The Effect of Scaffolding Teaching Strategy on the Achievement and Retention of Lower Basic 5 Special Needs Pupils in Abia State, Nigeria

Abstract

The study investigated effect of Scaffolding Teaching Strategy on the Achievement and Retention of Lower Basic Five Pupils' in Special Needs Schools in Abia State, Nigeria. The study was a quasi-experimental research design. The study determined the difference in the mean achievement and retention scores of lower basic five male and female students taught Home Economics using scaffolding teaching strategy and those taught using lecture method. Threeresearch questions and three null hypotheses guided the study. The sample consisted of 40lower basic five pupils drawnfrom the populationof 309 special needs pupils,using stratified simple random sampling technique. Home Economics Achievement Test (HEAT) which contained 34multiple-choice questions and four options: three distractors and one correct answer, with stability of reliability index of 0.81was used for data collection. The data collected from the pupils were analyzed using mean and standard deviation to answer the three research questions that guided the study, while the Analysis of Covariance (ANCOVA) was used to test the null-hypotheses at 0.05 level of significance. The results revealed that scaffolding teaching strategy independently had increasing effect on the pupils' academic achievement and retention in Home Economics respectively, having recorded higher mean gain than those in control group. It also showed that scaffolding teaching strategy independently had more increasing effect on the male pupils' academic achievements and retention in Home Economics respectively than on the female pupils.

Keywords: Home Economics, Scaffolding, Achievement and Retention

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Introduction

In recent years, the important of Home Economicsin family growth and development has been the subject of increased attention in Nigeria and the world-over. The rate at which this subject matter enhance family living including feeding, resource management, health and care of all family members, social relationship, decision making, political and economic wellbeing of the people is of course second to none (Anyakoha in Okoro, 2013). The knowledge of Home Economicsis an essential tool in our society that conglomerates aspect of social and natural sciences. As such, in the lower Basic level of Education, Home Economics is consideredasone of the most important core subject in a school curriculum. This is because Home Economics is a programme of study that deals directly to many relevant life skills that will help learners thrive. In view of this, Azunwena (2012) posited that the most important aspect of Home Economics programme is that pupils do not only learn about subject matters that have relevance to their present lives, but will constantly be of use as they continue to grow. This area of study makes individual family members to make best use of their own resources and society's output and help people amend to change and shape their future (Neequaye, Darkwa, & Amu, 2014).

The study of Home Economics provides career opportunities for individual (including special needs learners) in the areas of fashion, journalism, counsellor, home economics, supervisor, business, catering, hotel management, dietetics, company representative, interior decoration and teaching. Home Economicsis also very important to human and national development as it makes use of the knowledge of the arts by making living more creative. Ponte and Easingwood(2020)affirmed that Scaffolding is a valuable and effective pedagogical tool for supporting learning in special needs education. The authors argued that scaffolding can be particularly useful for special needs students, as it can help to promote self-confidence, independence, and a sense of achievement, while also helping to foster communication and collaboration between students and teachers. Ekpenyong, Edem and Martin (2015)noted that the lessons in Home Economics must be such that will kindle pupils' interest for the subject, and for pupils to ascend beyond their limits, their retentive ability must be well activated, otherwise the teacher may have to go through the teaching process overtime.

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Retention on the other hand, is the ability to recall an experience or learning that had taken place previously. It is the ability of the learner to remember or recall concepts learnt after sometime has elapsed (Chebet, 2016). This implied that poor retention produces poor recalling or transfer of knowledge. Retention according to Nkechukwu (2023), is the process by which a child stores information in his memory for use at a later period. Retention occurs when facts or experiences are stored in the long term memory. A student may be able to memorize facts in the short term, but may not retain those facts over the long term memory. According to Obunadike (2014), the goal of education in the Nigerian context, is the attainment of knowledge and skills that will prepare the individual to carry out his or her peculiar role in the society. Such knowledge and skills are provided by teachers in schools. Retention will help Home Economics learners/pupils to hold to heart the value other people's cultural heritage and to embrace unity in diversity among pupils from various ethnic, culture and religious backgrounds (Dhandhania, 2016). To discover how to meet the changing needs of individuals, families and to advance the communities, national and world condition, the overall academic achievement of pupils in Home Economics is paramount. The problem has to be solved from the classroom and this begins with the teacher's teaching method in Home Economics.

Teaching method is the use of appropriate techniques to enhance learning. Adu and Adeyanju (2013) described teaching method as systematic patterns to be followed in the instructional process for better understanding. Whether in, formal or informal education, teaching method effectiveness makes for retention of learnt concepts. Nwadike (2018) noted that the ability of the teacher to impart knowledge depends greatly on the method he applies during the teaching learning process. Where the method is defective, the pupils stand to lose as they do not benefit from the lessons. According to Ogbo (2020), for the teacher to be able to ensure order and enhance classroom learning, they have to possess necessary pedagogical skills which have to be systematic and methodical. They have to explore and make good use of their knowledge of instructional skills/strategies, whether the method adopted falls within the spectrum of mass or individualized instructional methods (Nkechukwu, 2023). Adu and Adeyanju (2013) opined that teaching, by its nature requires a variety of methods to facilitate teaching/learning in the class and to develop the student's knowledge and understanding to the maximum.

In recent years, research has consistently confirmed that isolated learning is not retained and the traditional approach of Home Economics consists almost entirely of teachers directing pupils to

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memorize presented facts or apply figures without attention to why or when it makes sense to do so (Nkechukwu, 2023). Home Economics as a subject is a closely-knit system of ideas, principles and processes. Connections among concepts and principles should be established so that learning is less a challenge to the pupils' memory and more a challenge to his or her intelligence. In view of this, Nkama (2020) emphasized that the content to be taught has to be worthwhile and the procedure has to be totally acceptable for the activity to be classified as teaching. Scaffolding teaching strategy in this respect,is ideal for this instructional purposes as Raja and Nagasubramani (2018) described itslearning outcomes as one that can boosts pupils' engagement and motivation in the classroom.

Scaffolding involves learning experience that supportive guidance and feedback which incorporates breaking down complex tasks or concepts into smaller, more manageable steps, and providing students with mastery. It is a strategy that has been documented in contemporary research (Azih&Nwosu, 2011). It has been revealed that learning develops by building on pupils' prior knowledge. According to Mohammed (2016), one of the characteristics of Scaffolding is that it activates prior knowledge, and this feature makes it acceptable at all levels of teaching and learning. Mohammed also posited that children come to school with pre-existing knowledge and through Scaffolding, learning is built on what a student already knows. Abakpa (2010) maintained that carefully implemented scaffolding lessons help to increase pupils' achievement and retention ability in any subject of their interest. Joda (2019) found that pupils who were taught using an instructional scaffolding strategy had considerably superior academic attainment than those who were taught using the lecture method.Scaffolding promotes active involvement of pupils in teaching and learning process. Operationally, it is an instructional strategy that provides students with supportive guidance, learning objectivity and self-regulation, which are be especially effective for students with special needs. The use of scaffolding teaching strategies can help level the playing field for all learners. Regardless of their gender and encourage their active engagement in learning.

Consequently, gender will serve as a moderator variable in this study. Gender is referred as the categorization of people into male and female. Gender is conceived as a variable used to analyze roles, rights, responsibilities, opportunities, incentives, costs, benefits and constraints which relates to men and women (Hilary, 2023). It is all the characteristics of male and female, which

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a particular society has determined and assigned each sex (Ogbonnaya, 2021). Idika, Onuoha, Nji and Eze (2018) viewed it as involving the psychological and socio-cultural dimensions of being a male or a female. Atubi's (2021) described gender as male and female that possesses biological features. Gender is a significant variable when taking into account individual talents and competency in learning Home Economics (Akpochafo&Oghenakoke, 2015). Okeke, Okeyand Omeodu (2018) found that male pupils outperformed female counterparts in instructional scaffolding.Van (2010) in this study, observed no significant difference between the groups in achievement, retention and attitude towards the two teaching methods. It is then imperative to investigate whether the use of Scaffolding can enhance lower basic fivepupils' achievement and retention in Home Economics, since the method advocates for active involvement of learners in teaching and learning.

Statement of the Problem

Home Economics, the study of human and material resources play a critical role in preparing individuals both for productive and fulfilling lives. Despite the significant advancements in special education, the unique needs of learners with respect to achievement in Home Economics Education remain an issue of concern. Research evidence seem to suggest that most of the pupilswere not exposed to promising potential innovative teaching strategies. The issues, challenges and trends of this phenomenon has left educators without evidence-based strategies to support these pupils learning and wellbeing. One wonders if scaffolding teaching could be effective in enhancing pupils' achievement and retention. The problem of the study therefore put in a question form is: what is the effect of scaffolding teaching strategy on the achievement and retention of lower basic five pupils' in special needs schools inAbia State, Nigeria?

Research question

The following research questions were posed;

1. What are the differences in the mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method?
2. What are the differences in the mean retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method?

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3. determine the differences in the mean achievement scores of male and female students taught Home Economics using scaffolding teaching strategy and those taught using lecture method;

Hypotheses

HO_1: Scaffolding teachingstrategy has no significant difference on the mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method.

HO_2: Scaffolding teachingstrategy has no significant difference on the mean retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method

$H0_3$: Gender has no significant effect on lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method.

Methodology

The study was a quasi-experimental research design. The sample of 40 special needs lower basic five pupils drawnfrom the population of 309 special needs pupils, usingstratified simple random sampling technique. Home Economics Achievement Test (HEAT) was used for data collection. The HEAT was validated by three experts: one in Home Economics Education, one in Measurement and Evaluation, all the two from Michael Okpara University of Agriculture Umudike, and one seasoned lower basic five school teacher. The reliability of the instruments was obtained by administering 25 copies of the Home Economics Achievement Test (HEAT) to lower basic five pupils of the school for the deaf and dumb Ofekata, OrodoMbaitolu L.G.A, Imo State, Nigeria. The scores obtained from the Achievement test were analysed using Kuder-Richardson (K-R20) to arrive at stability index of 0.81.

Experimental procedure:

The experimental procedure lasted for eight weeks and was carried out in three phases thus: Pre-treatment phase, Treatment phase and Post-treatment phase.

The pre-treatment phase involved visiting the schoolsand sought for approval from the management, familiarize and acquaintedwith the participant and administration of HEAT pretest. The treatment phase The Treatment Phase lasted for four weeks using the number of pupils in

the intact class from the schools with corresponding lesson plans. The class teacher monitored by the researcher assigned the lesson topics to each of the groups using same school time table such that each group had two lessons per week.This determined the equivalence in the academic ability of the sampled subjects.While the post treatment phase determines posttest scores by reshuffling and renaming of HEAT through administration to the participants in order to determine the posttest covariance. Also, to ascertain the level of their retention, a space of two weeks interval was given and then HEATIII were re-administered to these pupils after re-shuffledand the paper colourchanged for distraction to obtain retention scores.

The data collected from the pupils were analyzed using mean and standard deviation to answer the three research questions that guided the study, while the Analysis of Covariance (ANCOVA) was used to test the null-hypotheses at 0.05 level of significance.

Results and Discussion

Research question 1:

What are the differences in the mean achievement scores of lower basic fivespecial needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method?

The data for answering research question 1were analyzed and results presented in the Table 1.

Table 1 Pretest and Posttest mean achievement scores of lower basic five pupils Home Economics taught using scaffolding teaching strategy

Mean achievement scores	Number of Pupils	Tests				Achievement Mean Gain
		Pre test		Post test		
		$\bar{X}$	SD	$\bar{X}$	SD	
STS	25	2.97	.404	3.27	.50	0.30
LM	15	2.67	.626	2.77	.55	0.10

STS = Scaffolding Teaching Strategy **LM = Lecture Method**

Data in Table 1 showed mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy had a Pretest mean of 2.97 with standard deviation of 0.40 and a Posttest mean of 3.27 with standard deviation of 0.50, while lecture method group had a Pre-test mean of 2.67 with standard deviation of approximately 0.63

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and a posttest mean score of 2.77 with the standard deviation of 0.55. The result also showed that the scaffolding teaching strategy group had a mean gain of 0.30 while those of the lecture method group had a mean gain of 0.10. This showed that achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy had higher effect of 0.20 over those in the lecture method (Control) group.

Hypothesis 1

Scaffolding teachingstrategy has no significant difference on the mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method

Table 2 Analysis of Covariance (ANCOVA) of Effect of mean achievement scores of Pupils taught Home Economics using Scaffolding teaching strategy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	partial eta squared
Corrected Model	4.541[a]	2	2.270	10.009	.000	.351
Intercept	3.487	1	3.487	15.373	.000	.294
Pretest	2.051	1	2.051	9.043	.005	.196
Group	**.938**	**1**	**.938**	**4.134**	**.049**	**.100**
Error	8.393	37	.227			
Total	392.083	40				
Corrected Total	12.934	39				

Table 2revealed that a significant Probability (P)-value of 0.049was obtained. Since the Probability-value of 0.049 is less than 0.05 alpha level, the null hypothesis of no significant effect was rejected. Therefore, there is statistical significant difference on the mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method

Research Question 2

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What are the differences in the mean retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method?

Table 3 Pretest and Posttest mean Retention scores of pupils Home Economics taught using scaffolding teaching strategy

Mean retention scores	Number of Pupils	Tests				Retention Mean Gain
		Pre test		Post test		
		$\bar{X}$	SD	$\bar{X}$	SD	
STS	25	2.71	.702	3.38	.358	0.67
LM	15	2.83	.502	2.72	.543	-0.11

STS = Scaffolding Teaching Strategy LM = Lecture Method

Data in Table 3 showed mean achievement scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy had a Pretest mean of 2.71 with standard deviation of 0.70 and a Posttest mean of 3.38 with standard deviation of 0.36, while lecture method group had a Pre-test mean of 2.83 with standard deviation of 0.50 and a posttest mean score of 2.72 with the standard deviation of 0.54. The result also showed that the scaffolding teaching strategy group had a mean gain of 0.67 while those of the lecture method group had a mean gain of -0.11. This showed that retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy had higher effect of 0.56 over those in the lecture method.

Hypothesis 2

Scaffolding teachingstrategy has no significant difference on the mean retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method

Table 4. Analysis of Covariance (ANCOVA) of Effect of mean Retention scores of Pupils taught Home Economics using Scaffolding teaching strategy

Source	Type III Sum Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Moc	4.444[a]	2	2.222	12.27	.000	.399
Intercept	23.970	1	23.970	132.4	.000	.782

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				9		
Pretest	.507	1	.507	2.803	.102	.070
Group	**3.637**	**1**	**3.637**	**20.09**	**.000**	**.352**
Error	6.697	37	.181			
Total	404.270	40				
Corrected Total	11.141	39				

Table 4 showed that a significant Probability (P)-value of 0.000was obtained. Since the Probability-value of 0.000 is less than 0.05 alpha level, the null hypothesis of no significant effect was rejected. Therefore, there is a statistical significant difference on the mean retention scores of lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method.

Research Question 3

What are the differences in the mean achievement scores of male and female pupils taught Home Economics using scaffolding teaching strategy and those taught using lecture method?

Table 5 Pretest and Posttest mean achievement scores of Male and Female pupils taught Home Economics taught lower basic five using scaffolding teaching strategy

Gender	**Teaching Method**	**Number of Pupils**	**Tests**				**Achievement Mean Gain**
			Pre test		**Post test**		
			$\bar{X}$	SD	$\bar{X}$	SD	
STS	Male	11	2.98	.418	3.32	.497	0.34
	Female	14	2.95	.407	3.24	.527	2.95
LM	Male	6	2.40	.729	2.63	.602	0.23
	Female	9	2.71	.558	2.84	.541	0.13

STS = Scaffolding Teaching Strategy LM = Lecture Method

Data in Table 5 showed that male lower basic five pupils taught Home Economics using scaffolding teaching strategy had Pretest mean score of 2.98 with standard deviation of 0.418 while the female had a pretest mean of 2.95 with standard deviation of 0.407. Similarly, the posttest mean score of male and female pupils were 3.32 and 3.24 with standard deviation scores of 4.97 and 5.27 respectively. For the lecture method (control group), the male and female pupils had a Pretest mean scores of 2.40 and 2.71 with the standard deviation scores of 0.729 and 0.558 respectively while they had Posttest achievement mean scores of mean scores of 2.63 and 2.84

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with the standard deviation scores of 0.602 and 0.541respectively. The table further showed that the male pupils had a mean gain of 0.34 while their female counterparts had a mean gain of 2.95. Whereas for the lecture method (control group), the male pupils had a mean gain of 0.23 while their female counterparts had a mean gain of 0.13. Thisindicated that scaffolding teaching strategy had more increasing effect of 0.11 on the male and 2.82 on the female pupils' academic achievements over the lecture method in Home Economics.

Hypothesis 3
Gender has no significant effect on lower basic five special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method

Table 6 Analysis of Covariance (ANCOVA) of mean achievement scores of Male and Female pupils taught Home Economics using scaffoldingteaching strategy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.622[a]	2	1.811	7.195	.002	.280
Intercept	2.693	1	2.693	10.699	.002	.224
Pretest	3.622	1	3.622	14.390	.001	.280
Gender	**.019**	**1**	**.019**	**.074**	**.787**	**.002**
Error	9.312		.252			
Total	392.083					
Corrected Total	12.934					

a. R Squared = .280 (Adjusted R Squared = .241)

The data in Table 6 revealed that a significant P-value of 0.787 was obtained which is greater than 0.05 level of significance. This however means that the null hypothesis which stated no significant differencewas not rejected. Therefore, gender has no statistical significant effect between the mean achievement scores of male and female pupils in Home Economics using Scaffolding teaching strategy.

Discussion:

The result revealed that scaffolding teachingstrategy had an increasing and significant mean score difference on the special need pupils' academic achievement in Home Economics than the

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use of lecture method group. In other words, pupils taught Home Economics using Scaffolding teaching strategy recorded higher mean achievement than their counterpart taught using the lecture method. This result collaborated with Raja and Nagasubramani (2018) who posited that the learning outcomes of scaffolding boosts pupils' engagement and motivation in the classroom. The study equally agreed with Joda (2019) who found that pupils who were taught using an instructional scaffolding strategy had considerably superior academic attainment than those who were taught using the lecture method.

It was found from the study that Scaffolding teachingstrategy had an increasing and significant mean score on the pupils' retention in Home Economics than the use of lecture method. Specifically, the pupils taught Home Economics using Scaffolding teaching strategy had higher mean retention than their counterpart taught using lecture method. In other words, pupils exposed to Scaffolding teachingstrategy were able to retain more concepts taught in Home Economics than their counterparts in the lecture or conventional groups. The result does not align with Van (2010) who observed no significant difference between the groups in achievement, retention and attitude towards the two teaching methods. Although, the study of Abakpa (2010) maintained that carefully implemented scaffolding lessons help to increase pupils' achievement and retention ability in any subject of their interest.

Moreover, in a continued findings, gender has no statistical significant effect on pupils' academic achievements in Home Economics. In other words, gender has no statistical significant effect between the mean achievement scores of male and female lower basic five special needs pupils in Home Economics using Scaffolding teaching strategyand those taught using lecture method. The result vary from that of Okeke, Okeyand Omeodu (2018) who carried out similar studies and found among others that male pupils taught different school subjects scaffolding

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teaching strategy were able to outperform their female counterparts. But conformed with Van (2010) who observed no significant difference between the groups in achievement, retention and attitude towards the two teaching methods.

Recommendations

Based on the findings of this study the following recommendations were made by the researches:-

1. Since the scaffolding teaching strategies has been found to be effective in promoting achievement of special needs pupils' achievement and retention in Home Economics education, Home Economics teachers should be encouraged to use the method regularly while teaching in order to improve pupils' performance in the subject.
2. Educational researchers should carry out studies to identify other aspects of Home Economics where scaffolding strategy could be effectively used to reduce gender disparity in achievement in the subject.

Conclusion:

This study investigated effect of scaffolding teaching strategyon the achievement and retention of lower basic five pupils' in special needs schools in Abia State, Nigeria.

1. The result has shown that scaffolding teaching strategy had significant effect on pupils' academic achievements in Home Economics.
2. Scaffolding teachingstrategy had an increasing and significant mean score on the pupils' retention in Home Economics than the use of lecture method.

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3. Finally, the result revealed that there was no significant difference between the mean achievement of male and female lower basic5 special needs pupils' taught Home Economics using scaffolding teaching strategy and those taught using lecture method.

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Details of the AI usage are given below:

1.

2.

3.

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