An Empirical Comparison of Computer-Assisted Instruction and Field Trip Instructional Methods on Teaching of Basic Science and Technology Curriculum in Nigeria

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Doi: 10.23918/ijsses.v7i4p22

Abstract: This paper examined the impact of Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) on the educating and learning of fundamental science and innovation in upper basic education (Junior Secondary School 1-3). The study employed quasi-experimental design, which is the pre and post-test for control and experimental group design performed at three selected public schools in Gwagwalada Area Council, Abuja. Three research questions and hypotheses guided the study. Two hundred ten (210) junior secondary students (JSS) were randomly selected by a simple ballot method from three secondary schools in Gwagwalada area council of Abuja. A 50 – item questions test called Basic Technology Performance Test (BTPT) developed by the researcher was employed to gather information for the investigation. Scores generated from pre-test and post-test were analyzed using Pearson Product Moment Correlation Coefficient (PPMCC), and the test had a reliability of 0.92. The paired sample and independent-sample t-test were used to analyze the data through the Statistical Package for Social Science (SPSS) version 25. The result showed that the use of Computer-Assisted Instruction (CAI) has a better effect on students' achievement in basic science and technology. It was additionally uncovered from the outcome that there was a significant difference between pre- and post-lesson assessments. Recommendations were made to the teachers that they should always apply Computer-Assisted Instruction (CAI) materials for effective lesson delivery.

Keywords: Basic Technology Performance Test (BTPT), Computer-Assisted Instruction (CAI), Field Trip Instruction (FTI), quasi experimental design, Pre-test, Post-test

1. Introduction

A nation's curriculum is at the heart of its educational system. The curriculum addresses the goal and objectives of education at every level and provides teachers with the pedagogical principles and clarity for successful implementation. This implies that teachers are legally responsible for the translation, performance, and assessment of academic achievements to the level of the learners. Thus, teachers are expected to possess the attributes, skill, knowledge, and instructional competence for successful and functional implementation. In recent years, the teaching of basic science and technology education has been an essential concentration at the fundamental upper degree of the Nigerian instructive framework.

Received: October 12, 2020
Accepted: November 25, 2020
Adams, S.O., & & Rachel Uchenna Onwadi, R, U. (2020). An empirical comparison of computer-assisted instruction and field trip instructional methods on teaching of basic science and technology curriculum in Nigeria. *International Journal of Social Sciences & Educational Studies*, 7(4), 22-35.

Thus, the introduction of the Basic Science and Technology curriculum was in an attempt by the Federal Ministry of Education through the national policy on education (NPE, 2014) to enhance the acquisition of skills and competencies for practical and functional knowledge at the basic upper level. Basic Science and Technology, formally known as Integrated Science and Introductory technology, are subjects taught at and Junior Secondary School level (Nwafor, 2012). It is a prologue to the investigation of the sciences in the Senior Secondary Schools. Essential Science and Technology is the investigation of rudimentary science, life structures, earth/nearby planetary group, environment, hereditary qualities, and material science as a solitary science subject in the lesser auxiliary school. It offers essential preparing in logical aptitudes needed for human endurance, feasible turn of events, and cultural change (Nwafor & Abonyi, 2016). Fundamental Science contemplates include uniting customarily separate subjects, so understudies handle a more valid comprehension. The instructional conveyance of Basic Science and Technology in junior auxiliary schools has not been so significant in view of standard instructional techniques, overloaded curriculum, lack of instructional materials, large class size just to mention but a few (Miller et al., 2010). For these reasons, teachers simply adopt instructional approaches like the conventional explanatory method, which neither leads to objective reasoning nor arouses interest in students. There is, along these lines, each need to improve the instructing of Basic Science and Technology utilizing viable and energizing procedures to upgrade understudies' revenue and accomplishment in learning.

To actualize the educational benefits of the Basic Science and Technology curriculum, the role of teachers in the implementation process is very vital. Accordingly, Ebiringa (2012) observed that education is the entryway to modernization, however the educator holds the key. The educator figures out what occurs in the homerooms, particularly and the best instructional technique to be embraced. Practical usage of any instructive program must be guaranteed through instructors who have obtained fundamental capabilities as far as information, abilities, qualities, and perspectives. Indeed, the instructional delivery process focuses on how Basic Science and Technology curriculum subjects are being taught in schools within the context of the Nigerian educational system, the methodologies adopted by teachers, the adequate number of teachers in urban and rural locations, the effect of teacher gender on instructional delivery, adequacy and effective utilization of instructional resources (Olaitan, 2003). Instructional delivery of Basic Science and Technology curriculum subjects could be demanding and challenging for both the teacher and students. This is because the full implementation of the Basic Science and Technology curriculum requires competence, knowledge, and skill from the teacher whose duty is to make learning enjoyable to students. To accomplish these objectives, it is recommended that the teaching and learning of Basic Science and Technology curriculum should involve the use of innovative methods in education; methods like discovery, Computer-Assisted Instruction (CAI), problem-solving, field trip, and laboratory method among others.

1.1 Computer-Assisted Instruction (CAI)

The term Computer-Assisted Instruction (CAI), as the name proposes, is the utilization of a PC to give guidance. The arrangement can shape a basic program to instruct composing to an intricate framework that utilizes the most recent innovation to present new keyhole medical procedure strategies. CAI draws on information from the fields of learning, perception, Human-Computer Interaction (HCI) among others. PC Assisted Instruction (CAI) has been characterized as an efficient way to deal with building up understudies' information and abilities that utilizes a PC as a focal component to help guidance through

exercises including, yet not restricted to, introducing materials, evaluating progress, and controlling activities (Anohina, 2005). PC Assisted Instruction is not simply a refined sort of modified guidance however an alternate sort of educating by and large. Most likely, information preparing, information correspondence, assents of general media and media hypothesis, correspondence hypothesis, framework hypothesis, and learning are used in the preparation of the Computer-Assisted Instruction material. In contrast to CAI, Computer Managed Instruction (CMI) analyses the relationship between various fiction between students and teachers (Nazimuddin, 2015). CAI is also a program of instructional material presented by means of a computer or computer system. Eze (2000) states that Computer-Assisted Instruction (CAI) empowers an exercise to be conveyed through a PC without steady instructor guidance. Notwithstanding, she said that; Computer-Assisted Instruction makes learning additionally captivating. CAI programs use instructional exercises, drill and practice, reproduction, and critical thinking ways to deal with present subjects, and they test the understudy's understanding as Abonyi and Ugama (2005) sets that there is no movement in the educating getting the hang of setting that happens more often than estimating and assessing the students.

1.2 Field Trip

Field trip as an instructional method involves taking students out of the four corners of the classroom to the field, garden, institutions, game reserve, or park to study something that may not be brought to the class. Prem (2012) characterizes a field trip as a visit to a spot outside the standard homeroom, which is intended to accomplish explicit destinations which can't be executed also by different methods. Nwagbo (2008) further stress that field trips give an open door for understudies to escape the study hall and experience something new. The instructional places for field trips could be zoos, college, museums, wildlife parks, game reserves, national parks, schools, among others. The use of Computer-Assisted Instruction (CAI) and field trip instructional methods are necessary because most of the conventional explanatory method presently utilized in instructing essential science and innovation in junior auxiliary schools have not yielded numerous outcomes deciding from the terrible showing of understudies in the lesser Secondary Certificate Examinations (Uche et al., 2016). The conventional explanatory methods, according to Umar (2012) and Ukpai (2014), involves the presentation of concepts through talking, reading, note-taking, and memorization of facts without actually involving students in activities or practical works that would stimulate their interest to perform better. There has been therefore significant shift of emphasis in Science teaching from authoritative content and factual acquisition of scientific knowledge to those which make students actively involved in learning science by doing. This is where alternative strategies like computer-Assisted Instruction (CAI) and field trip instruction will be compared in this paper to ascertain the best strategy for showing the essential science and innovation educational program.

The teaching of the contents of the basic science and technology curriculum demands making instruction relevant to real-world problems using a more practical method which is among the most potent adaptive practice a teacher can use to improve student learning as against the conventional instructional method (Amalu, 2015). This kind of guidance permits understudies to investigate, ask, and genuinely develop information on certifiable issues that are pertinent to their life. Also, understudies are inspired and connected with when their learning is bona fide, particularly when this present reality assignments performed have customized results. The study sought to compare the use of Computer-Assisted Instruction

and Field Trip Instructional Methods for Teaching of Basic Science and Technology in some selected secondary schools in Abuja.

1.3 Statement of the Problem

Suffice to say that innovation and creativity amongst teachers have been significantly hampered by work overload, inadequate facilities such as laboratories, equipment, and materials, these have greatly influenced the way in which the Basic Science and Technology curriculum is taught as well as students' interest in the subject. Resourcefulness and ingenuity are essential in the instructional delivery process; however, teachers need to explore other methods of instruction in a way that learning will turn out to be more understudy focused instead of instructor focused. The instructing and comprehension of the Basic Science and Technology educational plan have, in this way been an issue of significant worry for quite a while (Ampadu, 2012). Presently, it appears that junior secondary school students' interests and academic performance in the Basic Science and Technology curriculum is declining. It may be possible that the nature of educators and classroom facilities are grossly inadequate? Even if this is not the case, what about the instructional methods used in the teaching and learning of the Basic Science and Technology curriculum in our schools? The problem before this investigation is to think about the utilization of Computer-Assisted Instruction and Field Trip Instructional Methods for Teaching of Basic Science and Technology in some chose junior optional schools in Abuja.

1.4 Aim and Objectives

This investigation plan to analyze the impact Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) on Junior Secondary School understudies' accomplishment in fundamental science and innovation curriculum implementation. Specifically, this study will investigate:

1. Students' mean achievement when they are taught basic science and technology using Computer-Assisted Instruction (CAI).
2. Students' mean achievement when they are taught basic Science and technology using Field Trip Instruction (FTI).
3. The effect of Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) on students' mean achievement in fundamental science and innovation.

1.5 Research Questions

RQ_1: What is the pre and post students' mean achievement taught in basic science and technology using Computer-Assisted Instruction (CAI)?

RQ_2: What is the pre and post students' mean achievement taught in basic science and technology using Field Trip Instruction (FTI)?

RQ_3: What is the mean achievement of students taught in basic science and technology using Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) methods?

1.6 Research Hypotheses

Based on the objective of the study, the following hypotheses were drafted to be retained or rejected at 0.05 level of significance.

H_{01}: There is no significant difference between the pre, and post-test mean scores of students taught basic science and technology through Computer-Assisted Instruction (CAI)

H_{02}: There is no significant difference between the pre, and post-test mean scores of students taught basic science and technology through Field Trip Instruction (FTI) methods

H_{03}: There is no huge distinction between the accomplishment scores in the information on understudies trained fundamental science and innovation utilizing Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) methods.

2. Review of Empirical Literature

Simeon (2019) investigated the effects of a field trip and peered tutoring instructional strategies on three hundred and fifteen (315) junior secondary school students' science process skills acquisition in essential science and innovation educational program in Osun State. The study was aimed at finding the effects of a field trip and peer tutoring instructional strategies (as against the traditional technique for educating) on auxiliary school understudies' science cycle abilities (perception, order, correspondence, estimation, surmising, and expectation) obtaining in essential science and innovation in Junior Secondary Schools (JSS) in Osun State. These were with the end goal of giving data on the convenience of the methodologies to upgrade the understudies' improvement of science measure aptitudes through the Basic Science and Technology lesson in Osun State classrooms. It was found out that field trip and peer tutoring instructional strategies are practical, what is more, inventive training strategies in improving understudies' science cycle abilities securing in Basic Science and Technology in optional schools. Oyelekan et al. (2017) carried out a study on science educators' usage of inventive methodologies for showing senior school science on an example of 200 and 56 science instructors picked haphazardly from optional schools in Ilorin East, South, and West Local Government Areas. T-test results indicated no critical distinction in science instructors' degree of usage of the imaginative training procedures dependent on experience and capabilities. Abdulrahman and Hassan (2016) considered the instructional techniques and understudies' finish of term accomplishment in science. The discoveries of the investigation set up a measurably critical connection between instructional procedures and understudies' scholastic accomplishment. This infers that the utilization of various instructional strategies by science instructors was not put to squander. Adedokun (2004) studied the impacts of Computer-Assisted Instruction (CAI) on the presentation of Technical College Students. The instrument used was the understudies' accomplishment test and the insights utilized were recurrence, mean, standard deviation, t-test, and Analysis of Variance (ANOVA) which shows that CAI affects the academic presentation of the specific students. Nwafor and Oka (2016) examined the impact of Computer-Assisted Instruction (CAI) on junior helper school understudies' achievement in key science, embracing the Quasi-exploratory plan for the examination. Graphic measurements, for example, mean score and inferential test like examination of Covariance (ANCOVA) at an alpha degree of 0.05 were utilized to uncover that Computer-Assisted Instruction (CAI) as a technique for showing upgraded higher understudies' accomplishment in Basic Science than the regular way. Arop et al. (2015 analyzed

the impact of instructional materials on the educating and learning of Basic Science in Junior Secondary Schools. The examination assessed the capacity of instructional materials in the science study corridor and how instructional materials have impacted the teaching and learning of Basic Science. The result demonstrated that the usage of instructional materials favorably affects understudies' accomplishment in science ideas. Mudasiru and Adedeji (2010) did an exploration on the effect of Computer-Assisted Instruction (CAI) on optional school understudies' presentation in Biology with an example size was 120 SS1 understudies utilizing 3 x 2 factorial plans. The disclosure of the investigation indicated that understudies trained Biology utilizing CAI performed in a way that is better than those understudies showed utilizing regular instructing strategies. Omeodu et al. (2018) examined the pertinence of field trips instructing and learning of material science, a science and practical subject. Findings from this study revealed that field trips encourage effective learning, provide experiences and knowledge, provide a practical approach, and promote required qualities among the students. Abdul Ganiyu et al. (2019) in an investigation on the impact of field stumbles on understudies' scholastic presentation of understudies in Basic Science. The examination indicated that the utilization of field trips in instructing and learning assists with bringing powerful and proficient comprehension of Basic Technology among understudies.

The various literature reviewed so far revealed the use of Computer-Assisted Instruction (CAI) and field trips in instructing and learning of essential science and innovation. The review also revealed that the achievements of students in essential science and innovation educational program, which are both practical and vocational subjects using innovative methods have a more positive effect on students than using techniques that are too conventional. The conventional methods do not in any way encourage practical knowledge and skill development; thus, it does not promote the retention of learning. The instructing and learning of essential science and innovation require instructional methods techniques such as demonstration, Computer-Assisted learning, and field practice which is student-centred.

3. Materials and Method

The research was practically motivated with pre and post-test for control and trial bunch plan and was performed at three chose state funded schools in Gwagwalada Area Council, Abuja, Nigeria.

3.1 Population and Sample

The investigation embraced the pre-test and post-test semi trial plan. The pre-test score was the benchmark group, while the post-test score was the trial gathering. The semi test framework is basic since it is utilized to decide the impact of instructional showing techniques (for example PC Assisted guidance and field stumble) on the accomplishment of upper essential training (JS 1-3) understudies in fundamental science and innovation.

The number of inhabitants in the examination comprises of junior optional school three (3) understudies of 2019/2020 scholarly meeting in three (3) showed fundamental science and innovation in three (3) arbitrarily chose public junior auxiliary schools in Gwagwalada Area Council, Abuja. The schools are Government auxiliary school (junior) Gwagwalada, Government Day optional school Gwagwalada and Government junior optional school Hajj-camp, Gwagwalada Abuja. This investigation thought about three thousand five hundred (3,500). Seventy (70) junior optional school understudies were haphazardly chosen from each of the three (3) schools to form 210 sample size of the study.

3.2 Source of Data and Reliability Test

Three (3) public secondary schools were randomly selected in Gwagwalada Area council, they are Government secondary school (junior) Gwagwalada, Government day secondary school and Government secondary school Hajj-camp. The instrument was the Basic Technology Performance Test (BTPT) - comprising of fifty (50) numerous decision question types with 5 (a, b, c, d, and e) choices. It estimated the exhibition of the understudies in the benchmark group (Computer Assisted Instruction) and in the trial (Field trip) bunches when treatment. The substance legitimacy of BTPT was guaranteed by the utilization of a table of detail (in view of the various degrees of targets of the psychological area). The instrucment was preliminary tried on 20 understudies from schools inside the populace, yet that was not some portion of the investigation test. The unwavering quality record was registered utilizing the Pearson Product Moment Correlation with a reliability index of 0.92, showing that the test was reliable. No instructional material was used to teach the selected students initially, the Basic Technology Performance Test (BTPT) were administered to the students, and the result was recorded as the pre-test. Students in control and experimental groups were taught the concept of science, technology, and society using the first instructional method (i.e. Computer-Assisted Instruction (CAI)) at one corner of the room and after two weeks the other instructional process, i.e. field trip was used to teach the students. This test was administered to the control, and experimental group and result were recorded as post-test.

3.3 Data Analysis

The information gathered through pre and post-tests were put to measurable investigation utilizing measurement bundle for sociologies (SPSS) Inc., Chicago, IL. The United States, form 25.0 for Windows. Notwithstanding computing the illustrative insights, combined examples t-test were raced to see whether the members' exhibitions were measurably unique on the pre and post-tests. Besides, a 2-tailed t-test was run to compare the participants' improvement in the pre-test compared to the post-test. Since the data in the study is continuous (numerical), it justifies the use of a t-test of significance. The decision rule guiding this study states that; Reject H_0 if $P< 0.05$ and accept H_0 if $P>0.05$.

4. Results

This section presents a comprehensive analysis of the results collected in this study. A descriptive analysis that comprised of the number of students mean, standard deviation, standard error of the mean and the mean achievement were presented at the first section of the analysis while the statistical inference that comprised of the paired samples t-test and independent sample t-test were presented at the later part of this section.

4.1 Students' Mean Achievement using Computer Assisted Instruction (CAI)

This section presents the mean, standard deviation, standard error, and means the achievement value of students taught basic science and technology using Computer-Assisted Instruction (CAI).

RQ_1: What is the pre and post students' achievement taught basic science and technology curriculum using Computer-Assisted Instruction (CAI)?

Table 1: Descriptive statistics of pre and post-test score for students taught using computer Assisted Instruction (CAI)

	Test	N	Mean	Std. Dev.	Std. error	Mean Achievement
Pair 1	Pre-test	210	32.4	6.35	0.453	37.2
	Post-test	210	69.6	10.62		

Source: result from SPSS output

A total of 210 junior secondary school students in Gwagwalada area council participated in the pre- and post-test. A descriptive statistics was carried out at the first part of the analysis, and the result of the pre and post students' achievement taught basic science and technology curriculum using Computer-Assisted Instruction showed that; the mean pre-test score was 32.4 while the mean post-test score is 69.6. The result further revealed that; there was an improvement in the post and pre-test score of the students because the mean achievement between the post and pre-test was 37.2, which implies that the Computer-Assisted Instruction has an effect on the learning and teaching of basic science and technology curriculum in junior secondary schools in Abuja, FCT (Table 1).

4.2 Students' Mean Achievement Using Field Trip Instruction (FTI)

This section presents the mean, standard deviation, standard error, and means the achievement value of students taught basic science and technology using Field Trip Instruction (FTI).

RQ_2: What is the pre and post students' achievement taught basic science and technology curriculum using Field Trip Instruction (FTI)?

Table 2: Descriptive statistics of pre and post-test score for students taught using field trips

	Test	N	Mean	Std. Dev.	Std. error	Mean Achievement
Pair 1	Pre-test	210	35.1	5.99	0.3765	32.0
	Post-test	210	67.1	10.39		

Source: result from SPSS output

For the field trip instructional method, the mean pre-test score was 35.1, while the mean post-test score was 67.1. The result further revealed that; there was an improvement in the post and pre-test score of the students because the mean achievement between the post and pre-test was 32.4. This result implies that the field trip instructional method has an effect on the learning of basic science and technology contents in junior secondary schools in Abuja, FCT (Table 2).

4.3 Students' Mean Achievement Using Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI)

This section presents the mean, standard deviation, standard error, and mean achievement value of students taught basic Science with Computer Assisted Instruction (CAI) and technology using Field Trip Instruction (FTI).

RQ_3: what is the achievement of students taught basic science and technology curriculum studies using Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) methods?

Table 3: Descriptive statistics of the mean achievement of Students taught using between Computer-Assisted Instruction and field trip

Teaching Instruction	N	Mean	Std. Dev.	Std. error	Mean difference
Computer Assisted Instruction	210	69.6	10.62	0.3765	2.5
Field trip Instruction	210	67.1	10.39		

Source: Result from SPSS output

The descriptive comparison of the Computer-Assisted instruction and field trip method (Table 3) shows that; there is a significant difference variance the mean achievement scores in basic science and technology knowledge of students taught curriculum using Computer-Assisted instruction (CAI) and field trip instruction (FTI) methods. This is because there was a higher mean score for junior secondary school students that were taught basic Science and technology using Computer-assisted instruction (CAI), (mean = 69.6, SD = 10.62), than the junior secondary school students that were taught basic science and technology using field trip instructional method (mean = 67.1, SD = 10.39). This result implies the computer-Assisted Instruction (CAI) has a higher effect on the junior secondary school students' achievement in basic science and technology than the field trip instructional method.

4.4 Hypotheses Testing

H_{01}: There is no significant variance between the pre, and post-test mean scores of students taught basic science and technology through Computer-Assisted Instruction (CAI)?

Table 4: Two-tailed t-test result of achievement in Biology between pre and post students taught using Computer Assisted Instruction (CAI)

Test	N	Mean	Std. error	t – value	d.f	P-Value	Decision
Pre-test	210	32.4	6.35	4.34	209	0.000	H_0 is rejected
Post-test	210	69.6	10.62				

Source: result from SPSS output, Decision Rule: Reject H_D if $P<0.05$

The post-test score of students taught basic science and technology using Computer-Assisted instruction (CAI) were highly significant than the pre-test score (Table 4). Post-test score (Mean 69.6 ± 10.62) was greater than pretest score (32.4 ± 6.35), $t_{(209)} = 4.34 > t_{critical} = 1.96$ and ($P = 0.000 < 0.05$) at 209 degree of freedom (d.f.). The null hypothesis one H_{01} is therefore rejected in favour of the alternative, indicating that the overall mean scores which showed highly significant improvement in the post-test scores of all the students compared to their pre-test scores. This result implies that a significant difference exists between the pre and post-test mean scores of students taught curriculum through Computer-Assisted Instruction (CAI).

H_{02}: There are no significant differences between the pre, and post-test mean scores of students taught basic science and technology through Field Trip Instruction (FTI) methods.

Table 5: Two-tailed t-test result of mean achievement in Biology between pre and post students taught using field trip Instruction (FTI)

Test	N	Mean	Std. error	t – value	d.f	P-Value	Decision
Pre-test	210	35.1	5.99	3.86	209	0.000	H_0 is rejected
Post-test	210	67.1	10.39				

Source: result from SPSS output, Decision Rule: Reject H_D if P<0.05

According to (Table 5) the difference of mean between pre and post-test of the students taught basic science and technology is significant (diff. = 32.0). In other to certain whether the effect was significant or not, the scientist utilized a combined example t-test for pre and post-trial of the field trip instructional method. The results of paired sample t-test on pre and post-test showed that; mean of post-test score (67.1 ± 10.39) was more than the mean of pretest score (35.1 ± 5.99), $t_{(209)} = 3.86 > t_{critical} = 1.96$ and (P = 0.000 < 0.05) at 209 degree of freedom (d.f.). The null hypothesis H_{02} is rejected and the alternative hypothesis H_2 is accepted; this simply indicates that students achieved more after studying through the field trip instructional method.

H_{03}: There is no significant difference between the achievement scores in the knowledge of students taught basic science and technology using Computer Assisted Instruction (CAI) and Field Trip Instruction (FTI) methods

Table 6: Two-tailed t-test result of the mean achievement in basic science and technology between Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI)

Instructional Methods	N	Mean	Std. Dev.	t – value	d.f	P-Value	Decision
CAI	210	69.6	10.62	2.47	418	0.0138	H_0 is rejected
FTI	210	67.1	10.39				

Source: result from SPSS output, Decision Rule: Reject H_D if P<0.05

The result presented in (Table 6) indicated that there were significant differences between junior secondary school students' mean again in basic science and technology taught using computer-Assisted instruction and field trip instructional methods. The mean difference between students taught basic science and technology using computer Assisted instruction and field trip instructional method was 2.5. The independent sample t-test result showed that, the mean Computer-Assisted Instruction (CAI) score of (69.6 ± 10.62) was greater than the mean score of field trip (67.1 ± 10.39), $t_{(418)} = 2.47 > t_{critical} = 1.96$ and (P = 0.0138 < 0.05) at 418 degree of freedom (d.f.). The null hypothesis (H_{03}) is rejected in favour of the alternative (H_{I3}), which implies that there is a noteworthy distinction between the accomplishment scores in the knowledge of students taught basic science and technology curriculum using Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) methods. The students achieved more after being taught basic science and technology through the Computer-Assisted Instructional (CAI) method.

5. Discussion

The paper looks at the Computer Assisted Instruction (CAI) with Field Trip Instruction (FTI) in educating and learning of fundamental science and innovation in some junior optional schools in Abuja and further examines the distinction between the pre and post-test accomplishment in essential science and innovation. The after effect of speculation uncovers that a huge distinction existed between the pre and post-test mean scores of understudies. This choice prompted the dismissal of the invalid speculation and the acknowledgment of the substitute theory. The outcome further uncovered that; there was an improvement in the post and pre-test score of the understudies on the grounds that the mean accomplishment between the post and pre-test was 37.2. This suggests that the Computer-Assisted Instruction (CAI) affects the learning and educating of fundamental science and innovation educational program in the junior auxiliary schools in Abuja, FCT. These discoveries are in accordance with the aftereffects of Shazli (2019) whose revelation showed that the pre and post-test scores of the Government school understudies differ subsequent to being shown utilizing Computer-Assisted Instruction (CAI). This examination additionally bolsters the cases of (Liao, 2007), (Bryan, 2006), and (Wilder, 2006) who discovered Computer Assisted Instruction (CAI) is more viable in improving understudies accomplishment and interest than the utilization of ordinary educating techniques. The finding of this examination additionally substantiated with (Gambari, 2008), that Computer-Assisted Instruction (CAI) is an incredible way to deal with encouraging that fortify understudies' accomplishment, animate their advantage and reduction their debilitating and unique nature. (Qaiser et al., 2017), brought up huge discoveries that Computer-Assisted Instruction (CAI) has a huge constructive outcome on understudy scholarly accomplishment and maintenance in Physics. Yusuf and Afolabi (2010) were of the feeling that the exhibition of understudies presented to Computer-Assisted Instruction (CAI) either independently or agreeably was superior to their partners presented to the traditional study hall.

The outcome of the ensuing hypothesis (research hypothsis two) testing shows that there is an immense difference between the pre and post-test mean scores of understudies taught fundamental science and innovation through Field Trip Instruction (FTI). This demonstrates that understudies accomplished more in the wake of concentrating through the field trip instructional technique. This outcome affirms that of (Cheung and Wong, 2011) who found that a scholarly animating initiative style stimulates representatives to look for inventive ways to deal with their work. This outcome further concurs with (Amosa et al., 2015) that supported field reads for science and essentially related courses/subjects. It is simply basic to endeavor to evaluate the field trip technique for educating alongside different strategies from the view of students, for approving or in any case of the writer's case. At last, the aftereffect of autonomous examples t-test examination uncovered that there is a critical distinction between the accomplishment scores in the information on understudies encouraged fundamental science and innovation utilizing Computer Assisted Instruction (CAI) and Field Trip Instruction (FTI) techniques which infer that understudies accomplished more in the wake of being trained essential science and innovation through the Computer Assisted Instructional (CAI) strategy. The finding of this investigation adjusts to (Nwafor and Oka, 2016) that Computer Assisted Instruction (CAI) is better than the customary way by decidedly improving understudy' accomplishment in Basic Science yet was anyway interestingly with (Yusuf, 2006), whose revelations revealed that understudies energized using field trip acted in a manner that is superior to their accomplices demonstrated using the ordinary system.

6. Conclusion & Recommendations

The findings of this examination will be of extraordinary advantage to essential science and innovation understudies and instructors, government, and partners of schooling. The fundamental explanation behind this exploration is the examination of Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) educating and learning of essential science and innovation usage educational plan of some chosen junior optional schools in Abuja, Nigeria. The findings showed that there is a critical distinction between the mean accomplishment scores in the information on understudies trained essential science and innovation educational plan utilizing Computer-Assisted Instruction (CAI) and Field Trip Instruction (FTI) strategies. The understudies accomplished more in the wake of being shown fundamental science and innovation through the Computer-Assisted Instructional (CAI) strategy. This finding will help essential science instructors, administrators, government, and partners to audit their training strategies as they could be aware of the instructing methodology to utilize. In light of the discoveries, it is prescribed that instructors be urged to utilize Computer Assisted Instruction (CAI) technique in showing essential science and innovation. Educational program designers ought to likewise revere the utilization of Computer Assisted Instruction (CAI) strategy in fundamental science and innovation educational program and give satisfactory rules on its use in showing the greater part of the points in the subject. Essential offices that can support the utilization of PC based self-learning instructional riddles ought to be given in all schools.

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