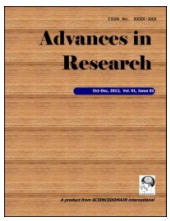

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Assessing the Potency of Scaffolding and Demonstration Instruction Methods on Student's Achievement in Technical Colleges in Akwa Ibom State

King Sam Ibritam[1], Nsikak-Abasi Udofia[2*] and Vincent Eze Onweh[3]

[1]Department of Technical Education, Akwa Ibom State College of Education, Afaha Nsit, Nigeria.
[2]Department of Educational Foundations, Guidance and Counselling, Faculty of Education, University of Uyo, Uyo, Nigeria.
[3]Department of Vocational Education, Faculty of Education, University of Uyo, Uyo, Nigeria.

Authors' contributions

This work was carried out in collaboration between all authors. Author KSI the study and wrote the first draft of the manuscript. Author VEO managed the literature searches and syntheses. Author NAU managed the experimental design and process. All authors collaborated in analyzing and discussing the results. All authors read and approved the final manuscript.

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ABSTRACT

This study was designed to determine the difference in students' achievement in Block-laying and Concreting using Scaffolding and Demonstration Instructional Methods in Technical Colleges in Akwa Ibom State. This was an attempt to test the potency of scaffolding as a teaching method in technical education having found it useful in other courses. A Quasi Experimental design was adopted for the study. Two hundred and forty six senior technical two students offering Block-laying and Concreting from six public Technical Colleges in Akwa Ibom State constituted the population of the study. A sample of 90 subjects drawn through simple random sampling technique

**Corresponding author: E-mail: nsisong99@yahoo.com;*

of three out of the six public Technical Colleges in Akwa Ibom State was used for the study. The Experimental and Control groups were taught Block-laying and Concreting topics from NABTEB syllabus and tested by the regular Research Assistants. An instrument titled Block-laying and Concreting Achievement Test (BCAT) developed by the researcher and validated by three experts was used for data collection. The reliability co-efficient indices of the instrument using Cronbach's Alpha ranged from 0.86 to 0.96. The independent t-test was used in testing hypothesis. The result showed that: Scaffolding Instructional Method can be used in teaching workshops-based subjects such as Block-laying and Concreting. Based on these findings it is recommended, among others that institutions training technical teachers should incorporate Scaffolding Instructional Method as one of the method in their curriculum used in training student-teachers in block-laying and concreting.

Keywords: Technical education; scaffolding; demonstration; teaching methods; academic achievement.

1. INTRODUCTION

Vocational Education teachers are constantly searching for the most effective method of imparting vocational skills to the learners in order to prepare them for employment and entrepreneurial achievements. The quest for appropriate instructional methods for improved students' achievement has led to the discovery of several pedagogic approaches such as demonstration method, assignment method, field trip, project method, lecture method and many other instruction methods.

Generally, teaching methods are grouped into two major classes: (1) The traditional or conventional methods and (2) The modern or scientific methods [1]. The Conventional Method in this context refers to method of teaching such as the Lecture Method. The scientific methods on the other hand include but not limited to: Demonstration Instructional Method (DIM), Scaffolding Instructional Method (SIM), Project Method, Field trip, Problem-based Method and Discovery Methods. The traditional or conventional teaching method do not really mean totally ineffective method, except that it has some limitations that make it not suitable for most teaching situations [1]. In the same vein, none of the scientific teaching methods can be considered as being perfect or effective in every teaching situation. In order to achieve the best teaching result, teaching methods should be chosen or selected, combined and used according to the teaching objectives.

The 3:4:5 method of setting out a building ensures that new building structures are erected on the correct position on the site as shown in the building blue print and survey plan. The 3:4:5 method involves four steps:

1. Setting out building line
2. Setting out profiles and marking out foundation and wall lines.
3. Determination of datum and transfer of level from datum point.
4. Setting out the building (that is, transferring the foundations plan from the blue prints to the actual position on the site)

In setting out a building using the 3:4:5 method, the following procedure may be followed:

a. Establish the frontal line of the building: Establish corner at points A and B at an interval indicating the length of the proposed building.
b. Using tape measure form a right angle at point B with sides measuring multiples of 3:4:5 units.
c. Stretch the side of the tape measuring multiple of 3 units parallel with range line, while the side measuring multiple of 4 parallel to the width of the proposed building. Angle ABC = 90º
d. Transfer the multiple of 3:4:5 arrangement to the corner at point A, with angle BAD = 90º
e. Link rectangle ABCD
f. Check diagonals A - C and B - D. If they are equal, then the setting out is correct, if not minor adjustment has to be made at A and B by re-inserting the multiple of the 3:4:5 tape measurement.

Upon completion of the setting out operation and subsequent confirmation of accuracies of all the lines the next thing to do is establishment of the datum level. Datum point or level is a level on a specific peg established on the site upon which all other level measurements of the proposed building are taken from. The level is established

by fixing a peg driven to the required level on a conspicuous and secured portion of the site. The datum level is transferred to the site from the peg marked the datum peg from the nearest permanent bench mark plus or minus level figures on the blue print. The level can be transferred from the datum peg using spirit level on a straight edge. In order to ensure a perfect and accurate transfer of the level, it is most desirable that the spirit levels be checked for accuracy by placing it against a known and accurate level already established with two pegs. In transferring the level, pegs are fixed at intervals a little shorter than the length of the straight edge and spirit level used against the straight edge placed across the pegs. The pegs are tapped lightly or raised as the case may be to achieve accurate level. The process is repeated peg after peg as the level is being transferred to the desired point.

The Lecture Method is defined as the method of instruction in which the teacher has full responsibility for presenting facts and principles orally to the learners. It operates on the principle of "banking concept of education" where the students are the depositories and the teacher is the depositor [2]. In the Lecture Method the teacher tells the learners the facts about the subject of learning and expects them to memorize such facts. It is based on the traditional belief that the teacher knows everything; while the students' heads are empty boxes to be filled with knowledge. The lecture method encourages spoon-feeding the learners as it is only the teacher that does the talking and narration, while the students sit passively and copy down notes. The Lecture Method if used alone is not suitable for workshop-based instructions such as for Block-laying and Concreting in which learning achievement is measured by the ability of the learners to perform some operations or tasks.

There are several teaching methods. In the recent time works by psychologist tends to prefer child centered teaching methods to the teacher centered teaching methods. In the contemporary classroom such teaching methods as inquiry, lecture, discussion, questions, discussion-demonstration, panel, seminar, debate, Socratic, project, field trips, drama, role playing, dramatization, skits, plays, constructions, role playing, storytelling, surveys, tutorial, coaching are used. In the technical Colleges curriculum the most recommended teaching method is the demonstration method discussed earlier. However, the researchers observe that Scaffolding which is actually derived from a technical object used extensively in the construction works is ignored. A Scaffolding is a temporary structure constructed to enable mostly technician and other people to function and at the same time move material from one place to another in the construction or repair of buildings and other structures. Scaffolding instructional method in the same guise is the technical support given during the learning process which is tailored to the needs of the student and to promote a deeper level of learning with the intention of helping students achieve certain learning goals [3]. Scaffolding theory was first introduced in the 1950s by the cognitive psychologist, Jerome Bruner, [4]. Jerome actually used it in teaching children how to communicate. Since then Scaffolding has been used successfully in several fields. However, it was not one of the recommended methods in the teaching of technical subjects. This prompted the researchers to conduct an investigation on the effectiveness of this teaching method in this study.

The performance of students in Block-laying and Concreting is worrisome, and some researchers [5] considered it to be the direct effect of instruction methods that were usually adopted to teach these subjects. The idea of using the same instructional approach such as Demonstration Method in every teaching and learning situation in all the workshop- based subject areas leads to poor achievement of the intended teaching and learning objectives [6]. It is for this reason that some other method of teaching and learning such as Scaffolding Instructional Method (SIM) should be tried as against the general notion that only DIM is the best for all workshop-based subjects or courses. The total dependence on Demonstrational Instruction Method (DIM) in skills development does not encourage exploration of other emerging scientific instructional method.

Some published research results indicated effectiveness of (SIM) in such areas as computer studies, mathematics, dance training, accounting, office practice and music [7,8]. The researcher is not aware of any research result on the use of SIM for skill development in workshop-based studies such as Block-laying and Concreting in Technical Colleges in Akwa Ibom State. The problem of this study summarized in a question form, against the background of using DIM only for teaching and learning of Block-

laying and Concreting and students' low achievement in skill development is: what difference would it make if SIM is introduced?

The main purpose of this study was to determine the difference in students' achievement in Block-laying and Concreting after being taught using Scaffolding and Demonstration Instructional Methods in Technical Colleges in Akwa Ibom State. Specifically the study was designed to determine the difference in students' achievement in Site preparation, Setting out simple building using 3:4:5 method, Construction of simple strip foundation and Construction of solid concrete ground floor after being taught using SIM as Against DIM.

1.1 Research Question

1. What is the difference in students' achievement in site preparation when taught using Scaffolding and Demonstration Instructional Methods?
2. What is the difference in students' achievement in setting out simple building with 3:4:5 method when taught using Scaffolding and Demonstration Instructional Methods?
3. What is the difference in students' achievement in construction of simple strip foundation when taught using Scaffolding and Demonstration Instructional Methods?
4. What is the difference in students' achievement in construction of solid concrete ground floor when taught using Scaffolding and Demonstration Instructional Methods?

1.2 Hypotheses

1. There is no significant difference in the achievement of students in the site preparation when taught using Scaffolding Instructional Method and Demonstration Instructional Method.
2. There is no significant difference in the achievement of students in setting out simple building with 3:4:5 method when taught using Scaffolding Instructional Method and Demonstration Instructional Method.
3. There is no significant difference in the Mean achievement of students in construction of simple strip foundation when taught using Scaffolding Instructional method and Demonstration Instructional Method.
4. There is no significant difference in the achievement of students in construction of solid concrete ground floor when taught using Scaffolding Instructional Method and Demonstration Instructional Method.

1.3 Research Method

The study was carried out in six public Technical Colleges in Akwa Ibom State. The geographical location of Akwa Ibom State as a river line State with thick rain forest favours block wall buildings. Temporarily and old mud wall building styles are giving way to modern and permanent block wall buildings. The State is, therefore, in high demand for skilled workers in Block-laying and Concreting to cope with the building styles in vogue.

Quasi-experimental design was adopted for the study. Specifically, it involved the non-randomized pre-test, post- test, control group design. The quasi-experimental design was appropriate since the study was carried out using intact classes, besides the independent variable was manipulated.

The population of the study comprised 246 students in Senior Technical 2 (ST2) offering block-laying and concreting in Technical Colleges in Akwa Ibom State. There are six public Technical Colleges in Akwa Ibom State.

Three out of the six public Technical Colleges in Akwa Ibom State, three were drawn through random sampling procedure into Experimental Group 1, Experimental Group 2 and Control Group, respectively. Thus intact classes in schools were involved in the Experimental groups. A typical class size was 30 students. Thus a total of 90 subjects were selected at the end of the treatment as sample representatives of the study.

The researcher developed multiple choice achievement test called Block-laying and Concreting Achievement Test (BCAT) with four options, out of which one answer was correct. BCAT was used to determine the achievement of the Experimental Groups and that of the Control Group. The BCAT covered all the selected topics on Block-laying and Concreting work of the NABTEB syllabus taught to ST2 students in the Technical Colleges in Akwa Ibom State.

All BCAT items were used for both pre-test and post-test for the study. In order to determine the number of test-items to be selected for a

particular topic, the researcher took into consideration the scope of each of the units in terms of relevance to the topic taught. Units that were large in scope attracted more items than those that were small in scope. As shown in the table of specifications, questions/items that demanded application received greater attention than those at the knowledge level which merely demanded recall of facts. In all, 60 multiple choice questions were constructed to cover the scheme of work for ST2 in NABTEB syllabus for construction trades examination.

Face and content validation of the Block-laying and Concreting Achievement Test (BCAT) was carried out. For this purpose, the BCAT was given out to three experts, two from Technical Education, one from the Department of Educational Measurement and Evaluation in the University of Uyo, Uyo. Specifically the experts were requested to examine the instrument along the following criteria: Clarity of the instrument and the questions, appropriateness of the instructions and questions to the students' level of understanding and experience.

Also, the experts were required to make comments which were utilized by the researcher in the improvement of instruction plans and the achievement test. Besides face and content validations, psychometric properties such as difficulty, discrimination and distraction indices, of the Achievement Test were computed to determine the internal validity of the instrument. For this purpose, the Block-laying and Concreting Achievement Test was administered on 50 Senior Technical 2 (ST2) students offering Block-laying and Concreting at Main Land Technical College, Oron, Akwa Ibom State.

The Block-laying and Concreting Achievement Test (BCAT) was tested on 22 Block-laying and Concreting students in Senior Technical 2 (ST2) selected from Union Technical College, Eket Local Government Area of Akwa Ibom State; this set of students did not participate in the actual study. They were tested twice by the researcher with a time lag of three weeks. The Pearson Product Moment Correlation of their scores was used for computing the coefficient of reliability of the instrument. The reliability indices of the instrument using Cronbach's alpha for each task was established as follows: Site preparation = 0.98; Setting out = 0.97; Construction of Strip Foundation = 0.93; Construction of Solid Concrete Ground Floor = 0.93.

The values as shown in Table 1 are substantially high and are in agreement with the opinions of some experts who opine that the reliability co-efficient of 0.05 will suffice at the early stage of an investigation [9,10]. The obtained reliability co-efficient were substantially high, and were therefore, considered appropriate for the study.

Table 1. Reliability indices of the research instrument using Cronbach alpha

Variable	Number of items		σ	r
Site preparation	7	40.51	0.02	0.98*
Setting out	8	40.32	0.08	0.97*
Strip fundn	8	40.44	0.04	0.93*
Con. Floor const.	6	40.44	0.04	0.93*
Load Bearing wall	9	40.46	0.02	0.96*
Block-Laying& con.	38	40.38	0.61	0.86*

**Substantially high enough to justify being used for the research instrument*

1.4 Experimental Procedure

The three public Technical Colleges in Akwa Ibom State were selected and assigned into Experimental Group 1, Experimental Group 2 and Control Group using random sampling technique. Experimental group 1 was taught using SIM; Experimental Group 2 was taught using DIM; while Control Group was taught using Conventional Instruction Method. The Technical Colleges involved were coded and drawn through the random sampling technique for grouping as follows: College No.1 for Experimental Group 1, college no. 4 was drawn for Experimental Group 2, while college no 2 was drawn for Control Group.

All the subjects in Experimental and Control Groups were subjected to pre-test before commencement of the treatment. This enabled the researcher to assess academic level of the subjects. After the pre- test, the eight units of Block-laying and Concreting courses were taught to Experimental Group 1 using SIM, Experimental Group 2 were taught using DIM, while Control Group were taught using Conventional Instruction Method. At the end of the treatment, BCAT was re-administered as post-test to each Group.

Block-laying and Concreting Achievement Test (BCAT) was administered as pre-test to Experimental and Control groups. Students in Experimental Group 1 were thereafter taught with SIM. Students in Experimental Group 2 were taught with DIM, while students in Control Group were taught using Conventional Instructional Method. At the end of the treatment, BCAT was re-administered as post-test to the subjects in the three groups. The test items of the BCAT carried one mark each.

The data generated from the pre-test and post-test were subjected to descriptive analysis (Mean statistics) to answer the research questions. Hypotheses 1, 2, 3 and 4 were tested using independent t- test; at .05 level of significance. In order to test the hypotheses, two variables were identified in hypotheses 1, 2, 3, 4. The variables were; (1) Treatment as independent variables in hypotheses 1, 2, 3, and 4 respectively and (2) Students' achievement as dependent variables in hypotheses 1, 2, 3 and 4 respectively. Independent t- test was used in comparing the Mean scores of the two variables in Tables 2, 3, 4 and 5 respectively.

Table 2. Mean difference and gain scores of students' achievement in site preparation when taught using SIM and DIM

Treatment	Site preparation		Mean gain	Mean difference
	Pretest	Posttest		
Scaffolding instructional method	38.57	53.83	15.26	2.69
Demonstration instructional method	41.13	53.70	12.57	

Table 3. Mean Difference and Gain Scores of students' achievement in setting out simple building with 3:4:5 method when taught using SIM and DIM

Treatment	Setting out simple building		Mean gain	Mean difference
	Pretest	Posttest		
Scaffolding Instructional Method	38.60	53.83	15.23	1.93
Demonstration Instructional Method	40.43	53.73	13.30	

Table 4. Mean Difference and Gain scores of students' achievement in construction of simple strip foundation when taught using SIM and DIM

Treatment	Construction of simple strip foundation		Mean Gain	Mean Difference
	Pretest	Posttest		
Scaffolding Instructional Method	38.63	53.s60	14.97	2.20
Demonstration Instructional Method	40.63	53.40	12.77	

Table 5. Mean Difference and Gain scores of students' achievement in construction of solid concrete ground floor when taught using SIM and DIM

Treatment	Construction of solid concrete floor		Mean Gain	Mean Difference
	Pretest	Posttest		
Scaffolding Instructional Method	38.63	53.50	14.87	1.57
Demonstration Instructional Method	40.63	53.93	13.30	

2. RESULTS

The data collected for the study were statistically analysed and presented in this paper. The presentation is arranged according to the research questions and hypotheses of the study.

From data in Table 2, the pretest score for SIM is 38.57 and DIM has 41.13. The post test score of DIM is 53.70 and that of SIM is 53.83. The Mean gain for SIM is 15.26, while DIM is 12.57. Thus the Mean difference between the post-test scores of students taught using SIM and those taught using DIM is 2.69. This means that SIM enhanced students' achievement in site preparation more than DIM.

The data in Table 3 indicate that SIM has scores of 38.60 and 53.83 in pretest and posttest respectively, while the corresponding figures for DIM are 40.43 and 53.73. This shows that SIM has Mean gain of 15.23, while DIM has Mean gain of 13.30. The Mean score difference between the students taught using SIM and those taught using DIM stands at 1.93. Thus, the difference between the Mean scores of students taught using SIM and those taught using DIM indicates that SIM enhanced students mean achievement more than DIM in setting out simple building using 3:4:5 method.

The data presented in Table 4 show that SIM has scores of 38.63 and 53.60 in pretest and posttest respectively, while the corresponding figures for DIM are 40.63 and 53.40. The Mean gains in their scores as shown in the analysis are; scaffolding, 14.97 and Demonstration, 12.77. The Mean score difference between the Scaffolding Group and those of Demonstration Group is 2.20. Thus, the difference between the students' scores in post-test achievement after they were taught using SIM and those taught using DIM means that SIM enhanced students' achievement in construction of simple strip foundation more than DIM.

The data presented in Table 5 reveal that SIM has scores of 38.63 and 53.50 in pretest and post-test respectively, while the corresponding figures for DIM are 40.63 and 53.93. The Mean gains of the students after they had been taught using SIM is 14.87 and that of those taught using DIM is 13.30. The Mean score difference between the Scaffolding and Demonstration is 1.57. Thus, the difference in the post-test Mean score of students taught using SIM and those taught using DIM means that SIM enhanced students' achievement in construction of solid concrete ground floor more than DIM.

Data in Table 6 show that the calculated t- value is 0.06 and is less than critical t-value at df 58 which is 2.02 at .05 significant level, hence the null hypothesis is retained. There is no significant difference in the mean achievement scores of the Students taught using SIM and that of those taught using DIM in site preparation.

Data presented in Table 7 show that the calculated t-value is 0.03 and is less than the critical t-value at df 58 which is 2.02 at .05 significant level, hence the null hypothesis is retained. There is no significant difference in the mean achievement scores of the students after being taught using SIM and that of those taught using DIM.

Data presented in Table 8 show that the calculated t-value is 0.07 and is less than the critical t-value at df 58 which is 2.02 at .05 significant level, hence the null hypothesis is retained. There is no significant difference in the mean achievement of students taught using SIM and that of those taught using DIM in construction of simple strip foundation.

Data in Table 9 show that the calculated t-value 0.15 is less than the t-critical at df 58 which is 2.02 at .05 significant level, hence the null hypothesis is retained. There is no significant difference in the mean achievement of students' scores taught using Scaffolding Instruction Method and those taught using Demonstration Instruction Method in construction of solid concrete ground floor.

Table 6. Independent t-test of the difference in the achievement of students in site preparation when taught using SIM and DIM

Variables	n		SD	t-cal
Scaffolding	30	53.87	11.69	0.06
Demonstration	30	55.70	11.38	

t-cal not significant at .05 level; df= 58; critical t- value = 2.02

Table 7. Independent t-test of the difference in the achievement of students in setting out simple building with 3:4:5 method when taught using SIM and DIM

Variables	n		SD	t-cal
Scaffolding	30	53.83	11.09	0.03
Demonstration	30	53.73	11.48	

t-cal not significant at .05 level; df= 58; critical t- value = 2.02

Table 8. Independent t-test of the difference in the achievement of students in construction of simple strip foundation when taught using SIM and DIM

Variables	n		SD	t-cal
Scaffolding	30	53.60	11.27	0.07
Demonstration	30	53.40	11.38	

t-cal not significant at .05 level; df= 58; critical t- value = 2.02

Table 9. Independent t-test of the difference in the achievement of students in construction of Solid Concrete floor when taught using SIM and DIM

Variables	n		SD	t-cal
Scaffolding	30	53.50	11.46	0.15
Demonstration	30	55.93	11.21	

t-cal not significant at .05 level; df= 58; critical t- value = 2.02

3. DISCUSSION OF FINDINGS

The results of data analysis with respect to the difference in students' achievement in site preparation after they were taught using SIM and DIM revealed that there was slight difference in the mean achievement of the students after they had been taught using SIM higher than those taught using DIM. However, the slight difference was not significant enough to suggest superiority of SIM over DIM. It goes to re-affirm the efficacy of DIM as an effective teaching method for teaching practical based subjects.

The slight difference between the posttest mean achievement scores of the students taught using SIM and those taught using DIM could also suggest the effectiveness of SIM for teaching workshop–based subjects such as block-laying and concreting. This finding corroborates with existing research reports which earlier identified effectiveness of SIM for other subjects such as computer training, guitar playing, mathematics, dance training, accounting and office practice [8, 11].

The findings of the study with respect to the difference in students' achievement in setting out simple building with 3:4:5 method after they had been taught using SIM and DIM indicated slight difference in the post test mean achievement scores of students taught using SIM higher than those taught using Demonstration Instructional` Method. SIM appeared to have enhanced students mean achievement in setting out simple building with 3:4:5 method than DIM. This was evidenced in the slight Mean deference shown in Table 5 in favour of SIM though the difference was not significant as further revealed by independent t-test analysis in Table 9. The results as shown by the two statistical analyses further reveal that SIM and DIM are closely related in terms of effectiveness as teaching methods. That does not in any way suggest superior of SIM to DIM as effective teaching method for practical related subjects.

The study showed that students taught construction of simple strip foundation using SIM had a higher posttest mean scores than those taught using DIM. However the result of the t-test presented in Table 7 indicated that their scores were statistically not significant. The non-significant difference in the achievement scores could be attributable to the fact that SIM and DIM appeared to be related in terms of effectiveness as teaching methods for practical based subjects. In essence both SIM and DIM have proven themselves as two complementary teaching methods that could be used for teaching block-laying and concreting and related subjects for an improved achievement.

However more evidences are still required for any conclusion as to the effectiveness of SIM for practical performance of students on block-Laying and Concreting related skill for it to fully compare with DIM.

The analysis of the data for answering Research Question 4 which sought to find out the

difference in students' mean achievement in construction of solid concreting ground floor after they had been taught using SIM and DIM revealed that students taught using SIM had a Mean score of 53.50 in posttest, while the corresponding figures for those taught using DIM was 53.93, and Mean gain of each of the treatment were 14.87 and 13.30 respectively. The difference in the Mean scores of students taught using SIM and that of the students taught using DIM was not significant as revealed by the t-test analysis in Table 9.

The slight positive effect of SIM on the performance of students as against those taught using DIM seem to suggest that SIM is also a powerful and effective Instructional Methods as DIM for teaching block-laying and concreting trades. Again for the fact that there was no significant difference in the mean performance between students taught using SIM and those taught using DIM suggest strongly also that DIM is a reliable and effective teaching method.

4. CONCLUSION AND RECOMMENDATION

In conclusion, the findings of this study show that SIM can be used for teaching workshop-based instructions such as Block-laying and Concreting. SIM could also be used either alone as an alternative instructional method or along with DIM in teaching Block-laying and Concreting work. However the mere fact that there was no significant difference between the achievement of students taught using SIM and DIM further establishes the efficacy of DIM as an effective method for teaching Block-laying and Concreting work and other workshop- based subjects.

On the other hand, there was significant difference between students' achievement after they had been taught using Scaffolding and Conventional Instructional Methods (lecture method). In the same vein, there was significant difference between achievement of students taught using DIM and those taught using Conventional Instructional Method. The findings suggest that Conventional Instructional Method is a weaker teaching method than either SIM or DIM. Therefore, Conventional Instructional Method (Lecture method) should not be used alone for teaching workshop based subjects.

Based on the findings of this study, the researchers recommend that the Ministry of Education and Technical Education Board should encourage teachers of Block-laying and Concreting in Technical Colleges in Akwa Ibom State to employ SIM along with DIM in teaching and learning Block-laying and Concreting. Furthermore, methods of teaching Block-laying and Concreting subjects should vary between SIM and DIM depending on the lesson objectives.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Katherina RS. My Life: Traditional Teaching vs Modern Teaching Methods. Retrieved from http://rickatz:blogspot.Com/2008/04/traditional son July 6 2010; 2008.
2. Bartholomae D, Petrosky A. Way of Reading an Anthology for Writers. New-York: St. Martin's Press; 1987.
3. Sawyer RK. The Cambridge Handbook of the Learning Sciences. New York: Cambridge University Press; 2006.
4. Ninio A, Bruner J. The achievement and antecedents of labelling. Journal of Child Language, 5, 1-15; 1978.
5. Kalat IK. Factor Affecting the Teaching of Basic Technology in Secondary Schools in Kafanchan Education Zone of Kaduna State. Journal of Nigeria Association of Teachers of Technology. 2008;6(4):230 – 267.
6. Okoro CC. Factors that Influence Learning. Basic Concepts in Education Psychology, Nsukka: UCO - Academic Publishers; 2002.
7. Mckenzie J. Scaffolding for Success: Beyond Technology, Questioning, Research and Information Literate School Community; 1999. (Retrieved from "http://fno.org/dec 99/Scaffol. Intnl on April 28, 2011.
8. Bransford J, Brown A, Cocking R. How People Learn: Brain, Mind, Experience and School. Washington, DC: National Academy press; 2000.
9. Onwioduokit FA. Educational Research Methodology and Statistics. Uyo: Dorand Publishers; 2000.

10. Azuka EB, Agomuo EE. Research Techniques for Tertiary Institutions. Oko: Dataword Computers Academy; 2006.

11. Chang K, Chen I, Sung Y. Effect of Concept Mapping to Enhance Text Comprehension and Summarization. The Journal of Experimental Education. 2002;71(1):5–23.

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