

AWARENESS OF COOPERATIVE LEARNING INSTRUCTIONAL STRATEGY AMONG SCIENCE TEACHERS IN JIGAWA STATE

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Abstract

Teaching is any activity organised by the teacher that brings about meaningful learning. Not all teaching practices are equal in promoting the desired learning outcome and there is a need to employ effective instructional strategies that can meet the desired learning goal. This study investigated the awareness of science teachers on cooperative learning instructional strategy (CLIS). Two Research questions guided the study. The study employed an ex-post facto design with awareness as the outcome variable and qualifications and years of experience as the predictor variables. The target population was the science teachers in Jigawa state. A sample of eighty (80) students was taken using both Purposeful and random sampling. An instrument known as the Cooperative Learning Awareness Test (CLAS) was used to generate the data. The data was analyzed using both descriptive and Analysis of Variance inferential statistics. The result of the study revealed a low mean awareness score for science teachers of different qualifications. The result equally revealed no statistical variation in the mean awareness of science teachers of different qualifications. It was concluded that the Awareness of science teachers of CLIS is low irrespective of qualification and years of experience. A few recommendations were given, one of which is that the university, as part of its corporate responsibility to the community should organize training workshops for science teachers on innovative strategies like CLIS.

Keywords: Cooperative Learning, Instructional Strategy, Awareness, Science Teachers

Introduction

Several decades of pedagogical research have now clearly shown that what teachers do in the classroom is undoubtedly the key educational determinant in student learning and achievement. Teaching according to Eronisho (2008), is any activity organised by the teacher that brings about meaningful learning. Not all teaching practices are equal in this respect. In line with this thought, Abubakar (2017) suggested that there is a need to employ effective instructional strategies that can meet the desired learning goal (Abubakar, 2017). The author opined that; “with the economic, social, political and technological distractions of today’s world, meaningful teaching can only occur when there is a touch of a new idea, approach or pedagogy”. Gauthier Dembele (2004) earlier in their contribution opined that there is a general rejection from educational stakeholders of what is referred to as traditional teaching. According to Tanner, Chatman & Allen (2009), to improve science teaching and learning, science teaching tools need to address two major criteria namely: (a) teaching practice should mirror the current understanding the of learning process, and (b) science teaching should reflect scientific practice. Teaching to satisfy the above criteria demands a shift from the traditional instructional methods “to approaches which focus on practical problem-solving activities, constant engagement with the immediate environment, competencies and skills development” (Erinosho, 2008p.83). Many studies have revealed cooperative learning as a promising learning strategy that can equip students with both cognitive and social skills needed for the 21st century ((Vijayratnam, 2009, Johnson, Johnson & Smith, 2014, Lord, 2001).

Cooperative learning is a theoretically supported instructional approach in education that can increase students' learning and promote positive attitudes toward both academics in general and the subject matter in particular (Johnson, Johnson & Stanne, 2000). Cooperative learning is the instructional use of small groups so that students work together to maximize their learning and each other's learning (Johnson, Johnson & Smith, 2013). It is learning based on a small-group approach to teaching that holds students accountable for individual and group achievement" (Orlich et al., 2010). According to Lam (2013), Cooperative learning is a student-centred, instructor-facilitated instructional strategy in which a group of students is responsible for its learning and the learning of all group members. However, group learning on its own does not connote cooperative learning group. It has been posited that some features like positive interdependence, promotive interaction, individual and group accountability, Interpersonal and Social Skills and group processing skills must be structured into group learning to turn it into a cooperative learning platform (Johnson *et al.*, 2013, Tanner *et al.*, 2009).

Cooperative learning has a range of benefits that affect many areas. Tianton and Teemuangsai (2013) found that students' critical thinking skills improve in a cooperative learning environment, as well as their ability to retain information and their interest in the subject matter. Additionally, Kolawole (2008) notes that cooperative learning promotes academic achievement and retention. Lord (2001) also found that it enhances positive attitudes, self-efficacy, scientific reading and writing, oral communication, and peer editing among students. Operationally, in this study, awareness refers to how much a teacher knows about cooperative learning and cooperative learning models

Theoretically, Cooperative learning can be rooted in Vygotsky's theory of social interaction. Vygotsky, (1962), a Russian teacher and psychologist, first stated that we learn through our interactions and communications with others. He further examined how our social environments influence the learning process. He suggested that learning takes place through interactions students have with their peers, teachers and other experts. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. It is the opinion of the researcher that platforms like cooperative learning will allow students to interact with one another leading to the development of a more elaborate cognitive framework. In this study, the Awareness of cooperative learning instructional strategy among science teachers in Jigawa state is explored.

Objectives of the Study

The study has the following objectives, they are:

- i. To investigate the mean difference in level awareness of cooperative learning strategy among science teachers of different qualifications.
- ii. To investigate the difference in level awareness of cooperative learning strategy among science teachers of different years of experience.

Research Questions

- i. What is the mean difference in level awareness of cooperative learning strategy among science teachers of different qualifications?
- ii. What is the mean difference in level awareness of cooperative learning strategy among science teachers of different years of experience?

Hypotheses

- i. There is no significant difference in the level of awareness of cooperative learning strategy among science teachers of different qualification
- ii. There is no significant difference in the level of awareness of cooperative learning strategy among science teachers of different years of experience

Empirical Studies

Tonbuloglu, et al. (2016) investigated Teachers' Awareness of Multicultural Education and Diversity in School Settings. Semi-constructed interviews, observations and document analysis, interview questions, an observation form and yearly plans were used as data collection tools. The data obtained were then evaluated by the content analysis technique. The study revealed some strengths and weaknesses, views and opinions of the teachers concerning multicultural education.

In a different but related study, Asan (2003) investigated teachers' perspectives, their awareness level of specific technologies and the roles this technology plays in education. The results revealed that many teachers were not computer users. Many teachers lacked a functional computer literacy foundation upon which to build new technology and skills. Analysis of teachers' knowledge of computer technologies revealed low levels of technical knowledge, as well as some interesting perceptions of the role of some specific computer-related items. For most teachers, the use of Computers and related technologies had not been a routine part of their own educational environment.

Adebowale & Dare (2012) investigated Teachers' Awareness of Nigeria's Educational Policy on ICT and the use of ICT in Oyo State Secondary Schools. The study is designed to investigate the level of awareness of primary and secondary school teachers invited for a capacity-building workshop on ICT of Nigeria's educational policy on ICT as well as its possible influence on the use of ICT for classroom teaching and learning. Two hundred volunteers (out of the 250 participants invited from all the Local Government Areas of the state) at an ICT training workshop organized for Oyo state (Nigeria) teachers participated in this study. Data was collected using a self-constructed and validated questionnaire titled ~~T~~Teacher's awareness of Nigeria's educational policy on ICT and the data were analyzed using simple percentages, t-test and ANOVA. The study found that only a small percentage of the respondents possessed a high level of awareness of the country's educational policy on ICT a considerable proportion of the respondents (35.1%) of the respondents were either completely ignorant of the policy or possessed poor levels of its awareness. previous training which some of these respondents attended had no significant influence on their awareness of the country's educational policy on ICT.

Kaya, *et al* (2015) examined the time spent on various types of science instruction with regard to teachers' awareness of instructional activities. The perceived effectiveness of instructional activities in relation to the allocation of time was also examined. A total of 30 4th grade teachers (17 female, 13 male), from seven different primary schools, participated in the study. First, the teachers completed a questionnaire regarding student-centred and teacher-centred activities and their effectiveness. Subsequently, classrooms were videotaped during a 40-minute science lesson. The videos were coded for the type and duration of instruction and analysed. During science lessons, teachers misidentified almost half of the activities in the questionnaire as being student-centred and rated these activities as more effective. Based on classroom observations, the teachers were found to

primarily use teacher-centred instruction. Based on the classroom videos, it was found that teachers who were more aware of student-centred activities spent less time on teacher-centred activities. Additionally, teachers who found teacher-centred activities more effective tended to spend more time on teacher-centred activities and thus less time on student-centred activities and orientation.

Musa, *et al.* (2020) examined the level of awareness and extent of utilization of innovative instructional strategies by science teachers for teaching science in senior secondary schools in Kebbi State, Nigeria. A quantitative, descriptive survey research design was adopted. A sample of 252 science teachers was drawn from all science teachers in public secondary schools in Kebbi State, Nigeria. The sample for schools was drawn using stratified sampling, while simple random sampling was used in the selection of science teachers. An expert-validated questionnaire with a reliability index of 0.76 using the test-retest method was used for data gathering. Findings from the study revealed that 19 (67.86%) out of 28 innovative instructional strategies were not known by science teachers, while 5 (17.86%) were known but not utilized by the teachers. Similarly, science teachers do not frequent libraries or browse the internet for current books, journals and other resources to update their knowledge on recent practices in teaching and learning science. The study recommends that Government should organize seminars, and workshops and provide adequate sensitization to science teachers on awareness and utilization of innovative instructional strategies for effective teaching and learning science. Science teachers should be encouraged to visit libraries and also search the internet for current information and ideas on current practices in teaching and learning science.

From the brief review above, it is evident that research on awareness of educational research findings and innovation has been explored. However, this research specifically beams its searchlight on the awareness of cooperative learning instructional strategy among science teachers in Jigawa state, northwest Nigeria.

Research Methodology

The study employed a survey design. The survey will permit the researcher to summarize the characteristics of the different groups or to measure their awareness, opinion or attitude towards cooperative learning strategy (Ary *et al.* 2006). The target population is all secondary school science teachers in senior science secondary schools under the Science and Technical Board, Jigawa state. There are eight schools under the board. However, using the emirates as strata, Stratified sampling was used to draw a sample of eighty (80) teachers from schools in the five (5) emirates and this constituted the sample for the study. Permission was sought from the office of the executive secretary State Science and Technical Board, Jigawa state to gather the data from respondents. The Data was collected using an instrument, Cooperative Learning Awareness Test (CLAS). CLAS comprises ten (10) short answer items on Cooperative Learning. The instrument was validated by senior-ranking lecturers in the field of science education and test and measurement respectively. The reliability coefficient of the CLAS was 0.75 using test-retest method. The administration of the instrument was on the spot to ensure a high return of the questionnaire and also to give clarification to the respondent where needed. A benchmark means of 10.00 was agreed upon for the CLAS.

Awareness, according to the Cambridge Dictionary is the knowledge that something exists or the understanding of a situation or subject at present based on information or experience. Most of the research on awareness helps bring to light teachers' perceptions, attitudes and knowledge concerning certain educational issues

Results

This study examines science teachers' awareness of cooperative learning in Jigawa State. The result is presented below according to the stated research questions and hypotheses.

Research Questions One: What is the difference in the level of awareness of cooperative Learning Instructional strategy Among Science Teachers of different qualifications?

Table 1: Descriptive Analysis of the scores of teachers of Different Qualifications

Qualification	Mean	N	Std. Deviation
BSC ED	5.2632	19	2.44591
BSC	5.2917	24	3.29003
MSC	6.3158	19	2.23738
OTHER	6.5556	18	4.35515
Total	5.8125	80	3.17464

The result in Table 1 above shows the mean and the standard deviation of the test scores of science teachers in the Awareness test. The result revealed teachers with other qualifications had a mean of 6.5556, followed by teachers with M.Sc. The result equally revealed the mean scores of teachers with B.Sc. (Ed) and B.Sc. to be 5.2632 and 5.2917 respectively. From the result equally, the standard deviations were slightly higher - this indicates that the scores were not clustered around the mean score of every category.

Research Questions Two: What is the difference in the level of awareness of cooperative Learning Instructional strategy Among Science Teachers of different Experiences? The test scores were analyzed using descriptive statistics and the result is presented in table 2, below.

Table 2: Descriptive Analysis of the Test Scores of Science Teachers of Different Experience

Qualification	Mean	N	Std. Deviation
1-3	6.0000	20	2.59554
4-6	5.8000	20	3.31821
7-9	8.9333	15	5.75036
10-12	5.8000	15	1.52128
13-ABOVE	5.4000	10	2.22111
Total	6.3875	80	3.55604

The result above revealed that the mean score of science teachers with 7-9 years' experience is the highest (8.93) followed by teachers with 1-3 years' experience. From the result, teachers with 4-6 and 10-12 years have a mean score of 5.8000. The result equally showed teachers with 13 years and above years' experience had the lowest mean score of 5.4000. However, the standard deviation shown in the table above is relatively high, indicative of the fact that the test scores of the teachers deviate slightly from the mean score

Research Hypotheses

H₁: There is no significant difference between the mean Test scores of the science teachers of different qualifications. The Analysis of Variance (ANOVA) of the test scores was done and the result is presented below.

Table 3: Analysis of Variance of the Test Scores of Science Teachers of Different Qualifications

Sum of Squares	df	Mean Square	F	Sig.
26.995	3	8.998	.889	.451
769.192	76	10.121		
796.187	79			

The table above shows the result of ANOVA of the test scores of the science teachers with different qualifications. From the result, $F(3,76) = .889$, $p = .451$. From the result the p -value is higher than the set value of 0.05, this revealed that there is no significant variation in the mean scores of the group. Therefore, the hypothesis earlier stated is upheld.

H₂: There is no significant difference in the mean Test scores of science teachers of different years of experience. To test the hypothesis, ANOVA was done and the result is presented below

Table 4: Analysis of Variance of the Test Scores of Teachers with Different Years of Experiences

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	122.054	4	30.514	2.610	.042
Within Groups	876.933	75	11.692		
Total	998.988	79			

The table above shows the result of ANOVA of the test scores of the science teachers with different years of experience. From the result, $F(4,75) = 2.610$, $p = .042$. From the result the p -value is lower than the set value of 0.05, this revealed that there is significant variation in the mean scores of the group. Therefore, the hypothesis earlier stated is rejected.

Discussion of the Findings

The study investigated, the level of awareness of cooperative learning instructional strategy (CLIS) among science teachers in Jigawa state. From the findings, the awareness of the teachers of CLIS was relatively low. Many could not define cooperative learning let alone mention a cooperative learning model. However, it is contrary to the researcher's expectation that awareness was not better among teachers with a B.Sc. Ed. Qualification, one could have thought that those with a B.Sc. Ed qualification who were professionally trained to know and implement theoretically proven innovative pedagogy like CLIS would exhibit high awareness. The finding supported the report of Musa *et al* (2020) who reported that 67.86% of innovative instructional strategies were not known by science teachers. The finding equally couldn't sufficiently establish any variation between teachers of different years of experience. This concurred with the report of Oyelekan *et al* (2017) who reported no significant difference in science teachers' level of utilization of innovative teaching strategies based on experience and qualifications. Awareness is the function of attitude or interest rather than qualification and years of experience. In the words of Abdul Gafoor (2012) to be aware is to know, to realise or to be interested in something. Similarly, Musa *et al.* (2020) observed that science teachers do not frequent libraries or browse the internet for current books, journals and other material resources. This submission by Musa *et al.* (2020) presumably could have been the reason for these findings

Conclusion

From the findings of the study, the following conclusion can be drawn,

- Awareness of science teachers of CLIS is low irrespective of qualification and years of experience.

- ii. There is no significant variation in the awareness score of science teachers of different qualifications.
- iii. There is a significant variation in the awareness score among science teachers of different experiences.

Recommendations

The following recommendations were given,

- i. The university, as part of its corporate responsibility to the community should organize training workshops for science teachers on innovative strategies like CLIS.
- ii. The government, through the state science and technical board should roll out some motivation that will support science teachers' attendance at workshops and conferences.
- iii. Faculties should, as concerning teachers' training go back to the drawing board to ensure that students are adequately taught on innovative instructional strategy like CLIS.

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