

MULTIPLE INTELLIGENCE-BASED INSTRUCTIONAL APPROACH AND STUDENTS' COGNITIVE ACHIEVEMENT IN SOCIAL STUDIES EDUCATION.

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Abstract

The study was carried out to determine the effect of the multiple intelligence-based instructional approach on students' cognitive achievement in Social Studies. Two research questions turned into hypotheses guided the study. The quasi-experimental pre-test post-test research design was used. From a population of 6,011 Junior Secondary Two students in all the nine schools in Oron Local Education Zone, a sample of 100 subjects were randomly drawn from two intact classes and randomly assigned to either experimental or control groups. A pre-test was given to both groups followed by a four-week treatment to the experimental group before the post-test. Mean and standard deviation scores were used in answering research questions while analysis of covariance (ANCOVA) was used in testing the hypotheses at .05 alpha level. Results showed significant difference in the mean scores of experimental and control groups while an insignificant difference in the mean scores of male and female students in the experimental group was found. It was concluded that the multiple intelligence-based instructional approach enhanced cognitive achievement of students in Social Studies and should be adopted by teachers.

Teachers are increasingly facing serious instructional challenges as the diversity among students in each classroom situation continues to widen. A possible solution to this challenge could be the implementation of the multiple intelligence-based instructional approach in the teaching-learning process. The multiple intelligence-based instructional approach involves a process in which a teacher employs various instructional techniques each of which specifically addresses at least one of the students' intelligence variables as identified by Gardner (1983).

The theory of Multiple-Intelligence according to Christison and Kennedy (1998), presupposes that human beings possess a number of distinct potentials which manifest themselves in different skills and competencies and they represent different ways to learn and demonstrate understanding. Ogwo and Orannu (2006) reported that Gardner (1983) identified eight intelligence variables namely, verbal-linguistic, logical-mathematical, visual-spatial, and bodily-kinesthetic intelligence. Others are musical-rhythmic, interpersonal, intra-personal and naturalist intelligence.

Verbal-linguistic intelligence according to Smora (2003) deals with the ability to think in words and to use spoken and written words to express ideas, appreciate meaning and accomplish other goals. Logical mathematical intelligence deals with the ability to use numbers to calculate, quantify and analyse problems logically as well as use inductive-deductive reasoning (Patterson, 2002). Laman (2001) described the visual-spatial intelligence as the ability to think in pictures, to create mental images and to transform visual or spatial ideas into imaginative and expressive creations. In the opinion of Patterson (2002), bodily-Kinaesthetic intelligence is concerned with the ability to use one's body partly or wholly to solve problems or fashion out a product. Ogwo and Orannu (2006) described musical-rhythmic intelligence as the skill to discern pitch, tone and music. Interpersonal intelligence relates to the ability to work and interact with others and understand their feelings, moods and temperaments (Christison & Kennedy, 2001). Smoral (2003) described intrapersonal intelligence as the ability to understand oneself, recognize one's feelings, strengths and weaknesses and to use the information to direct one's life. He noted further that the capacity to recognize and classify natural species (flora and fauna) in one's environment is what Gardner (1983) called naturalist intelligence.

According to Armstrong (2000), these intelligence variables describe different ways people can be 'smart', that is, how their natural talents are manifested and how they learn best. Thus, people

with high verbal linguistic intelligence are said to be 'word smart' because they learn best through spoken or written words. Those with high logical-mathematical intelligence are said to be 'number smart' because they learn best through numbers. Those highly endowed with visual-spatial intelligence are described as being 'picture smart' because they learn best through pictures. Those with high bodily-kinaesthetic intelligence are said to be 'body smart' as they learn best through activities that involve body movement. People richly endowed with musical-rhythmic intelligence are described as being 'music smart' since they learn best with music. Those with high interpersonal intelligence are said to be 'people smart' since they learn best in company of other people. Similarly, people with high naturalistic intelligence are said to be 'nature smart' because they learn best in natural settings.

Armstrong (2000) advocated that teachers using the multiple-intelligence instructional approach should present their lessons using a wide variety of instructional techniques that involve the use of words, numbers, pictures, physical activities, music, group activities and the natural environment in order to cater for the diverse learning preferences of the students. On this basis, the following instructional techniques identified by Armstrong (2000), and Patterson (2002) and which address the intelligence variables indicated, constitute the multiple intelligence-based instructional approach in this study. They include active learning, collaborative learning and self assessment.

Active learning is an instructional technique in which students are given ample opportunity to actively participate in their learning process through expressing their views in the class, offering suggestions, making comments, asking and answering questions. As aptly noted by Bonwell and Eisten (2003), it can be contrasted with passive learning in which students just sit down passively in the class to take in information from the teacher who expects them to memorize and regurgitate.

Collaborative learning, also known as co-operative learning, is an instructional technique in which students are organized into groups to work, interact and learn together. Self assessment is an instructional technique in which a learner is allowed to assess his achievement and progress. It allows the individual to identify his strengths and weaknesses and hence, make appropriate efforts for improvement (North Central Regional Education Laboratory, NCREL, 2000). In the context of this study, active learning addressed the verbal-linguistic intelligence; collaborative learning addressed interpersonal intelligence while self assessment addressed intrapersonal intelligence.

Studies by Campbell and Campbell (1999), Armstrong (2000), Wilson (2002), Patterson (2002) and Ogwo and Orannu (2006) have shown that there is a wide acceptance of the multiple intelligence theory by educationists because it provides teachers a framework for understanding students' natural talents and their vast learning capabilities and to adequately address students wide dispositions and diversity. Studies by Campbell and Campbell (1999), Carver, Price and Wilken (2000), Geimen, Gertz, Pochet and Pullam (2000), Janes, Koutsopanagos, Mason and Villaranda (2000), Patterson (2002), and Smora (2003) have also shown that the multiple intelligence-based instructional approach greatly improves cognitive achievement in a wide range of subjects in both children and adults.

Social Studies is an academic subject taught both in primary and junior secondary schools. It is concerned with the reciprocal relationship between man and the various aspects of his environment. While interacting with his physical and social environments, man encounters problems and challenges in his quest to live comfortably, orderly and more meaningfully. Therefore, the purpose of Social Studies education is to help students develop the ability to adapt to the ever-changing environment they live in through the acquisition of relevant knowledge, attitudes, values and practical skills. This implies that Social Studies was designed and introduced into the Nigerian school curriculum to provide functional social education to Nigerian youths. The programme is expected to make good citizens and patriots out of Nigerian youths. Incidentally, the programme of Social Studies has been implemented for many years now without much success in terms of inculcating the values of good citizenship into the youths. Many youths are rich in the knowledge of Social Studies concepts and

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facts but deficient in expected social values, attitudes and behaviour that characterize socially responsible citizens. It is assumed that this deficiency arises from the way the subject is taught and learnt in the classroom.

Statement of the Problem

The instructional techniques presently adopted by most teachers which are based on behavioural learning theories seem not to adequately address the diverse learning styles and preferences of the students. Also, the conventional method of teaching utilises only linguistic and mathematical abilities making it difficult to measure performances in other areas which students are naturally talented in. Consequently, students who are not very good in these two areas become apathetic and resistant to learning. It seems therefore that the present methods do not lay much emphasis on active learning, collaborative learning and self assessment. This may have accounted partly for the observed poor students' performances in Social Studies in Junior School Certificate Examinations in recent years (Nwoji, 2003; Udoudo, 2005).

In spite of documented advantages of the multiple intelligence-based instructional approach in enhancing students' cognitive achievement in many subject areas, research findings relating to their use in the teaching of Social Studies is lacking. The problem of this study was therefore students' poor performance arising from non-use of the multiple intelligence-based instructional approach to improve students' cognitive achievement in Social Studies.

Purpose of the Study

The purpose of this study was to examine the effects of the multiple intelligence-based instructional methods on students' cognitive achievement in Social Studies. Specifically, the study had the following objectives:

- i) To examine the difference in the mean scores of experimental and control groups in Social Studies Achievement Test (SSAT) based on the use of multiple intelligence-based instructional methods.
- ii) To determine gender difference in the mean scores of students in the experimental group in the SSAT based on the use of multiple intelligence-based instructional methods.

Research Questions

The following research questions guided the study:

- i) Are there differences between the pre- and post-test scores of the experimental and control groups in the SSAT based on the use of multiple intelligence-based instructional methods?
- ii) Is there gender difference in the mean scores of students in the experimental group in SSAT based on the use of multiple intelligence-based instructional methods?

Research Hypotheses

The following null hypotheses guided the study:

- i) There is no significant difference between the mean scores of experimental and control groups in SSAT based on the use of multiple intelligence-based instructional methods.
- ii) There is no significant gender difference in the mean scores of students in the experimental group in the SSAT.

Research Method

The study adopted the quasi-experimental pre-test post-test research design. The experimental and control groups were used. The study area was Oron Local Education Zone made up of Oron, Okobo, Mbo, Udung Uko and Urue Offong/Oruko Local Government Areas of Akwa Ibom State, Nigeria. The target population for the study comprised the 6,011 Junior Secondary II students in all the nine government-owned secondary schools in the zone. The sample size was made up of 100 Junior Secondary Class Two students randomly selected from two intact classes and randomly assigned on equal number basis to the experimental and control groups.

One instrument was used in collecting data for the study. This was the Social Studies Achievement Test (SSAT) designed by experienced teachers of Social Studies selected from the study area. The multiple-intelligence lesson plans incorporating three multiple intelligence based instruction techniques namely, active learning, collaborative learning and self assessment, were used as treatment on the experimental group before exposing them to the pos-test. The face validation of this instrument was provided by three experts in Measurement and Evaluation, from the Department of Educational Foundations, Guidance and Counselling, University of Uyo, Akwa Ibom State, Nigeria. The reliability co-efficient of the SSAT instrument determined through the use of the split-half method was 0.87. This was considered by experts to be high enough for use in the study.

Research Procedures

The pre-test was first administered on all the subjects. Thereafter, the experimental group was taught lessons with the multiple-intelligence lesson plans for a period of four weeks. The control group was equally taught the same ten lessons with the conventional lesson plans. The scores of the experimental and control groups in the two tests were recorded. The research questions were answered with the mean and standard deviation scores while the two hypotheses were tested using analysis of covariance (ANCOVA), at .05 alpha level. The pre-test scores were used as the covariates.

Results

Research Question 1

Are there differences between the pre- and post-test scores of the experimental and control groups in the SSAT based on the use of multiple intelligence-based instructional method?

Table 1: Mean and Standard Deviation Scores of Experimental and Control Groups in SSAT.

Group	n	Pre-test Scores		Post-test Scores	
		X	SD	X	SD
Experimental	50	45.90	8.17	58.60	6.39
Control	50	45.30	6.58	50.30	7.45

The data in Table 1 shows that the mean scores of pre and post-test of experimental group were 45.90 and 58.60 respectively while those of the control group were 45.30 and 50.30. This result reveals a difference between the two groups as the experimental group recorded higher mean score than the control group in the SSAT.

Research Question 2

Is there gender difference in the mean scores of students in the experimental group in SSAT based on the use of multiple intelligence-based instructional methods?

Table 2: Mean and Standard Deviation Scores of Male and Female Students in the Experimental Group in the SSAT.

Gender	N	Pre-test Scores		Post-test Scores	
		X	SD	X	SD
Male	22	47.23	8.13	60.45	6.15
Female	28	44.29	8.02	57.14	6.30

The data in Table 2 shows that the pre- and post-test mean scores of male students in the experimental group were 47.23 and 60.45 respectively while those of female students were 44.29 and 57.14 respectively. This finding shows that male students had a higher mean score than female students in the experimental group in the SSAT.

Hypothesis 1:

There is no significant difference between the mean scores of experimental and control groups in SSAT based on the use of multiple intelligence-based instructional methods.

Table 3: Analysis of Covariance (ANCOVA) of the Mean Scores of Experimental and Control Groups in the SSAT.

Sources of Variation	SS	Df	Ms	F-cal
Covariates	1648.83	1	1648.83	
Residual	4069.08	98	48.32	39.71*
Total	5717.86	99		

* $P < .05$; $df = 1, 98$; Critical F-value = 3.92.

The analysis of covariance in Table 3 revealed that the calculated F-value of 39.71 at .05 alpha level with 1 and 98 degrees of freedom was higher than the critical F-value of 3.92. The null hypothesis was therefore rejected. This implies that there is significant difference between experimental and control groups in their performance in the SSAT.

Hypothesis 2:

There is no significant gender difference in the mean scores of students in experimental group in the SSAT.

Table 4: Analysis of Covariance of the Mean Scores of Male and Female Students in the Experimental Group in the SSAT.

Sources of Variation	SS	Df	Ms	F-cal
Covariates	83.32	1	83.32	
Residual	1755.16	48	36.57	2.28**
Total	1838.48	49		

** $P < .05$; $df = 1, 48$, Critical F-value = 4.08.

Analysis of covariance in Table 4 revealed that the calculated F-value of 2.28 at .05 alpha level with 1 and 48 degrees of freedom was less than the critical F-value of 4.08. The null hypothesis was accepted. This implies that there is no significant difference in the mean scores of male and female students taught Social Studies with the multiple intelligence-based instructional approach.

Discussion of Findings

The findings of the study revealed that students taught Social Studies with multiple intelligence-based instructional approach scored higher in the post-test than those taught with the conventional lecture method. Analysis of covariance of the scores revealed that the difference in the scores was significant. The implication of the finding is that the multiple intelligence-based instructional approach enhances students' cognitive achievement in Social Studies more than the conventional method. This finding agrees with earlier findings by Campbell and Campbell (1999), Carvor, Price and Wilken (2000) and Patterson (2002).

The study finding also revealed that there was no significant difference between the mean scores of boys and girls in the experimental group in the SSAT. This finding is in line with an earlier finding by Ogwo (1996) that no significant difference exists in the mean scores of male and female students taught metal work with the multiple intelligence instructional approach.

Conclusion

Based on the findings of the study, it is concluded that the multiple intelligence-based instructional approach greatly enhances students' cognitive achievement in Social Studies. Since the study found that there is no significant difference in the cognitive achievement of male and female students in the experimental group, it is strongly recommended that henceforth, teachers should only provide the learners with basic knowledge, values and skills but allow them go on through the process of constructing knowledge, using their natural intelligence. Teachers should only provide scaffolding support to learners when and where it is needed, allowing them to build up their knowledge using their potential talents. These supports can take the form of prompts, hints, suggestions and performing tasks that the learners can not execute. Support for learners should be gradually withdrawn as their performance increases, especially towards the later part of task execution. Finally, learners should be encouraged to reflect on the process and products of the learning tasks by comparing their work with those of others. This can take the form of recall of previous experiences and re-examination in the light of new experiences.

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