Effect of Constructivist Instrumental Four-Step Approach on the Achievement and Retention in Pattern Drafting by Nigerian Certificate in Education Home Economics Students in South-South Zone, Nigeria

Nwabah, Nkeiruka Iwebunakite[1*], Igbo Chinyere Anne[2]

[1]Department of Vocational and Technical Education, Faculty of Education, University of Benin, Benin City, Nigeria.
[2]Department of Vocational and Teacher Education, Faculty of Education, University of Nigeria Nsukka, Nigeria.

*Corresponding author: Nwabah, Nkeiruka Iwebunakite (Email: ninwabah@yahoo.com)

ABSTRACT

This study was designed to determine the effect of constructivist instructional four-step approach on the achievement and retention in pattern drafting by Nigeria Certificate in Education Home Economics students in south-south zone, Nigeria. The study adopted a quasi-experimental research design which involved groups of students in their intact classes assigned to experimental and control groups respectively. The population for the study was 333 year-one students of all the colleges of education in the six (6) states in south-south Nigeria, out of which 118 students were purposely sampled and used for the study. Five research questions and four null hypotheses, tested at 0.05 level of significance guided the study. The instruments used for data collection were Pattern Drafting Cognitive Test (PDCT), Pattern Drafting Psychomotor Test (PDPT). The instruments; PDCT, PDPT were validated to ensure face and content validity. The instruments were trial-tested to determine the psychometric indices, namely; internal consistency of the items and coefficient of stability. The data collected were analyzed using mean and standard deviation to answer the research questions. Null hypothesis were tested using analysis of covariance (ANCOVA) at 0.05 level of significance. The study revealed that the constructivist instructional four-step approach was more effective in improving students' academic achievement and retention of learning.

Keywords: *Pattern drafting, Knowledge retention*

1. INTRODUCTION

Pattern drafting involves the application of scientific knowledge in the design, selection of materials, operation and manipulation of equipment and tools to produce patterns. According to Igbo and Iloeje (2012), pattern drafting is an engineering approach to pattern drafting production, using a set of measurements obtained from a figure while following a set of instructions. The instructions are interpreted into drawing of shapes on the paper or fabrics. According to Anderson (2004), pattern drafting is dynamic, challenging, and creative and involves life skills arts that can be learned in the clothing construction process.

Effective acquisition of skills in pattern drafting leads to production of skilled manpower and self-reliant individuals that could go into garment production.

Nurture*: Volume 8, Issue 1, 8-19,* ***2014***
Online ISSN*: 1994-1633/* ***Print ISSN****: 1994-1625*
DOI*: 10.55951/nurture.v8i1.69 |* ***URL****: www.nurture.org.pk*

There are various techniques of pattern drafting. According to Igbo and Iloeje (2012), pattern drafting includes the computer-aided design method; the knock-off-method, the modeling or draping method and flat pattern drafting method, Computer-aided design method, just as the name connotes, are patterns designed by computer. The knock-off method could be described as the imitation of a ready-made garment. To achieve this, a ready-made garment is carefully ripped off all the seams, parts are ironed out and laid on fresh fabric, all construction lines are transferred into the new fabric and cut. All parts are assembled following the old seam lines to produce the initial garment or style. In the modeling method, fabric is placed on a model or foam while the desired style is traced.

For this study however, the flat pattern method shall be adopted. Flat pattern method is a process of obtaining pattern by working from a set of measurement of a figure, adhering to a set of instructions and drawing the shape on paper or cardboard (Aldrich, 2006; Igbo & Iloeje, 2012). There are two stages in this pattern drafting method: (1) making a set of five basic patterns, namely - Bodice (front and back), Skirt (front and back) and Sleeve (long and short), known as block pattern, blue print or master plan and (2) the adaptation of the block to styles required to produce skilled students in pattern drafting and self-reliant individuals in the place of work in this 21st century therefore, this study becomes pertinent.

Pattern drafting is one of the most important areas of skills in clothing construction that should be acquired by Nigeria Certificate in Education (NCE) students before graduation, irrespective of their gender (National Commission for Colleges of Education, 2008). The NCE is a body put in place by the NCCE to produce middle level skilled manpower to teach (Federal Government of Nigeria, 2000). Nigeria Certificate in Education is a form of education involving general education, the study of technology, related sciences and the acquisition of practical skills of which pattern drafting skill is one (Federal Republic of Nigeria, 2004). The course content of pattern drafting is developed along activities and modules, which include theory and practice that offer the pattern drafting industry units and systems. It is also comprised of training compartment, which can lead to small business managements and entrepreneurial training. The NCCE Curriculum, if adequately implemented, is expected to produce competent garment makers for technological development in Nigeria. It can also lead individuals into production of commercial patterns that are used for garment production irrespective of their gender.

Gender is a critical issue on the image of home economics, since its inception. The International Federation of Home Economics Association (1998) identified gender as a critical area of concern on the image of home economics. According to Anyakoha (2010), gender denotes the different roles men and women play in the society and to the relative power they wield. Though, gender bias still prevails in home economics education, male and female still enroll to study home economics in colleges of education, in preparation to meet the demands of the technological advancement of the 21st century in work place.

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

Technological development in the world is dynamic. With advancement in technology, the garment industries are using new materials, equipment and tools for garment construction. Thus, the students must be properly equipped to fit into the garment industry. According to Rojeweki (2002), students irrespective of their sex must be prepared in order to meet the technological development of the 21st century workplace. This in turn requires that educational institutions should, in addition to academic skill, inculcate a broad set of workplace skills which include learning both technical and interpersonal communication skills, higher order thinking skills such as decision making and problems solving as well as flexibility, creative thinking and ability to work in team which will make the students adapt the present and future changes. To meet the demands of the 21st century garment industry for the workplace, the constructivist instructional four-step (collaborative, critical thinking skills, communicative skills and knowledge building) approach is adopted for this study.

Constructivist instructional four-step techniques are based on constructivist learning theory (Mayer, 2004). The term constructivist refers to the idea that learners construct knowledge for themselves - individually and socially as he/she learns. Constructivist teaching approach makes learner use their knowledge to solve problems that are meaningful and realistically complex. Different constructivist thus exists (Ogundola & Oke, 2010). Effective teaching depends on the teachers' use of appropriate instructional methods and techniques (Ogwo, 2004). To make different types of constructivism and constructivist learning effective, tools are needed. Dougiama (1998) describes the major tools of constructivism to include (1) collaborative learning (2) critical thinking strategy (3) communication skills and (4) knowledge building. The descriptions of the tools are thus:

Collaborative learning, a major tool of constructivist instructional approach, is carried out by having students work in groups. Using collaborative method is another way a teacher can direct a lesson. Kaye (2009) explains that collaborative learning is the process whereby each member contributes personal experiences, information, perspective, insight, skills and attitudes with intent of improving learning accomplishments of others. Brooks and Brooks (1993), in constructive learning theory, suggests that average learning retention percentage of collaborative/immediate use of learning is 90%. Roblyer, Edwards, and Harerariluk. (2010) are of the view that shared learning gives students an opportunity to retain knowledge, engage in discussion, take responsibility of their own learning and thus become critical thinkers.

Critical thinking skill is another constructivist tool which involves skills of flexibility, originality, fluency, elaboration, brainstorming, modification, imagery, associative thinking and forced relationships. The aim of critical thinking according to Gokhale (1995) is to stimulate curiosity and promote divergence among the students. Glasersfield (1989) explains that developing critical thinking skills in students encourages discovering for themselves how things work. This, therefore relates to the present study, since pattern drafting is abstract and involves a lot of critical thinking and communication skills.

Communication skill is another very useful tool in constructivist classroom. According to Shatz and Gelman (2004), communication is one effective collaborative learning tool or condition for effective learning. If adequately used, communication is used to promote creativity, as well as generate meaningful interaction between group members. Hence, its adoption will enhance the learning of pattern drafting skill because students talk together, ask questions and solve difficult problems in construction process together which leads to knowledge building.

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

Knowledge building is also an educational instructional strategy, a tool in a constructivist classroom, designed to help and support knowledge building communities, pedagogies and collaborative learning (Berecites & Scardamalia, 2003). In learning pattern drafting skills, the application of knowledge building environment would provide means of initiating the students into knowledge creating culture, making pattern drafting skills easy and gain control over their learning. With the application of the types of constructivism and tools of constructivist, instructional approach therefore, students are expected to effectively articulate their goals and plan in pattern drafting skills, leading to improve understanding, achievement and retention of learning.

Achievement is an act of accomplishment or finishing a set of project, especially by means of exertion, skill, practice and perseverance. Momoh-Olle (1997) says that achievement means performance in a school subject symbolized by a score or marks on achievement test. The student's achievement is of great importance as it relates to how effective the constructivist instructional approach is in pattern drafting skills in the classroom. For there to be an academic achievement in the study therefore, there must be records of retention of learning. Retention is the ability to remember or to store after teaching and learning has taken place for a long time. According to Demmert (2001), retention of learning is a repeat performance of behavior or understanding earlier required by a learner, elicited after an interval of time. According to Jossy Bass (2004), for effective learning and retention to take place, good method must be adopted by the teacher. Retention is affected by the degree of original learning, method of learning and the learner's memory capacity among other factors.

The main purpose of this study is therefore to determine the effect of constructivist instructional four-step approach on achievement and retention in pattern drafting by Nigerian Certificate in Education Home Economics students in south-south zone of Nigeria.

1.1. Purpose of the Study

The main purpose of this study was to investigate the effect of constructivist instructional four-step approach on the achievement and retention of learning about pattern drafting by Nigerian Certificate in Education Home Economics students in south-south zone of Nigeria. Specifically the study sought to;

i. Determine the mean achievement scores of students who were taught pattern drafting skill with the constructivist instructional four-step approach and those taught using the conventional methods.
ii. Determine the mean retention scores of students who were taught pattern drafting skills with the constructivist instructional four-step approach and those taught using conventional teaching methods.
iii. Determine the effect of gender on the mean achievement scores of students who were taught pattern drafting skills using the constructivist instructional four-step methods.

1.2. Research Questions

The following research questions were formulated to guide this study;

1. What are the mean achievement scores of students taught pattern drafting skills with the constructivist instructional four-step approach and those taught using conventional teaching methods?
2. What are the mean retention scores of students taught pattern grafting skills with the constructivist instructional four-step approach and those taught using conventional teaching methods?
3. What is the effect of gender on the mean achievement scores of student taught pattern drafting skills using the constructivist instructional four-step approach?

H_{01}: There is no significant difference between the mean achievement scores of students taught pattern drafting skills with constructivist instructional four-step approach and those taught using conventional teaching methods.

H_{02}: There is no significant difference between the mean retention scores of students taught pattern drafting skills with constructivist instructional four-step approach and those taught using the conventional teaching methods in the test for retention of learning.

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

2. METHODOLOGY

Area of the study: The area of study is Delta and Edo states. Out of the six states in the south-south, the study was conducted in only two states as it is an experimental study. The students in the College of Education, Warri in Delta State were the control group while the students in College of Education, Ekiadolor Benin, Edo State were the experimental group.

Design of the Study: A quasi-experimental design was adopted for this study because it allows for the use of two groups/streams of a class as experimental and control groups respectively (Nworgu, 2006).

Population for the Study: The population for this study comprised of all 333 year-one students enrolled in Nigeria Certificate in Education Home Economics in Edo State -34, College of Education Omoku, River State, -80, College of Education Agbor, Delta State -50, Federal college of Education Asaba, Delta state, -54, College of Education Warri, Delta State -84, College of Education Akwa-Ibom -35, College of Education Cross rivers, not accredited, College of Education, Bayelsa –Nil. Data was obtained from 2009/2010 Sessions from the Office of the Registrar in the different Colleges of Education.

Sample and Sampling Procedures: A purposive sampling technique was used for the study, this involved the selection of two Colleges of Education- College of Education, Warri, Delta State and College of Education, Ekiadolor, Benin City, Edo state from the list of seven government owned Colleges of Education in the south-south zone of Nigeria. These colleges were purposively chosen because Home Economics Laboratory in the College of Education Warri is more equipped than others in Delta state and College of Education Ekiadolor is the only College of Education offering Home Economics in Edo states. College of Education Warri was assigned to the control group. Year one home economics students in the College of Education, Warri Delta state - 84 and the Colleges of Education, Edo state -34, (intact class) were used for the study. This is in line with (Osuala, 2005) who stated that the whole population should be studied when the entire size of the population is small in order to obtain an ideal response.

Instrument for data collection: The instrument used for data collection were Pattern Drafting Cognitive Test (PDCT), Pattern Drafting Psychomotor Test (PDPT). The PDCT and PDPT were used to test the students' achievement and retention learning pattern drafting skills. The questions were based on year one – second semester HEC 121. The PDPT contained the practical task based on the construction of front and back skirts, front and back bodice and long sleeve patterns, block patterns contained in HEC 121- clothing construction and alteration (National Commission for Colleges of Education, 2008) in Home Economics program for College of Education.

Experimental Procedures: The pre-test was administered before treatment. The pre-test of Pattern Construction Cognitive Test (PCCT) and the Pattern Drafting Skill Test (PDST) was administered to subjects in both the experimental and control group simultaneously collected and followed immediately by treatment. During the treatment, the experimental group was taught with constructivist lesson plans, while the control group was taught with conventional lesson plans. Teaching strategies such as critical thinking skills, collaborative learning, communication skills and knowledge building skills were used in preparing constructivist lesson plans. The constructivist lesson plan was geared towards the real world of work context and was practical oriented. The experimental group was taught six lessons, each with the constructivist lesson plans, while the control group was taught six lessons, each with conventional lesson plans. Each lesson lasted for three hours. The treatment lasted six weeks. Each block pattern was handled in a week; post-test was administered at the end of the treatment to groups with the PDCT and PDPT. The PDCT and PDPT was administered after two weeks of teaching to the experimental and control group as retention learning test and the scores were compared to determine if there were any significance differences in the rate of retention of learning in the two groups.

Method of Data Analysis: The data collected was analyzed using the analysis of covariance (ANCOVA), the test for significance between the teaching methods at 0.05 level of significance. Mean and standard deviation was used to answer the research questions. The null hypothesis was tested using analysis of covariance (ANCOVA) at 0.05 level of significance because intact class was used .

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

The data presented in Table 1 showed that the experimental group in case FBBBP had a mean score of 1.03 and standard deviation .05 in pre-test and a mean score of 2.07 and standard deviation of .20 in post-test making a pre-test-post-test mean gain of 1.04. In case of BBBBP, the experimental group had a mean score of 1.01 and standard deviation of .01 in pre-test and a post-test mean score of 2.25 and standard deviation of .48 in post-test making a pre-test post-test mean gain of 1.24. The experimental group in case BBSBP had a mean score of 1.01 and a standard deviation of .01 in pre-test, and a mean score of 2.32 and standard deviation of .19 in post-test, making a pre-test post-test mean gain of 1.31. In case of BSBP, the experimental group had a mean score of 1.05 and standard deviation of .08 in the pre-test and a mean score of 2.21 and standard deviation of .20 in the post-test making a pre-test post-test mean gain of 1.16. In BSBP the experimental group had a mean score of 1.02 and standard deviation of .06 in the pre-test and mean score of 2.29 and standard deviation of .24 in the post-test, making a pre-test post-test mean gain of 1.27.

Generally, all the post-test mean scores of the control groups fell below 2 showing that the experimental group performed better in the achievement test in pattern drafting skills, using the constructivist instructional four-step approach. The mean gain in the control group was not significant showing poor performance in the post-test mean scores.

$H0_1$: There is no significant difference between the mean achievement scores of students taught pattern drafting skills with constructivist instructional four-step approach and those taught using conventional teaching methods.

The data presented in Table 2 shows that since the F-cal (596.917) computed is greater than the critical value of the significance (0.000) at .005 level of significance, null hypothesis is rejected. It, therefore, means that there is significant difference between the mean scores of students taught with the constructivist instructional four-step approach and those taught with the conventional methods in pattern drafting skill achievement test.

Research Question 1

What are the mean achievement scores of students taught pattern drafting skills with the constructivist instructional four-step approach and those taught using the conventional aching method?

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

Table 1. Mean and standard deviation of pre-test and post-test scores of experiment and control groups in patterns drafting skills.

		Pre-test			Post-test		
Group	Cases	N	$\bar{x}$	SD	$\bar{x}$	SD	Mean Gain
Experimental	FBBBP	34	1.03	.05	2.07	.20	1.04
	BBBBP	34	1.01	.01	2.25	.48	1.24
	BBSBP	34	1.01	.01	2.32	.19	1.31
	FBSBP	34	1.05	.08	2.21	.20	1.16
	BSBP	34	1.02	.06	2.29	.24	1.27
Control	FBBBP	84	1.05	.08	1.05	0.8	0.0
	BBBBP	84	1.01	.01	1.02	.05	0.01
	BBSBP	84	1.03	.05	1.02	.06	−0.01
	FBSBP	84	1.05	.08	1.02	.06	−0.03
	BSBP	84	1.01	.01	1.03	.05	0.02

Note: * FBBBP = Front basic bodice block pattern
* BBBBP = Back basic bodice block pattern
* BBSBP = Back basic skirt block pattern
* FBSBP = Front basic skirt block pattern
* BSBP = Basic sleeve block pattern
* Maximum score = 3
* Minimum score =0

Table 2. Analysis of covariance of the scores of experimental and control group in the pattern drafting skills.

Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	33.428[a]	4	8.357	667.192	.000
Intercept	15.519	1	15.519	1239.014	.000
MPre-test	.017	1	.017	1.344	.249
Treatment	7.474	1	7.474	596.717	.000
Gender	.013	1	.013	1.061	.305
Treatment * Gender	.001	1	.001	.115	.735
Error	1.415	113	.013		
Total	257.426	118			
Corrected Total	34.843	117			

Note: * Significant at sig. off< .05

Research Question 2

What are the mean scores of Retention of learning of students taught pattern drafting skills with constructivist instructional four-step approach and those taught using conventional teaching methods?

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

Table3. Mean and standard deviation of post-test and retention-test scores of Pattern drafting skills of experimental and control groups in cases of pattern.

Groups		Post-test			Retention-test		
Group	Cases	N	$\bar{x}$	SD	$\bar{x}$	SD	Mea Gain
Experimental	FBBBP	34	2.07	.20	2.26	.20	0.19
BBBBP		34	2.25	.48	2.55	.18	.3
BBSBP		34	2.32	.19	2.70	.14	0.38
FBSBP		34	2.21	.20	2.58	.24	0.37
BSBP		34	2.29	.24	2.43	.19	0.14
Control	FBBBP	84	1.05	.08	1.02	.05	0.03
BBBBP		84	1.02	.05	1.02	.04	0
BBSBP		84	1.02	.06	1.02	.05	0
FBSBP		84	1.02	.06	1.03	.07	0.01
BSBP		84	1.03	.05	1.03	.06	0

Note: *FBBBP = Front basic bodice block pattern
*BBBBP = Back basic bodice block pattern
*BBSBP = Back basic skirt block pattern
*FBSBP = Front basic skirt block pattern
*BSBP = Basic sleeve block pattern 'Maximum score = 3
* Maximum score = 3
*Minimum =0

Table4. Analysis of covariance of the scores of experimental and control Group in retention of learning test in pattern drafting skills.

Source	Type III Sum of squares	df	Mean square	F	Sig.
Corrected model	50.468[a]	4	12.617	3068.643	.000
Intercept	22.533	1	22.533	480.382	.000
MPre-test	5.737	1	5.737	.014	.906
Treatment	14.403	1	14.403	3502.957	.000
Gender	.001	1	.001	.353	.553
Treatment Gender	.001	1	.001	.271	.604
Error	.465	113	.004		
Total	296.952	118			
Corrected Total	50.932	117			

Note: * Significant at sig. off< .05.

Research Question 3

What are the mean achievement scores of males and females taught pattern drafting skills using the constructivist instructional four-step approach?

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

Table 5. Mean and standard deviation of pre-test and post-test of experimental and control of males and females taught pattern drafting skills.

Treatment	Gender	Pre-test			Post-test		
		N	$\bar{x}$	SD	$\bar{x}$	SD	Mean Gain
Experimental	Female	31	.28	.08	2.21	.19	1.93
	Male	3	.21	.07	2.14	.17	1.93
Control	Female	81	.29	.08	1.03	.05	0.74
	Male	3	.31	.06	1.01	.01	0.7

The analysis of covariance reveals that there is significant difference between the mean scores of the experimental and control group in the achievement test in favor of the experimental test group. This further implies that the different method of teaching practical skill to Nigeria certificate in Education Home Economics Students does have a significant differences.

The data in Table 3 reviews the homogeneity of the respondents using the standard deviation scores ranging from .005 to .048. The Table revealed that experimental groups in the construction of FBBBP had a mean score of 2.07 and a standard deviation of .20 in post-test and mean score of 2.26 and standard deviation of .20 in retention of test making a post-test retention-test gain of 0.19 cases BBP, BBSP, FBSBP and BSPP had a mean scores of 2.25, 2.32, 2.21 and 2.29 post-test, with standard deviation .48, .19, .20 and .24, with retention. Test scores of 2.55, 2.70, 2.58 and 2.43, making a post-test retention-test mean gain of .3, 0.38, 0.37 and 0.14.

The data in Table 3 revealed that the control groups all had post-test ranging from 1.03 to .05, standard deviation ranging from .05 to .08, retention-test ranging from 1.02 to 1.03 and mean-gain ranging from 0-0.03. This implies that the experimental group performance in achievement test is better than the control group.

$H0_2$: There is no significant difference between the mean scores of students taught pattern drafting skills with constructivist instructional four-step approach and those taught using the conventional teaching methods in the test for retention of learning.

The data presented in Table 4 shows that since the F-cal (3502.957) computed is greater than significance (0.000) at 0.05 level significance, null hypothesis is rejected. It, therefore, means that there is a significance difference between the mean scores of students taught with the constructivist instructional four-step approach and those taught with the conventional methods in the achievement in retention of learning test in pattern drafting skills.

The analysis of covariance also reveals that there is significant difference between the mean scores of the experimental and control groups in the retention of leaning achievement test in favor of the experimental groups. This further implies that the different method of teaching practical skills to NCE Home Economics Students in Colleges of Education does give a significant difference.

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

The data presented in Table 5 revealed that the females in the experimental groups had a mean score of .28 and standard deviation of .08 in the pre-test and a mean score of 2.21 in post-test and standard deviation of .19, making a pre-test post-test mean gain of 1.93. The data also showed that the males in the experimental group had a mean score of .21 and a standard deviation of .07 in the pre-test and a mean score of 2.14 and a standard deviation of .17, making a pre-test post-test mean gain of 1.93. The data in Table 5, also indicated that the male and females in the control group had mean scores of .29 and .31 in pre-test, standard deviation of .08 and .06, had mean score of 1.03 and 1.01 in post-test and had a mean gain in pre-test post-test of 0.74 and 0.7. This result therefore implies that the male and females in the experimental group performed in the achievement test better than the males and females in the control group. The performance of the males and females implies that the academic achievement of the students do not depend on gender, but on the effectiveness of the instructional approach used.

3. DISCUSSION OF FINDINGS

The data presented in Table 1 provided answer to research question 1. The findings revealed that the effect of constructivist instructional four-step approach on students' achievement in pattern drafting is greater than the effect of conventional teaching method. Analysis of Covariance (ANCOVA) was used to test the first hypothesis in Table 2 at the calculated f-value 596.717 significance of F.000 at 0.05 level of significance. There was a statistically significant difference between the mean effect of constructivist instructional four-step approach and that of the conventional teaching method. This implies that the use of constructivist instructional four-step approach on practical skills on the Nigeria Certificate in Education Home Economics Students does give a significant difference. The findings are in line with the findings of Ogundola and Oke (2010), who conducted a study on the effect of constructivism instructional approach on teaching practical skills to mechanical related students in Western Nigeria technical colleges. The findings showed that the students taught with constructivism instructional approach scored higher in the post-test than the students taught with conventional method. The data presented in Table 3 provided answer to research question 2. The findings revealed that the post-test retention mean scores of the students taught pattern drafting skills—FBBBP, BBBBP, BBSBP, FBSBP and BSBP using the constructivist instructional four-step approach was higher than the mean scores of those taught with conventional teaching methods. The analysis of covariance (ANCOVA) presented in Table 4 also confirmed the difference in the mean scores of students taught with constructivist instructional four-step approach was significantly different from those taught with conventional teaching methods. The F-cal (3502.957) was greater than the sig. (.000) at 0.05 level of significance, where the null hypothesis was rejected and the alternative was accepted, confirms this. This implies that the use of the constructivist instructional four-step approach is more effective in stimulating students' interest in studying pattern drafting in Home Economics Education as compared to the use of the conventional teaching methods. The findings are in agreement with the findings of Ogwo (2004), who stated that effective teaching depends on the teacher's use of appropriate instructional methods and techniques. Jossey-Bass (2004), also agreed that for effective learning and retention to take place, good method must be adopted by the teacher. The data presented in Table 5 provided the answer to the third research question. The findings revealed that the males and females taught pattern drafting with the constructivist instructional four-step approach had higher post-test mean scores being close and same mean gain as those taught with conventional teaching method. The findings revealed that students performance and academic depends largely on how and with what instructional approach is used. Hence, Anyakoha (2001) advocated for gender main streaming in all development projects and policies. Also, Ogundola and Oke (2010), stated in their findings that teaching strategy is not sex bias.

Nurture**: Volume 8, Issue 1, 8-19, **2014
***Online ISSN**: 1994-1633/ **Print ISSN**: 1994-1625*
***DOI**: 10.55951/nurture.v8i1.69 | **URL**: www.nurture.org.pk*

4. CONCLUSION

The findings of this study indicate that the constructivist instructional four-step approach has a positive effect on students' academic achievement in pattern drafting skills. This implies that the key component found in the constructivist instructional four-step approach when used collectively, are more effective than the conventional teaching methods in enhancing students' academic achievement. The findings of the study also indicates that males and females taught with the constructivist instructional four-step approach had higher mean scores that varies with slight margins, but still had high meaning that gender had no significance in the mean scores of the males and females taught pattern drafting with constructivist instructional four-step approach. All the activities and innovations in the constructivist instructional four-step approach were geared towards the effective teaching of pattern drafting skills in order that the performance of the Nigeria Certificate in Education Home Economics Students will meet the demands of the 21st century place of work. Haven found that the constructivist instructional four-step approach have positive effect on students' performance, teachers need to adopt this approach in order to make teaching and learning process move effective.

5. RECOMMENDATIONS

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

1. Home Economics teachers should adopt the constructivist instructional four-step approach. This will help improve students' academic achievement and development of practical tasks.
2. The Home Economists should be adequately exposed to the learning outcome identified in the study.
3. Large and equipped laboratories should be built for easy implementation of constructivist instructional four-step approach by the government.
4. Workshops, seminars and conferences should be organized by Home Economics research and development bodies to enlighten teachers on how to use the constructivist instructional approach to improve students' academic achievement.

FUNDING

This study received no specific financial support.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

ARTICLE HISTORY

Received: 18 March 2014/ Revised: 4 September 2014/ Accepted: 16 October 2014/ Published: 30 December 2014

REFERENCES

Aldrich, W. (2006). *Metric pattern cutting*. Hong Kong: Blackwell Publishing.

Anderson, L. (2004). Fashion and textiles. *Journal of American Association of Family and Consumer Sciences, 4*, 13-15.

Anyakoha, E. U. (2010). *Challenging gender discrimination in developing countries: In the new millennium and roles of home economics: The Nigerian situation*. Paper presented at the Paper presented at the sixth international/federation of home economics (IFHE) congress on "A new century-focus of the future. The roles of Home Economics held in University of Ghana Legon. Ghana 23rd to 29th, July 2010 (Note: there is no year).

Berecites, C., & Scardamalia, M. (2003). Learning to work creatively with knowledge.

Brooks, J., & Brooks, M. (1993). In search of understanding: The case of constructivist classrooms. *In Alexandra, V.A. Association for Supervision and Curriculum Development*.

Demmert, K. L. (2001). Improving performance among native American Students: A review of the literature. Retrieved from: http://www.aor.com.

Dougiama, M. (1998). *A journey into constructivism*. Oxford: Blackwell Publishers Ltd.

Federal Government of Nigeria. (2000). Educational goals in Nigeria. *Federal Ministry of Education*.

Federal Republic of Nigeria. (2004). *National policy on education*. Lagos: Federal Ministry of Education.Printing Division.

Glasersfield, E. (1989). Cognition construction of knowledge and teaching. *Thesis, 80*(1), 21-40.Available at: https://doi.org/10.1007/bf00869951.

Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Journal of Technical Education, 7*(1).Available at: https://doi.org/10.21061/jte.v7i1.a.2.

Igbo, C. A., & Iloeje, F. (2012). *The basis of dress pattern drafting*. Nigeria: In Selbesg (Nig.) Ltd.

Kaye, A. (2009). *Learning together apart.NATOASISeries* (90, 1-3). Berling: Springer-Verlag.

Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? The case for guided methods of instruction. *American Psychologist, 59*(1), 14-19.Available at: https://doi.org/10.1037/0003-066x.59.1.14.

Momoh-Olle, J. (1997). Effects of cognitive preference and advance verbal organizers on the retention of an O level physics textual materials. *The Nigeria Teacher Today, 5*(1), 26-33.

National Commission for Colleges of Education. (2008). *Printing division*. Lagos: National Commission for Colleges of Education.

Ogundola, I. P., & Oke, J. O. (2010). Effect of constructivism instructional approach on teaching practical skills to mechanical related trade students in western Nigeria technical colleges. *International NGO Journal, 5*(3), 59-64.

Ogwo, B. A. (2004). *Functionality vocational education in Nigeria public schools: Examining some policy paradigms in Uzodimma, C.U. (Ed). Functionality of Education in Nigeria: Issues problems and concerns*. Enugu: The Academic Forum for the Interdisciplinary Discussions.

Roblyer, T., Edwards, U., & Harerariluk. (2010). Planning for instruction. *Wikimedia Formation*.

Rojeweki, W. J. (2002). Preparing the Workforce of tomorrow: A conceptual framework for career and technical education. *Journal of Vocational Education Research, 27*(1), 7-35.Available at: https://doi.org/10.5328/jver27.1.7.

Shatz, M., & Gelman, R. (2004). The development of communication skills: Modification in the speech of young children as a function of listener.