

## Effect of Video Tutorial on Students' Skill Performance, Interest and Retention in Basic Electronics in Technical Colleges in Rivers State

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**Abstract:** This study was designed to determine the Effects of Video Tutorial on Students' skills Performance, Interest and Retention in Basic Electronics in Technical Colleges in Rivers State. Three specific objectives, three research questions and three null hypotheses guided the study. The study adopted a quasi – experimental design of non-randomized pre-test, post-test controls group. The population for the study comprised of 89 students of ST3 all from the Technical Colleges in Rivers State. The sample size of the study consisted of 120 students. The instruments used for data collection were Basic Electronics Performance Test (BEPT) and Basic Electronics Interest Inventory (BEII). To ensure content validity of the BEPT, a test blue print (Table of specification) was used to build the test. The BEPT, BEII and lesson plans developed for the experimental and control groups were subjected to face validation by three experts all from University of Uyo. The BEPT was trial tested twenty (20) students who were not research sample for the purpose of determining the psychometric indices of the test. The reliability coefficient of the Basic Electronics Performance Test (BEPT) and the Basic Electronics Interest Inventory (BEII) obtained through Cronbach alpha statistics were 0.87 and 0.89 respectively. The high reliability indices indicated that the instruments were reliable for use in the study. The data collected were analyzed using mean and standard deviation to answer the research questions, t-test was used to hypotheses 1-3. Based on the findings of the study, it could be concluded that the use of video tutorial instructional method enhances students' skills performance, interest and retention in Basic Electronics than using demonstration method. Finally, from the study the researcher recommended that Basic Electronics teachers and instructors in all public Technical Colleges in Rivers State should henceforth adopt video tutorial in teaching topics in Basic Electronics in order to improve students' skills performance, interest and retention in Basic Electronics.

**Keywords:** Video, Video Tutorial, Skill, Skill Performance, Interest and Retention.

### Introduction

Basic Electronics is one of the major options in Technical Education programmes. It is offered in Nigerian Technical Colleges, trade centres and in some tertiary institutions for the production of middle level manpower for the electronics industry. Electronics play an important role in many pieces of household equipment. Basic Electronics is a branch of technology relating to the condition and control of electricity flowing through semi-conductor materials or through vacuum or gases. It is concerned with the study and application of motion of charge carriers (Electrons) under the influence of externally applied voltage or current (Terrell, 2018).

The objectives of studying Basic Electronics in Technical Colleges in Nigeria according to Federal Ministry of Education (FME, 2018) are to: develop a further understanding of the basic concepts and

principles of electronics, build and test simple electronic devices, develop skills in circuit fault tracing and repairs, use simple electronic devices in the construction of electronic system and prepare students adequately for further work in electronics. The Federal Republic of Nigeria (FRN, 2014) stipulated that Basic Electronics should be one of the vocational courses to be taught in Technical Colleges to provide trained manpower and give training necessary for acquisition of skills to individual who shall be self-reliant economically. However, the topics in Basic Electronics and the ways they are taught appears to lack proper instructional procedure that creates interactive teaching style. Sidhu (2016) noted that the instructions are not logically sequenced to fit the ability of the learners as teachers could not provide teacher – led practice to engage in reciprocal teaching. The field of electronics has undergone explosive growth and has majorly imparted on the lives of nearly every person in the world in many ways. Its effects are so powerful that the age in which we live is often called the electronic age (Terrell, 2018).

The advancement of technology has found its effects in Education, that they are so powerful tools in lesson delivery. The aims and objectives of education depend on the nature, needs and the form of multimedia. For education to be useful to the society, certain desirable skills, capabilities, qualities, knowledge, attitude and values need to be inculcated in the individuals. These anticipated desirable outcomes should be clearly spelt out and considered very important because the success of the educational endeavour depends on how much they are achieved (Akubua, 2019). This achievement is possible when multimedia tools are used. The use of multimedia in the classroom is not a new phenomenon, the type of media used and how it is used is changing with technological innovations. Video tutorial could be considered as one of the technological innovations that needed to be used in the classroom.

Video is an instructional tool that possesses the capacity to enhance quality teaching and learning, seek to arouse interests, stimulates thinking and concretize knowledge that could otherwise only be talked about in abstract-term. It also has the potentials of increasing the probability that students will learn more, retain better and even improve performance of their skills (Nsofor and Momoh, 2013). A Video Tutorial therefore is a Video that demonstrate how to perform a specific task. The primary goal of Video Tutorial is to guide the viewer through a particular activity so that they can complete it themselves. Video Tutorial has unique features that make it an effective teaching and learning method that can enhance and replace traditional class-room based and teacher–led learning approaches. Video Tutorial has the capacity of changing the way teacher teach as well as how the learners learn. In addition, Video Tutorial can help students by visualizing how something works and show information and details difficult to explain by text or static photos. Furthermore, video tutorial can attract students' attention, thus motivating them and engaging them to increase their skills performance on what they are learning (Ahmed and Mohamed, 2018).

A lot of skills need to be imparted to the students for effective performance in the electronics industries. Skill, according to Marcus (2017), is the ability or the expertness in doing something well. Performance on the other hand is the outcome of education, the extent to which students have achieved their educational goals. It is measured by examination results which is one of the major goals of a school (Shehu and Hajara, 2018). Skill performance therefore is the skills and abilities that an individual demonstrates in the actions they perform. Skills are specialized and well-rehearsed method or technique of carrying out a task which would be repeated with predictable quality, efficiency and effectiveness acquired through training, practice and experience. Dem et al, (2017) defined skill as the capacity of accomplishing knowledge precision or certainty, practical knowledge in combination with ability to do something expertly and well in accordance with set standard or manufacture. Dem et al. further stated that to possess skill is to demonstrate the habit of acting such that the process becomes natural through repetition of practice. Skill requires the 3Hs, which is head the right cognition involves

in the job, hand the application of the cognition through the hands and heart the right state of mind needed in the job.

Interest is a persisting tendency to pay attention and enjoy some activities. Interest has been viewed as emotionally oriented behavioral trait which determines a student's vim and vigor in tackling educational programmes or other activities. Interest is an important variable in learning because when one is interested in an activity one is likely to perform positively. It can be expressed through simple statement made by individuals about their likes and dislikes. Obodo (2018) described interest as the attraction which forces or compels a child to a particular stimulus. By implication, a child develops interest if a particular stimulus is attractive and arousing or stimulating him/her. In other words, the child is bound to pay attention as a lesson goes on because interest is shown. Student's interest and performance in any learning activity are sustained by the active involvement of the learner in all aspects of the learning process. Obodo further emphasized that unless the teacher stimulates students interest in learning, students' performance especially in skills will be minimal, hence, it is essential that technical teachers use teaching method/ strategies which ensures students active involvement in learning and provide suitable learning environment to improve skills performance and stimulate interest which will lead to better retention of knowledge.

Retention is the noun form of the verb "retain" Retain is defined as to keep, continue to have or hold or keep in place or keep possession of. Retention, which is the act of retaining, absorbing and holding or to continue having or hold (Samuel, 2015). In the context of this word, retention refers to the act of absorbing, holding or continuing to hold or have facts or skills learnt. Retention, according to Denga et.al (2009) in Ado and Abasi (2021) is the process of keeping knowledge overtime. It is the ability of human beings to store, retain and recall information. The human mind acquires the materials of knowledge through sensation and perceptions. Whenever a stimulating situation occurs, retained images are reviewed or reproduced to make recall possible.

The cognitive theory of multimedia learning was popularized by the work of Richard Mayer and other cognitive researchers who argued that multimedia supports the way human brain learns. They assert that people learn more deeply from words and pictures than from words alone, which is referred to as the multimedia principle. Multimedia researchers generally define multimedia as the combination of text and pictures; and suggest that multimedia learning occurs when we build mental representations from these words and picture. The words can be spoken or written, and the pictures can be any form of graphical imagery including illustrations, photos, animation, or video. Multimedia instructional design attempts to use cognitive research to combine words and picture in ways that maximize learning effectiveness. Multimedia learning occurs when a learner builds a mental representation from words and pictures that have been presented. Cognitive Theory of Multimedia Learning seeks to explain the processes that take place in the minds of learners during meaningful learning from multimedia instruction.

Nsofor and Momoh (2013) conducted a study on the effects of developed electronic instructional medium (video tutorial) on students achievement in Biology. The study was guided by two research questions and two hypothesis, using a quasi-experimental, pretest-posttest control group design. The sample comprised of 180 senior secondary year two students from six schools located in the education zones of Niger State. The Subjects were divided into experimental (Video Tutorial) and control group (traditional lecture method). Structured Biology Achievement Test (SBAT) with intentional consistency reliability co-efficient of 0.83 was used to measure the students achievement before and after the treatment. The data obtained from the study were analyzed using analysis of covariance (ANCOVA). The results from mean, ANCOVA and scheffe test indicated that the achievement of students in Biology greatly improved with the use of video tutorial. These results have implication for innovative use of instructional media and creating sound strategies for disseminating science in the

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classroom. This study is related to the presents study which employed Video Tutorial to improve students' skill performance, interest and retention in Basic Electronics in Technical Colleges of Rivers State.

Aberson (2020) studied the use of interactive video tutorial for teaching statistical power in Benin-city educational zone. Two research questions and one null hypothesis guided the study. A descriptive survey design was adopted. The population of the study was 156 secondary school students in Benin-city. Questionnaire containing 20 items was used for data collation. Descriptive statistic and t-test were used to answer the research question and testing the hypothesis respectively. The findings of the study revealed that the use of interaction Video Tutorial for teaching statistical power increased students interest, hence their greater performance in statistical power. This study is related to the presents study which employed Video Tutorial to improve students' skill performance, interest and retention in Basic Electronics in Technical Colleges of Rivers State.

Bright (2020) carried out a study on the effect of Video Tutorial on secondary school students' interest and performance in practical land preparation in Yobe State. It also examined the influence of gender on students' interest and performance in the subject. Quasi experimental design, pre-test post test control group design was adopted. The sample size was 80 SS 11 students comprising 52 males and 28 females from intact classes. The two classes were randomly assigned experimental and control groups. The experimental group was taught with Video Tutorial while the control group was taught with conventional method. The treatment lasted for four weeks. To guide the study six research questions and six hypotheses were formulated. Agricultural Achievement Test (AAT) comprising thirty practical questions and an interest inventory were developed. The two instruments used for data collection where face validated by three experts and their reliability index were 0.84 and 0.91 respectively. Analysis of Covariance (ANCOVA), mean and standard deviation were used to analyze the data collected for the study. The results showed that Video Tutorial had significant effect both on students' interest and achievement in practical land preparation; gender had no significant influence on students' interest and achievement in practical land preparation. Therefore, the major contribution of this study is in the area of enhancing the students' interest and achievement in practical land preparation using Video Tutorial enhance the interest and achievement of students. Finally, the researcher recommended among others that agricultural science teachers should adopt the use of Video Tutorial to facilitate teaching and learning. This study is related to the presents study which employed Video Tutorial to improve students' skill performance, interest and retention in Basic Electronics in Technical Colleges of Rivers State.

Ojo (2019) investigated the role of Video Tutorial on the interest and retention of secondary school students. It was an experiment study conducted on 80 female students. The sample was divided into control and experimental groups on the basis of pre-test. One group (control) was taught the course contents of Basic Electronics with the traditional lecture method and the other group (experimental) was taught with the Video Tutorial. After one month treatment both the groups were exposed to interest inventory. To check the retention a delayed post-test (retention test) was administered six weeks after the post-test. The results show that in the Video Tutorial group, the students showed more interest and they retained the concepts for a long period of time as compared to the traditional lecture method. Hence the researcher recommended that the use of Video Tutorial be used in teaching and learning.

According literature reviewed there have been challenges in workplaces as a result of the effects of globalization and the rapid revolution in information and communication technology. These changes have called for a realignment of curriculum content and instructional techniques in line with current realities if Vocational Education products are to survive in the continuously changing and competitive world. From the review of related literature, it can be seen that students have more positive attitudes

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and interest towards learning with Video Tutorials than with conventional instruction. Perhaps, if Video Tutorials is used for teaching Basic Electronics to the Technical College students in Rivers State, the students would improve in their skill performance and develop more interest than the use of conventional method. Also, from the empirical studies reviewed, it was found that although some studies focused on the effects of Video Tutorial on students skills performance interest and retention in many technical subjects, none of the available studies focused specifically on the comparative effects of Video Tutorial and demonstration methods on students skill performance, interest and retention in Basic electronics in technical colleges in Rivers State. This is the gap that this study sought to bridge.

## **Statement of the Problem**

Basic Electronics teachers do not seem to teach students using the right teaching methods/strategies such as Video Tutorial and other modern teaching methods. This results to student poor academic performance and skill acquisition. This is evidenced by the fact that electronics craftsman that operates in societies are mainly those that passed through the apprenticeship systems. Those who have passed through higher institution in Technical Education (Electrical/Electronics) find it very tough and hard to either operate by themselves or employ others. The situation is worse to the extent that according to Ogbuanga and Igweh (2014), those who try to establish their own workshops create more havoc to the faulty electrical and electronics appliances contracted to them for repair. This is a clear evidence that Basic Electronics as a course might not have been properly taught in Technical Colleges or students are not interested or have low retention of the course.

The situation of poor academic performance and skills acquisition in Basic Electronics could be improved through the use of innovative strategies like Video Tutorial that could complement the traditional methods. The Video Tutorial approach helps students to understand on their own in a meaningful way and help the teacher to teach their learners using different up-to-date teaching approaches. The researcher observed that continuous use of traditional method of teaching specifically demonstration method in Basic Electronics might create a serious drop back in students' academic performance in different examinations. Hence, this study sought to determine the effect of Video Tutorial teaching method on students' skill performance, interest and retention in Basic Electronics in Technical Colleges in Rivers State.

## **Purpose of the Study**

The purpose of this study was to determine the effects of Video Tutorial and demonstration instructional methods on students' skills performance, interest and retention in Basic Electronics in Technical Colleges in Rivers State. Specifically, the study sought to:

- (1) Determine the difference in students' skills performance in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional methods.
- (2) Determine the difference in students' interest in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method.
- (3) Determine the difference in students' retention in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method.

## **Significance of the Study**

The findings of this investigation would be of immense significance to Basic Electronics teachers, students, educational administrators and researchers. Technical teachers work would become easier and interesting as they would be playing supervisory roles. This would bring improvement in technical teacher's morale. The knowledge gained from the skills in the use of Video Tutorial in teaching Basic Electronics would be better as opposed to the present conventional teaching method which is teacher

centered. Technical teachers would use student centered interactive knowledge classroom environment to secure and sustain the attention of the students in learning Basic Electronics. The knowledge of Video Tutorial if found effective would help the teachers to improve their instructional delivery to bridge the gap in skill performance, interest and retention of students in Basic Electronics. This study would also serve as source of literature to schools and educational researchers in this area of the study. Also findings of this study are apt to generate other related problems for further research.

### Research Questions

The following research questions would guide the study

- (1) What is the difference in students' skills performance in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method?
- (2) How do students' interest in mini audio amplifier circuit construction differ when taught using Video Tutorial and demonstration instructional method?
- (3) How do students' retention in mini audio amplifier circuit construction differ when taught using Video Tutorial and demonstration instructional method?

### Research Hypotheses

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

- (1) There is no significant difference in students' skills performance in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method.
- (2) There is no significant difference in student's interest in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method.
- (3) There is no significant difference student's retention in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method.

### Research Methodology

A quasi-experimental design of non-randomized pre-test post-test control group design was used for this study. According to Gall et al (2007) quasi-experimental design can be used when it is not possible for the researcher to randomize the subjects and assign them to treatment group without disrupting the academic programme of the school involved in the study. Also Udoh and Joseph (2005) stated that quasi-experimental design provides a less satisfactory degree of control, used only when randomization is not feasible. This design was used as the researcher did not want to disrupt the school academic programmes.

### Presentation and Analysis of Results

#### Research Question 1

What is the difference in students' skill performance in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method?

**Table 1: Mean Performance scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods**

S/N	Group	N	Pretest		Post-test		Mean Gain
			$\bar{X}$	SD	$\bar{X}$	SD	
1	Video Tutorial	62	8.68	1.53	16.13	1.76	7.45
2	Demonstration	58	8.45	1.59	10.03	2.14	1.58

The data in Table 1 is a summary of the mean pre-test and post test scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The result shows that the mean pre-test and mean post-test scores of students in the experimental group who were taught with Video tutorial are 8.68 and 16.13 respectively with standard deviations of 1.53 and 1.76. The corresponding figures for those students in the control group who were taught with demonstration method are 8.45 and 10.03 respectively with standard deviations of 1.59 and 2.14 respectively. It could be observed that students who were taught with Video tutorial had a higher mean gain of 7.45 as against 1.58 obtained by those who were taught with demonstration method. This result suggests that teaching mini audio amplifier circuit construction using video tutorial enhances students' skill performance than using demonstration instructional method

### Research Question 2

What is the difference in students' interest in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method?

**Table 2: Mean Interest scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods**

S/n	Group/ Method	N	$\bar{X}$	SD
1	Video Tutorial	62	65.68	4.95
2	Demonstration	58	58.00	1.07

The data in Table 2 is a summary of the mean interest scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The result shows that the mean interest score of students in the experimental group who were taught with Video tutorial is 65.68 with standard deviations of 4.95 while those in the control group who were taught with demonstration method had a mean interest score of 58.00 with standard deviation of 1.07. It could be observed that students in the experimental group had a higher interest score than those in the control group. This result suggests that teaching mini audio amplifier circuit construction using video tutorial enhances students' interest than using demonstration instructional method

### Research Question 3

What is the difference in students' retention in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method?

**Table 3: Mean Retention scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods**

S/n	Group	N	$\bar{X}$	SD
1	Video Tutorial	62	16.76	1.99
2	Demonstration	58	10.29	1.88

Table 3 presents a summary of the mean retention scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The result shows that the mean retention score of students in the experimental group who were taught with Video tutorial is 16.76 with standard deviation of 1.99 while those in the control group who were taught with demonstration method had a mean retention score of 10.29 with standard deviation of 1.88. It could be observed that students in the experimental group had a higher retention score than those in the control group. This result suggests that teaching mini audio amplifier circuit construction using video tutorial enhances students' retention than using demonstration instructional method.

**Research Hypothesis 1 (H<sub>01</sub>):** There is no significant difference in students' skill performance in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method

**Table 4: Summary of t-test Analysis of the mean skill performance of students' taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods**

GROUP	N	Mean	Std. Deviation	Std. Error Mean	t	Df	P	Decision
Video Tutorial	62	16.13	1.76	0.22	17.11	118	0.00	S
Demonstration	58	10.03	2.14	0.28				

\*S = Significant at 0.05 level of significance

Table 4 is a summary of the t-test analysis of the mean skill performance of students' taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The students were divided into two groups based on teaching method namely video tutorial and demonstration instructional methods. The t -value for teaching method or group is 17.11 with p- value (level of significance) being 0.00. Since the obtained p- value is less than the stipulated probability level of 0.05, it implies that the value of t is significant at 0.00 level of significance. On this basis, the null hypothesis is rejected implying that there is significant difference in students' skill performance in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method. The difference is in favour of students in the experimental group who obtained a higher mean performance score than their counterparts in the control group as shown in Table 1.

**Research Hypothesis 2 (H<sub>02</sub>):** There is no significant difference in students' interest in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method

**Table 5: Summary of t-test Analysis of the mean interest scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods**

GROUP	N	Mean	Std. Deviation	Std. Error Mean	t	Df	P	Decision
Video Tutorial	62	65.68	4.95	0.63	5.35	118	0.00	S
Demonstration	58	58.00	10.07	1.32				

\*S = Significant at 0.05 level of significance

The data in Table 5 is a summary of the t-test analysis of the mean interest scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The students were divided into two groups based on teaching method namely video tutorial and demonstration instructional methods. The t -value for teaching method or group is 5.35 with p- value (level of significance) being 0.00. Since the obtained p- value is less than the stipulated probability level of 0.05, it implies that the value of f is significant at 0.00 level of significance. On this basis, the null hypothesis is rejected implying that there is significant difference in students' interest in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method. The difference is in favour of students in the experimental group who obtained a higher mean interest score than their counterparts in the control group as shown in Table 2.

**Research Hypothesis 3 (H<sub>03</sub>):** There is no significant difference in students' retention in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method



**Table 6: Summary of Analysis of Covariance of the mean retention scores of students taught mini audio amplifier circuit construction using video tutorial and demonstration instructional method**

GROUP	N	Mean	Std. Deviation	Std. Error Mean	t	Df	P	Decision
Video Tutorial	62	16.76	1.99	0.25	18.22	118	0.00	S
Demonstration	58	10.29	1.88	0.24				

\*S = Significant at 0.05 level of significance

Table 6 is a summary of the t-test Analysis of the mean retention scores of students' taught mini audio amplifier circuit construction using video tutorial and demonstration instructional methods. The students were divided into two groups based on teaching method namely video tutorial and demonstration instructional methods. The t -value for teaching method or group is 18.22 with p- value (level of significance) being 0.00. Since the obtained p- value is less than the stipulated probability level of 0.05, it implies that the value of f is significant at 0.00 level of significance. On this basis, the null hypothesis is rejected implying that there is significant difference in students' retention in mini audio amplifier circuit construction when taught using video tutorial and demonstration instructional method. The difference is in favour of students in the experimental group who obtained a higher mean retention score than their counterparts in the control group as shown in Table 3.

### Findings of the Study

#### Students' skills performance in mini audio amplifier circuit construction when taught using Video Tutorial and demonstration instructional method

Students in the experimental group who were taught with mini audio amplifier circuit construction using Video tutorial had a higher mean gain of 7.45 as against 1.58 obtained by those who were taught with demonstration method. This result suggests that teaching video tutorial enhances students' skill performance than using demonstration instructional method. The superiority in skills performance of students in the experimental group could be attributed to the fact that Video Tutorial is capable of communicating facts and demonstrating procedures to assist in mastery learning where a student can view complex electrical and electronic procedures as many times as they need to. Moreover, by making Video Tutorials available online, students are able to access lessons anytime, anywhere. This allows them to learn at their own pace and on their own time. In addition, by combining video tutorial and learning by doing, Video Tutorial provide a unique tool for knowledge acquisition along with skill development.

The finding of the present study is in agreement with that of Nsofor and Momoh (2013) who studied the effects of developed electronic instructional medium (video tutorial) on students achievement in Biology. The result revealed that the achievement of students in Biology was greatly improved with the use of video tutorial. The finding also agrees with that of Bright (2020) who studied the effect of Video Tutorial on secondary school students' interest and performance in practical land preparation in Yobe State. The results showed that Video Tutorial had significant effect both on students' interest and achievement in practical land preparation. The present finding however contradicts that of Ybarrondo (2013) who attempted to find out whether Video Tutorials teaching could increase the level of learning in Technical College Electronics classes. The results showed that there was no significant difference in the performance of students in the experimental and control group.

**Students' interest in mini audio amplifier circuit construction differ when taught using Video Tutorial and demonstration instructional method**

Students in the experimental group had a higher interest score than those in the control group suggesting that teaching mini audio amplifier circuit construction using video tutorial enhances students' interest than using demonstration instructional method. The superiority in interest score of students in the experimental group could be attributed to the fact that the use of Video Tutorial can transform a passive viewing experience into an active learning experience by presenting knowledge in an attractive and engaging way which tend to stimulate learners attention while at the same time motivating them to participate actively in the learning process. In addition, video tutorial can support different learning style and are appealing to both visual and auditory learners. The finding of the present study is in agreement with that of Aberson (2020) who studied the use of interactive video tutorial for teaching statistical power in Benin-city educational zone. The findings of the study revealed that the use of interactive Video Tutorial increased students interest, hence their greater performance in statistical power. The finding is also in agreement with that of Bright (2020) who carried out a study on the effect of Video Tutorial on secondary school students' interest and performance in practical land preparation in Yobe State. The results showed that the use of Video Tutorial had significant effect both on students' interest and achievement in practical land preparation.

**Students' retention in mini audio amplifier circuit construction differ when taught using Video Tutorial and demonstration instructional method**

Students in the experimental group had a higher retention score than those in the control group. This result suggests that teaching mini audio amplifier circuit construction using video tutorial enhances students' retention than using demonstration instructional method. The superiority in the performance of students in the experimental group with respect to retention of learning could be attributed to the fact that video tutorial involves the combination of visual and oral materials which is well known to enhance memory and cognition due to the fact that it involve two sense organs: sight and hearing. This is in consonance with the Chinese educational paradigm: I hear, I forget, I see, I remember, I do, I understand. Also, learners are remember only 10 percent of what they read, 20percent of what they hear, 30percent of what they see, 50percent of what they see and hear, 70 percent of what they say and write and finally 90 percent of what they do.

The present finding is in agreement with that of Ojo (2019) who investigated the role of Video Tutorial on the interest and retention of secondary school students. The results show that students in the Video Tutorial group showed more interest and they retained the concepts for a longer period of time as compared to those taught using the traditional lecture method.

**Conclusion**

Based on the findings of the study, it could be concluded that the use of Video Tutorial instructional method enhance students' skills performance, interest and retention in Basic Electronics than using demonstration method.

**Recommendations**

Based on the findings of the study, the researcher made the following recommendations:

1. Basic Electronics teachers and instructors in all public Technical Colleges in Rivers State should henceforth adopt Video Tutorial in teaching topics in Basic Electronics in order to improve students' skills performance in Basic Electronics

2. Basic Electronics teachers and instructors in all public Technical Colleges in Rivers State should henceforth adopt Video Tutorial in teaching Basic Electronics in order to improve students' interest in Basic Electronics
3. Teachers and instructors of Basic Electronics in all public Technical Colleges in Rivers State should henceforth adopt Video Tutorial in teaching Basic Electronics in order to improve students' retention of learning in Basic Electronics.
4. The Rivers State Ministry of Education should recommend and enforce the use of Video Tutorial method in the teaching of Basic Electronics in all public Technical Colleges in the state.

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