Despite the argument of critics that Edutainment provides a watered-down form of education where the medium becomes more important than the message, however advancements in information and communication technology (ICT) have continued to promote the evolution of edutainment in institutions of learning across the globe at an astronomical rate. Thus, as the world draws closer through the use of ICT, edutainment continues to spread globally across educational institutions worldwide and its gaining acceptability and popularity at an equally tremendous rate. One of the most popular platforms which is gaining tremendous publicity and acceptability in teaching and learning is known as edutainment. According to Kumazhege (2016) the use of edutainment in teaching and learning is gaining momentum because of the

perception that the platform is not only engaging and motivating but it also give students the confidence to communicate and learn at their own pace, time and from convenient location. Above all, edutainment enhance quality education. This view was corroborated by Oyewole (2017) who opined that edutainment is quite exciting because it is concerned with using entertainment to compliment teaching and learning. Thus, when students learn with fun, they find it pleasurable and that make recollection easier and faster, thus the use of edutainment is capable of enhancing the quality of education. Edutainment according to Fallata (2012) is the act of learning through a medium that both educates and entertains or any of various media, such as computer software, that educate and entertain. Other examples of edutainment are video games, films, television programs and radio programs. Therefore, there is the need to appraise its effect among institutions of learning in Nigeria.

2.1. Purpose of Study

This study was design to determine the use of Edutainment as a catalyst for stimulating technical education students' interest and learning retention. Specifically, the study determined:

- The effect of edutainment on students' interest in learning
- The effect of edutainment on students' learning retention
- Strategies to promote effective use of edutainment among the students of technical education

2.2. Research Questions

The following research questions are to guide the study:

- What is the effect of edutainment on students' interest in learning?
- What is the effect of edutainment on students' learning retention?
- What are the strategies that can promote effective use of edutainment among students of technical education?

2.3. Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

H_{O1}: There is no significant difference in the interest mean scores of students taught with edutainment platform and those taught with conventional teaching method

H_{O2}: There is no significant difference in the learning retention mean scores of students' taught with edutainment platform and those taught with conventional teaching method

3. Methodology

The research design used is the Pre-test, Post-test, Non-equivalent Control Group Quasi- Experimental Design. Quasi-experimental was considered appropriate because the intact classes which were used for the study cannot be disorganized because of the research. Thus, this measure was necessary in order not to disrupt the normal schools' class structure and time-table. The use of intact classes in a quasi-experimental research is supported by several scholars such as Shadish, Cook and Campbell (2001), Shuttle worth (2008) and Sambo (2008).

The instruments used for data collection were: technical education students' interest inventory (TESII) and technical education students' learning retention (TESLR) tests for the first and second research questions respectively. Similarly, a structured questionnaire was used to answer the third research questions. The students' interest was assessed through the use of the TESII. The test comprised of 20 items which required students to indicate their preferences in agreement to the ratings. The five-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and Undecided (UD) was adopted. For the purpose of scoring the test items, the scales were weighted as follows: SA=5, A=4, D=3, SD=2, UD=1. The idea of using ETII is to test the students' interest in studying Technical education and it was administered on pre-test post-test basis. Similarly, the Retention Test was used to measure students' learning retention. It consists of 30 multiple choice items with four options.

The research instruments were subjected to both face and content validity by three experts in Measurement and Evaluation and an expert in Curriculum Development from the Department of Industrial and Technology Education, Federal University of Technology, Minna and Niger state college of education. The experts examined and scored the research instruments for suitability and appropriateness based on the following factors: Clarity of the questions, appropriateness of the language usage and extent to which the instrument tests what it is expected to test. Their suggestions and comments were subsequently used to arrive at the final version of the research instruments.

The reliability of the instrument was established using the Pearson product moment correlation coefficient formula and was found to be 0.84. Similarly, the Kuder-Richardson (KR20) formula was used to determine the internal consistency of the instrument and the result obtained was 0.75. These values were good enough for the reliability of an instrument as affirmed by Sambo (2008) as well as Uzoagulu (2011).

The study used mean statistics to answer the research questions. The hypotheses formulated for the study were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance. The choice of ANCOVA was considered appropriate for this study because it involved comparing an independent variable and its effects on two dependent variables. The independent variable in this regard is the use of edutainment while the dependent variables are: interest and learning retention.

3.1. Area of the Study

The study was carried out in colleges of education that offer technical education courses in the north central geo-political zone of Nigeria. The states that form the north central zone are: Benue, Kogi, Kwara, Nassarawa, Niger, Plateau States and the Federal Capital Territory, Abuja.

3.2. Population/Sample of the Study

The target population for this study consists of 540 NCE II students of 2016/2017 academic session from the Colleges of Education under study. Stratified random sampling technique was adopted to select the subjects for the study. Chado (2010) reported that Ary, Jacobs and Razavieh (2002) suggested the use of a stratified sampling technique in a research population that consists of a number of sub groups or strata that may differ in the characteristics being studied. On the other hand, Yaro Yamane's sampling formula was used to sample 225 students for the research, 125 for the experimental and 100 for control group.

4. Result and Findings

4.1. Research Question 1

What is the effect of edutainment on students' interest in learning?

Group	N	Pre-test	Post-test	Mean Gain
		$\overline{X}$	$\overline{X}$	
Experimental	125	52.79	70.05	17.26
Control	100	65.10	76.58	11.48

Table 1: Pretest and Posttest Mean Scores of Experimental and Control Groups

Table 1 shows that the experimental group had a mean score of 52.79 in the pretest and a mean score of 70.05 in the posttest making a pretest, posttest mean gain in experimental group to be 17.26. On other hand, the control group had a mean score of 65.10 in the pretest and a posttest mean of 76.58 with a pretest, posttest mean gain of 11.48. With this result, the experimental group interest is higher than the interest of the students in the control group. Therefore, the use of edutainment is more effective than the conventional teaching method in stimulating students' interest in Technical education

4.2. Research Question 2

What is the effect of edutainment on students' learning retention?

Group	N	Posttest	Retention Score	Mean Gain
		$\overline{X}$	$\overline{X}$	
Experimental	125	22.27	28.73	6.46
Control	100	22.20	25.43	3.23

Table 2: Pretest and Posttest Mean Scores of Experimental and Control Groups

Data presented in Table 2 shows that the Experimental group had a mean score of 22.27 in the posttest and a mean score of 28.73 in the retention test hence the posttest- retention test mean gain of the Experimental group was 6.46. Meanwhile, the Control group had a mean score of 22.20 in the posttest and a retention mean test of 25.43. Thus producing pretest posttest mean gain of 3.23. Consequently, this result is an indication that both the edutainment and conventional methods were effective in improving students' learning retention, but the effect was more pronounced for the edutainment group than that of the conventional instruction.

4.3. Research Question 3

What are the strategies that can promote effective use of edutainment among students of technical education?

S/N	Item Statement Strategies To Promote Effective Use Of Edutainment Among Students:	Mean	Remark
1	Provision of 4G and similar high speed internet connectivity and services within the College premises	4.25	SA
2	Provision of well-equipped ICT centre by the college management	4.75	SA
3	Provision of constant and reliable power supply by the electricity authority	4.50	SA
4	Provision of alternative solar powered system for ICT facilities	4.00	SA
5	Provision of smart interactive boards in the lecture halls	4.60	SA
6	Provision of subsidized I pads, Tablets, and laptops	4.25	SA
7	Provision of power point projectors in the lecture halls	4.00	SA
8	Free access to software and virtual classrooms for students	3.45	A
9	Enforcement of ICT polices by the College management	3.25	A
10	Close monitoring and supervision of lecturers' method of instructions by the College management	3.45	A

Table 3: Mean Ratings of Strategies to Promote Effective Use of Edutainment among Students

Data in Table 3 indicates that all the items had mean scores above the cutoff point of 3.00. This is an indication that the students agreed that all item statements are strategies that can be employed to encourage effective use of edutainment among students of technical education.

4.3.1. Hypothesis 1

- H$_{O3}$: There is no significant difference in the interest mean scores of students taught with edutainment platform and those taught with conventional teaching method

Source of Variance		Sum of Squares	df	Mean Square	F	Sig
Between		864.888	39	22.177		
Within	Between	19.013	1	19.013	1.747	.000
	Residual	424.487	39	10.884		
	Total	443.500	40	11.088		
Total		1308.388	79	16.562		

Table 4: Summary of Analysis of Covariance for the Test of Significance on the Effect of Interest between the Mean Scores of Edutainment and Conventional Groups with Respect to Their Interest Inventory Mean Scores

Data shown in table 4 revealed the F-calculated value for the mean scores of edutainment and conventional groups in the interest inventory of students' in Technical education. The F-calculated value for the interest inventory is 1.747 with a significance of F at .000 which is less than .05. Consequently, the null-hypothesis was rejected at .05 level of significance. This result shows that there is significant difference in the mean scores of students' interest taught with the edutainment platform and those taught with conventional approach. Thus, the implication is that there is significant difference between the effects of edutainment and conventional instruction on the students' interest in Technical education. Therefore, the null hypothesis of no significant difference between the effect of edutainment and conventional instruction on the students' interest was rejected at .05 level of significance. Hence, there is a significant effect of treatments given to the students with respect to their mean scores.

4.3.2. Hypothesis 2

- H$_{O2}$: There is no significant difference in the learning retention mean scores of students' taught with edutainment platform and those taught with conventional teaching method

Source of Variance		Sum of Squares	df	Mean Square	F	Sig
Between Group		577.000	39	14.795		
Within Group	Between	140.450	1	140.450	18.409	.000
	Residual	297.550	39	7.629		
	Total	438.000	40	10.950		
Total		1015.000	79	12.848		

Table 5: Summary of Analysis of Covariance for the Test of Significance between the Mean Scores of Edutainment and Conventional Groups on Students' Learning Retention

Results shown in table 5 revealed the F-calculated value for the mean scores of edutainment and conventional groups in the learning retention of students in Technical education. The F-calculated value for the learning retention is 18.409 with a significance of F at .000 which is less than .05. Consequently, the null-hypothesis is rejected at .05 level of significance, therefore there is a significant difference in the mean scores of learning retention between students taught with the edutainment approach and those taught with conventional approach. Thus, the implication is that there is a significant difference between the effects of edutainment and conventional instruction on the students' learning retention in Technical education. Therefore, the null hypothesis of no significant difference between the effect of the students' learning retention was rejected at .05 level of significance. Conclusively, it can be affirmed that the edutainment approach is more effective in improving learning retention of students.

5. Discussion

The data presented in Table 1 provided answer to research question one on the effect of edutainment on students' interest in learning technical education. The result shows that the use of edutainment is more effective in improving the students' interest in learning technology. This was confirmed by the higher post mean scores obtained by the group taught with edutainment when compared with the post mean scores of those taught with the conventional talk and chalk method.

At the same time, the result shown in Table 4 revealed that the analysis of covariance used to test the first hypothesis affirmed that there was a significant difference between the effects of edutainment and conventional method on the students' interest in learning. Thus, this revelation is a confirmation of the fact that the use of edutainment is more effective in stimulating the interest of students. This finding is consistent with that of Higley (2013) who asserted that the use of e-learning medium such as edutainment helps to stimulate attention and maintain students' interest in both theories and concepts under discussion.

This assertion was also corroborated by Khalid and Kabilan (2012) as well as Kelsen (2009). According to these authors, the use of edutainment platforms such as YouTube, WhatsApp and Facebook are capable of making the class intrinsically interesting and enjoyable because the platform provides the students' the opportunity to interact and review the lectures by going online to watch the video over and over again.

A possible explanation for the effectiveness of edutainment over the conventional method in terms of stimulating the students' interest is the fact that they (the students) are at liberty to save and download the lecture materials, watch and review the content at their own convenience either online with internet availability or offline (that is, from the downloaded version without connectivity to the net). Thus according to Fallata (2012) the use of edutainment platform can serve as a motivational and stimulating tool for students because they can use it as a medium of studies outside the class.

The use of edutainment to stimulate interest of students, according to Kumazhege (2016) was further supported by the connectivism theory which is termed as the Learning Theory for the Digital Age. Thus, in today's digital age, the teaching and learning process is not just the questions of "how" and "what" to learn, but also that of "where and when to learn". Thus, learning, according to the proponents of this theory (such as Siemens, Prensky and Darrow) should not only be made flexible, innovative, self-paced but also excitingly stimulating in order to sustain and maintain the students' interest in learning.

Analysis of covariance was used to test the first hypothesis, table 4. The result shows that at the calculated F value (1.747) with a significance F (.000) and confidence level (.05), there was a significance difference in the interest means scores of students' learning. The implication of this result is that the use of edutainment is capable of stimulating interest of students in learning technical education.

The answer to research question two was provided by the data presented in Table 3. The information contained in the table revealed that the use of edutainment was more effective in improving students' learning retention, because the group taught with edutainment platform had higher post mean scores than those taught with the conventional method. Similarly, the analysis of covariance which was used to test the second hypothesis (Table 5) revealed that there was a statistical significant difference between the effects of edutainment and conventional talk and chalk method on the students' learning retention of technical education. Thus, the implication of this revelation is that the use of edutainment platform is more effective than the conventional approach in terms of improving the students' retention of learning. This finding is in harmony with that of Kumazhege (2016) because the research showed that the participants' retention ability was more effective with edutainment platform. Yusuf (2014) also buttressed this finding when he reported that the use of e-learning instructional platform such as the edutainment increases the extent of students' learning process, memory retention, classical and cognitive response as well as teacher-student relationship. He maintained that audio-visual aids components of e-learning platforms such as YouTube plays a vital role in promoting the retention of subject matter. Its most obvious characteristic is its visual and audio aspect. Humans intuitively grasp the power of images to convey meaning, as can be seen in the old adage that values a picture at a thousand times the value of a word.

To this end, edutainment can promote lifelong independent learning skills. In agreement with this finding, Chianson, kurumeh and Obida (2010) affirmed that the ability to remember takes place more effectively when experiences are passed across to the learner via an appropriate instructional medium. Thus, it can be asserted that the adoption of innovative e-learning platforms such as edutainment approach can further engage students, influencing time on task in their learning and promoting their success in learning retention. As many researchers asserted that students get positive indicators when they watch natural and real life videos, watching video in YouTube will help students to memorize the events more easily (Maness, 2004), thus ensuring retention of the learned concept.

Analysis of covariance was used to test the second hypothesis, Table 5. The result shows that at the calculated F value (18.409) with a significance F (.00) and confidence level (.05), there was a significance difference in the learning retention means scores of students' taught Technical education with the edutainment platform and those taught with the conventional method. The implication of this result is that the use of edutainment platform is more effective than the conventional method in improving students' learning retention.

With respect to the third research question on the strategies that can promote effective use of edutainment among students of technical education, the results in Table 3 indicate that provision of 4G high speed internet connectivity and services within the college premises, provision of well-equipped ICT centre by the college management and provision of constant and reliable power supply by the electricity authority tops the list of strategies required to encourage the adoption of edutainment by the lecturers. Other key strategies includes: Provision of smart /interactive boards and power point projectors in the lecture halls, Provision of subsidized I pads, Tablets, and laptops, as well as free access to software and virtual classrooms for students. This finding is consistent with the study of Adamu (2017) who reported that measures for encouraging the utilization of edutainment platform in teaching and learning include; training and re-training of lecturers and students on innovative learning methodologies such as edutainment, availability of steady, uninterrupted power supply, strong and high-speed internet connectivity, as well as provision of adequate ICT tools/facilities in staff rooms and lecture halls.

6. Conclusion

The advent and subsequent evolution of edutainment has resulted in a paradigm shift in the way and manner teaching and learning is conducted globally in the 21st century. This paradigm shift is responsible for the tremendous change in students' learning styles and approach. Thus, the use of innovative teaching and learning methodologies such as edutainment has become inevitable in higher institutions because of its numerous benefits and potentials which includes the ability to stimulate the interest of students to learn.

It is against this backdrop that this study was carried out to determine the effect of edutainment on College of Education students' interest and learning retention. The study found out that the use of edutainment was very effective in enhancing students' interest and learning retention.

These findings are confirmation of the fact that the use of innovative e-learning platform (such as edutainment) is a viable method which is not only capable of improving the student' performance but it is also capable of stimulating their interest in learning and above all, enhance their learning retention. Conclusively, it therefore implies that adopting these instructional approaches in teaching and learning is an assurance of producing competent, qualified graduates that will teach Technical education and also keep up with the rapid technological advancement in the field of Technology.

7. Recommendations

On the basis of the findings of this study, the following recommendations were proffered:

- The college management should ensure adequate provision of 4G high speed internet connectivity and services within the college premises
- Provision of well-equipped ICT centre by the college management
- Smart /interactive boards and power point projectors should be installed in the lecture halls
- Provision of constant and reliable power supply by the electricity authority
- Provision of alternative solar powered system for ICT facilities
- Provision of subsidized I pads, Tablets, and laptops for students by the college management

8. References

i. Adamu, M. J. (2016). Comparative Effects of Synchronous and Asynchronous Instructional Approaches on College of Education Students' Achievement, Interest and Retention in Electrical Technology, Unpublished PhD thesis, Federal University of Technology, Minna, Nigeria

ii. Adamu, M.J. (2017). Awareness level of edutainment among technology education lecturers in colleges of education in Nigeria. Proceedings of International conference on education, development and innovation held at Methodist University College, Accra, Ghana

iii. Bhatia, H.R. (2003). A textbook of educational psychology: India, Radiv Berifor Macmillan Ltd

iv. Chado, M.I.D. (2010). Development and use of Computer Assisted Instruction Package for Teaching Metal Forging Technology at Nigerian Certificate in Education (Technical) Level. Unpublished Ph.D Dissertation. Abubakar Tafawa Balewa University, Bauchi, Nigeria.

v. Chianson,M.M, Kurumeh,M.S & Obida,J.A.(2010). Effect of cooperative learning strategy on students' retention in circle geometry in secondary schools in Benue State, Nigeria

vi. Duncan, J. & Wallace, M.K. (2002). Assessing online technology: edutainment or desktop- rubbishing. The delta pi-epsilon journal, 44 (1), 25-38

vii. Elbitar, H.M and Umunadi, K.E. (2011).Learning styles in technical drawing courses as perceived by students in Egypt and Nigeria. Journal of STEM Teacher Education, 48, 3

viii. Fallata, M.D. (2012). The role of edutainment in teaching reading and vocabulary to English language learners, Masters Thesis Department of Education, California State University, Sacramento

ix. Flowerday, T., & Schraw, G. (2000). Teacher beliefs about instructional choice. Journal of Educational Psychology,92: 634–645.

x. Harp, S. F., & Mayer, R. E. (1997). The Role of interest in learning from scientific text and illustrations: On the distinction between emotional and cognitive interest. Journal of Education. Psychol, 89: 92–102.

xi. Herman, L. & Morrell, M.(1999). Educational progression: electronics portfolios. The journal, 26(11), 86-89

xii. Higley, M. (2013). Benefits of synchronous and asynchronous e-Learning. Free E-learning Industry. Retrieved from http://elerningindustry.com

xiii. Ito, M. (2006). Engineering play: children's software and cultural politics of edutainment. Studies in cultural politics of education, 27(2), 139-160

xiv. Jasinski, M. (2004). New Practices in Flexible Learning: Educational Infotainment. Australian Flexible Learning Framework. November 2004.

xv. Kara, Y. & Yesilyurt, S. (2007). Assessing the effect of tutorial and edutainment software programmes on students' achievement, misconceptions and attitudes towards biology. Asia-pacific forum on science learning and teaching, 8, 2-5

xvi. Kelsen, B. (2009). Teaching EFL to the iGeneration: A survey of using youtube as supplementary material with college EFL students in Taiwan. CALL-EJ Online, 10(2).

xvii. Khalid, A. & Kabilan, M. (2012). The use of YouTube in teaching English literature the case of Al-Majma'ah community college, Al-Majma'ah university (case study).International Journal of Linguistics 4, 4 Retrieved November 12th 2014 from www.macrothink.org/ijl 525

xviii. Kumazhege, S.Z. (2016). Effects of edutainment on motivation and achievement of students in motor vehicle mechanics work in technical colleges of adamawa state, Nigeria. Unpublished Ph.D Dissertation. Modibbo Adama University, Yola, Nigeria.

xix. Langa, G. N. (2013). Comparison of students' performance on guided discovery and conventional teaching methods in Electrical/Electronics equipment fault diagnosis in Colleges of Education (Technical) In North-Eastern Nigeria. Unpublished Master's thesis. Modibbo Adama University of Technology, Yola, Nigeria.

xx. Maness, K. (2004). Teaching media-savvy students about the popular media. English Journal, 93(3), 46-51.http://dx.doi.org/10.2307/4128808

xxi. New World Encyclopedia (2008). Edutainment. Retrieved Dec,17th 2016 from http://www. New World Encyclopedia

xxii. Okan, Z. (2003). Edutainment: Is learning at risk? British journal of educational technology, 34(3), 255-264

xxiii. Oyewole, N. (2017,May 15th). Stakeholders advocate adoption of e-learning in tertiary education. pg 20

xxiv. Reinhardt, D.J. (2007). Factors that influence learning retention for industrial maintenance Technicians. Master of Science Degree. The Graduate School University of Wisconsin-Stout

xxv. Sambo, A. A. (2008). Research Methods in Education. Ibadan, Nigeria: Stirling-horden publisher

xxvi. Schraw, G., Flowerday, T., & Lehman, S. (2001). Increasing situational interest in the classroom. Educational psychology review, 13, 3

xxvii. Shadish, W, Cook, T., &Campbell, D. (ND).Experimental and Quasi-Experimental Designs for Generalized Causal Inference. Boston, New York: Houghton Mifflin Company.

xxviii. Shuttleworth, M. (2008). Quasi-experimental Design. Retrieved November 19th, 2014 from Explorable. Com: https://explorable.com/quasi-experimental-design

xxix. Udofia, N. & Udofia, A. (2013). Project and e-learning methods and skills acquisition in Electrical Installation Works in Technical Colleges in Akwa Ibom State. Academic Journal of Interdisciplinary Studies, 2,2

xxx. Umunadi, K.E. (2009). A relational study of students' academic achievement of television technology in Technical Colleges in Delta States of Nigeria. Journal of Industrial Teacher Education, 46, 3

xxxi. Uzoagulu,A. E.(2011). Practical Guide to Writing Research Project Reports in Tertiary Institutions. Enugu: John Jacobs Classic Publishers.

xxxii. White, R. (2013). White Hutchison Leisure and learning group. Retrieved Dec,17th 2016 from http://www.whitewhutchison.com

xxxiii. Yusuf, A. (2014). An analysis of the influence of ICT on student learning process in UDUS Sokoto. Retrieved from http://www.academia.edu

Appendix

Technical Education Students' Interest Inventory (Tesii)

The technical education students' interest inventory is compiled to ascertain the level of your interest in technical education.

All information supplied shall be purely used for the purpose of research. You are therefore advised to be honest and sincere in your rating.

Section A
Personal data:
a. Name of institution..............................

Section B

Instruction:

 a. Below is a list of statements to ascertain your feeling towards use of edutainment in teaching and learning technical education.

Please respond to whether you strongly Agree (SA), Agree (A), Disagree (D) or Strongly Disagree (SD) by ticking (√).

S/N	Item	SA (5)	A (4)	D (3)	SD (2)	UD (1)
1	I am eager to attend lectures that involves using Facebook					
2	I do not feel at ease when Whatsapp is used to deliver lectures					
3	Technical education is a course I enjoy studying on Youtube					
4	I am not very comfortable when Social media is used for lecture series					
5	I am always keen to learn new facts about Technical education on Imo					
6	I am more at ease with Skype platform of instruction					
7	I enjoy using Facebook to discover new facts about Technical Education					
8	I do not prefer the use of edutainment to learn Technical Education					
9	Using Whatsapp makes me feel more excited during Technical Education lesson					
10	I am more comfortable to attend Technical Education lectures on Social Media					
11	The use of Social Media platform to teach is boring					
12	I detest the use of Social Media instructional platform					
13	I more comfortable with the physical presence of my teachers than the Social Media instructional platforms					
14	The continuous use of face-to-face teaching method is boring					
15	I am not always attentive during Technical education lectures on Social Media platform					
16	I am frightened when technology questions are posed on me during Youtube lectures					
17	I am frightened when technology questions are posed on me during Skype lectures					
18	I feel depressed throughout the Social Media lecture series					
19	I am always confused during Technical education Practical lessons using the Social media platform					
20	I do not feel nervous throughout the practical lesson on Social media platform					

Table 6