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EFFECT OF TEACHER TASK ORIENTED APPROACH ON STUDENTS' ATTITUDE TOWARDS SCIENCE SUBJECTS IN ENUGU STATE

Udabah, Cordelia Udemgbo, General Studies Division, Enugu State University of Science and Technology (ESUT), Enugu

Abstract: *This study was designed to investigate the effect of Teacher Task Oriented Approach on Students' Attitude towards Science Subjects in Enugu State. It was a quasi-experimental study, pretest-post test, non equivalent groups were used. A total of 261 JSSII students were sampled from four secondary schools in Agbani Education zone of Enugu state. The schools were made up of two rural and two urban schools drawn by purposive sampling while eight intact classes were randomly sampled and assigned experimental and control groups. Attitude to Science Scale (ASS) was used for data collection. The instrument was validated by the expert. A reliability coefficient of .85 was obtained for ASS using Cronbach's Alpha method. Two research Questions and three hypotheses guided the study. ASS was administered to the subjects at the beginning of the study to collect the pretreatment attitude scores. After a treatment period of six weeks, ASS was administered to the subjects for post treatment attitude scores. Mean and standard deviation were used to answer the research questions while the hypotheses were tested at .05 level of significance using analysis of covariance (ANCOVA). Major findings of the study revealed that students in the experimental group taught sciences with Teacher Task Oriented Approach exhibited better attitude in sciences than those taught with expository method. There was no significant effect or interaction between teaching methods and school location on students' attitude towards sciences. It was therefore recommended that teacher task oriented approach should be adopted for teaching secondary school sciences.*

Keywords: *Teacher, Task, Oriented Approach, Students' Attitude, Science Subjects*

INTRODUCTION

According to Marks (2002) a task is a lesson that involves goals and activities that are designed to enhance students' comprehension of identified concepts, skills or values. In other words, it is an activity geared towards a specific outcome or result within a given time schedule. It could be a range of work plans which have the overall purpose of facilitating learning either from the simple and brief exercise to more complex and lenthy activities.

Carter (2009) asserted that in task design, a task is taken as "a piece of an activity, usually with specified objectives, undertaken as part of an educational course or used to elicit data for research Active learning which is characteristic of science learning depends on the teachers' ability to recognize, harmonize and maximize the science class room transaction through adequate tasks.

A task-oriented instruction is a teaching method in which the instruction is oriented towards what? the teacher must do focusing on the task to be achieved within a given time schedule. Task based instruction is often promoted as an effective teaching approach superior to traditional method and soundly based in theory and research. Task oriented instruction is an important aspect of effective teaching because it relates to how much time the teacher actually spends on a designated instructional task. This requires the teacher's plan for a lesson (task) that appeals to the students, captures and keeps the students' attention and then heightens their interest on the task within the period of time without distractions that draw students attention away. The planning, delivering and evaluation of learning account for the teacher-task orientation. It is a behaviour devoted to teaching an academic subject. There is therefore a focus on the time for the accomplishment of task. Ellis (2004) states that "the more time allocated to teaching a specific topic the greater the opportunity students have to learn".

Teacher task orientation is a key behaviour (Brophy, 2002; Berlinear and Biddle 1995. Porter, 1993) cited in (Onuora, 2002) opined that studies on teachers' task orientation show that classrooms in which teacher-student interaction focus more on intellectual content that allows their students the maximum opportunity to learn and practice what was taught are more likely to have higher rates of achievement. In task orientation the teacher identifies the task that students will need to perform and then structures or plans their activities accordingly. The sub-topics must be task-oriented in their phrasing. Such phrases would be specific indicating the exact task that needs to be done. It does not leave the students vague but tells them exactly which to do at any particular time. For instance, if the task is on volume of acid" the task oriented phrase could be measure the volume" which leaves the student wondering what to do with "volume thereby spending longer than necessary time on the task. Task orientation enables the teacher to give a numbered list to guide the

students step by step through the activities involved in the task. The teacher can also allocate time to each step so that the task can be accomplished within the time schedule.

In the task-orientation instructional approach, the teacher must avoid what could be called "an educated guess work", rather he/she must take time to identify the task, find out what students do especially in the laboratories, areas of their difficulties and the outcome of their activities. These analyses enable the teacher structure his tasks accordingly. To get detailed step by step phrasings, the teacher wants to find out for instance, what questions the students are likely to ask at any particular stage' what materials will be needed to carry out any particular task. Proper provision of answers to such questions makes the accomplishment of the task much easier and within time schedule. This will eventually lead to better understanding, greater performance and higher academic achievement. This also saves time since the aim of task orientation is accomplishment with time schedule for maximum performance. Task orientation approach promotes a more effective performance and academic achievement in terms of developing both the theoretical and practical competences in students unlike some other common teaching strategies where the teacher dominates the class while the students are demotivated and passive listeners depending much on their teacher and lacking a sense of subjectivity for their own learning. As a result the students may be theoretically competent but unable to cope with practical tasks effectively.

The task oriented teaching approach involves the interaction between what is to be learned and the way it should learned, the interaction between the teacher and the student and interaction between the students background knowledge and the task to be done. This approach provides tasks which are usually with specified objectives(s), appropriate content, specified working procedure and a range of outcomes for those who undertake the task. It refers to a range of work plans which have the overall purpose of facilitating learning. The main methodological point is that learners would be doing the problem-raising, experimentation and discovery rather than teacher providing ready-made answers to problems which may not be those most directly affecting the learners. This also has advantages on individual differences, by giving room for individual progression rates where those with faster and better understanding make progress, the weaknesses of those other ones are exposed and thereby helped accordingly. One more advantage of task orientation

is that it places their students in a natural setting while doing specific tasks. The teacher lets go the control of the learning process. It increases learner activity while making the teacher produce and supply different tasks which will give the learners the opportunity to experiment spontaneously, individually and originally on their tasks. At this point, the teacher must take the responsibility of the consciousness-raising process which must follow the experimenting task activities. This is very crucial for the success of any teaching/learning process because it is here that the teacher must help learners to recognize differences and similarities, help them to 'correct, clarify and deepen" their perception of the task.

Task orientation as an approach of teaching is useful for moving the focus of learning process from the teacher to the student giving the student a different way of understanding. It brings teaching from abstract knowledge to real world application by letting the student use their own skills at their current level. It helps in meeting the immediate needs of the learners while providing a framework for making the class interesting and also able to address students need.

According to Onuoha (2007) teacher task orientation refers to the knowledge or planning and delivering instruction and of evaluating learning. The extent and quality of the professional preparation you receive will influence both the quality and the style of your teaching. The more knowledge you have of planning and delivering instruction and of evaluating learning, the better your students learn. Instructors without sufficient pedagogical or teaching are forced to teach by instinct and are doomed to trial-and error approaches. Ubagu (2002) held that novice, teachers, having little knowledge of pupils and teaching, tend to grow increasingly authoritarian and custodial. They are obsessed with classroom control, therefore they may also begin to plan instruction designed not to promote learning, but to discourage children's misbehaviour. Ubagu added that some task related questions a teacher must answer are:

i. How much time do I spend in teaching, asking questions, and encouraging students to inquire or think independently?
ii. How much time do I spend organizing for teaching and getting my student ready to learn? And
iii. How much time do I spend assessing my learner's performance?

According to Tsui (2004) classrooms in which teacher-student interactions focus more on intellectual content that allows their students an opportunity to learn are more likely to have higher rates of achievement. A task oriented effective teacher stops or prevents misbehaviour with a minimum of class disruption. Tsui hinted that student engagement in the learning process is a key behaviour that refers to the amount of time students devote to learning an academic subject. It is related to a teacher's task orientation and should provide students the greatest opportunity to learn the material. The time the student actively engaged in learning the material is called the engagement rate. In other words, engagement rate is the percentage of time devoted to learning when the student is actually on the task, engaged with the instructional materials and benefiting from the activities being presented. Even though a teacher may be task oriented and may provide maximum content coverage, the students may be disengaged. This means that they are not actively thinking about working with, or using what is being presented. Such disengagement can involve an emotional or mental detachment from the lesson that many or may not be obvious. When students jump out of their seats, talk, read a magazine or leave for the restroom, they obviously are not engaged in instruction. Correcting this type of disengagement may be much more difficult, it requires changes in the structure of the task itself and the cognitive demands placed on the learner.

Carter (2009) gave some useful suggestions for increasing learning time and, more importantly, student engagement as follows:

1. Set rules that let students attend to their personal and procedural needs about teaching and learning process without obtaining the permission each time.
2. Move around the room to monitor students' seat and work then communicate according, the students' progress.
3. Ensure that independent assignments are interesting, worthwhile, and easy enough to be completed by each pupil without the direction for instruction by writing the daily schedule on the board.
4. Make abundant use of resources and activities that are at, or slightly above, a student's current level of understanding.
5. Avoid timing errors. Act to prevent misbehaviour from occurring and increasing the severity so they do not influence others in the class.

From the fore-going, the teacher task oriented instruction is a strategy that targets a task that should be accomplished within a specified time. Until and unless a learner practices or undergoes the necessary cognitive processes in the science classroom, gaining conceptual understanding into science concepts remains utopian dream for majority of students. There is no real value in learning scientific knowledge through memorization. The teacher task orientation does not given room for memorization. It creates an atmosphere for both the teacher and the student to be focused while participating actively on the task. It gives room for individual progression and exposes those who are not being carried along. It makes learning to be easily determined as the teaching goes on. From the fore-goings, it is important to investigate whether these benefits of teacher task oriented approach can be harvested in the teaching and learning of science subjects at secondary school level. This is the focus of this study.

PURPOSE OF THE STUDY

The purpose of this study was to investigate the effects of Teacher Task Oriented Approach on Secondary School students' Attitude towards Science. Specifically, the study aimed at investigating the effects of Teacher Task Oriented Approach on;

1. Secondary School students' attitude towards Sciences
2. Secondary school students' Attitude towards Sciences with regard to location of their schools.

RESEARCH QUESTIONS

The following research questions guided the study

1. What are the mean attitude scores of students in the experimental and control groups in both pretreatment and post treatment?
2. What are the mean attitude scores of urban and rural students in experimental group in both pre treatment and post treatment?

HYPOTHESES

The following research hypotheses tested at 0.05 level of significance were formulated to guide the study;

1. There is no significant difference between the mean attitude scores of students in the experimental and control groups.

2. There is no significant difference between the mean attitude scores of urban and rural students in the experimental group.
3. There is no significant interaction between method and location of schools on students' attitude towards sciences.

METHODOLOGY

The research design adopted in the conduct of this investigation was quasi-experimental design, thus, a pre-test –post test, non equivalent groups design was used. Intact classes randomly assigned to experimental and control groups were used. This justifies the choice of this research design as the researcher cannot manipulate the subjects by way of assigning them randomly to either experimental or control groups. The area covered in this study was Agbani Education Zone of Enugu State consisting of Nkanu East, Nkanu West and Enugu South Local Government Areas. The choice of this Education zone is informed by the fact that it is characterized by lower educational development than other education zones in Enugu State (Agbo, 2004).

The population of the study consisted of all junior secondary two (JSS II) students in the sixty four secondary schools in Agbani Education Zone of Enugu State, numbering nineteen thousand, three hundred and fifty eight (19,358) students when this study was conducted. To ensure even representation of the three local government areas and the rural and urban status, purposive sampling was used as follows: one secondary school each was randomly sampled from Nkanu East and Nkanu West Local Government Areas to represent the rural schools while two schools were randomly sampled from Enugu South Local Government Area to serve as Urban schools.

Furthermore, in each of the four secondary schools two JSS II intact classes were sampled randomly and consequently assigned experimental and control groups randomly also. The total number of 261students in the eight JSS II classes described above constituted the subjects of the study and Attitude to Sciences Scale (ASS) was developed by the researcher and used for data collection in the study. ASS was made up of 14 – items with a 4 – point rating scales namely; strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD).

Attitude to Science Scale (ASS) was validated by three research experts. ASS was trial-tested by administering it to JSS II Students in a different school outside the schools sampled for

the study; the scores obtained were used to compute a reliability of .85 for the instrument using Cronbach's Alpha method. Research Questions were analyzed using mean and standard deviation while test of hypotheses were done with analysis of covariance (ANCOVA) at .05 level of significance.

EXPERIMENTAL PROCEDURES

The researcher trained the four regular science teachers in the four secondary schools used in the study for a period of two weeks on the use of teacher task oriented approach. At first, the ASS was administered to all the subjects of the study as pre-test. Thereafter, the treatment was administered for a period of six weeks. The experimental group in each school were taught sciences using the teacher task oriented approach, while the control group in each school were taught the same topics using expository method.

At the expiration of the treatment period, the ASS was re-administered to all the subjects as post-test.

RESULTS

Research Question One:

What are the mean attitude scores of students in the experimental and control groups in both pretreatment and post treatment?

Table 1: Result of Data Analysis for Research Question one

Group	n	Pre test Mean	Standard Deviation	Post Test mean	Standard Deviation
Experimental	128	30.5	3.01	69.3	6.22
Control	133	39.6	3.03	42.7	18.91

The pretest mean attitude scores and standard deviations were 30.5 and 3.01 and 27.6 and 3.03 for experimental and control groups respectively. The post test mean attitude scores and standard deviations were 69.3 and 6.22 for experimental group and 42.7 and 18.91 for control group respectively. Attitude appreciated in both groups but higher in the experimental group. Also the mean attitude score of the experimental group was more reliable as indicated by a lower standard deviation value of 6.22. While a standard deviation of 18.91 for control group indicates that there were more extreme scores in the group.

Research Question Two:

What are the mean attitude scores of urban and rural students in experimental group in both pre treatment and post treatment?

Table 2: Result of Data Analysis for Research Question Two

Group	n	Pre test Mean	Standard Deviation	Post Test mean	Standard Deviation
Urban	65	26.4	5.13	68.7	3.40
Rural	63	27.0	5.12	70.1	3.36

The pre test mean attitude scores and standard deviations were 26.4 and 5.13 for urban students and 27.0 and 5.12 for rural students respectively. Also the post test mean attitude scores and standard deviations were 68.7 and 3.40 and 70.1 and 3.36 for urban and rural students respectively. This shows that no tangible difference existed between both groups. Like wise the standard deviations showed that the means for both groups were equally reliable.

HYPOTHESIS TESTING

1. There is no significant difference between the mean attitude scores of students in the experimental and control groups.
2. There is no significant difference between the mean attitude scores of urban and rural students in the experimental group.
3. There is no significant interaction between method and location of schools on students' attitude towards sciences.

Table 3: ANCOVA Analyses of Hypotheses 1, 2 and 3

Source of Variance	Sum of squares	df	Mean squares	F-calc.	Level of significance	Decision
C0-variates	5.770	1	5.770	0.032	0.859	
Pretest	5.770	1	5.770	0.032	0.859	
Main effects	12400.383	2	12400.383	33.861	0.000	
Method	10269.560	1	10269.560	56.085	0.000	S
Location	6006.753	1	6006.753	32.805	1.001	NS
2-Way interaction	54.567	1	54.567	0.297	0.586	NS
Method/ Location	54.467	1	54.467	0.297	0.586	
Explained	14432.591	4	3608.148	19.705	0.000	
Residual	53777.268	321	183.107			
Total	**73209.879**	**325**	**225.26**			

S = Significant, NS = Not significant at 0.05 level of probability

Table 3 displays a result that shows significant effect in the pretest and main effects as indicated by the F-calculated obtained. Conversely, the F–calculated for 2-way interaction between methods and location shows no significant effect.

SUMMARY OF FINDINGS

The results of this study revealed the following:

1. The students taught sciences with Teacher Task Oriented Approach showed better attitude towards sciences than those taught with expositing method.
2. There is no significant different between the mean attitude scores of urban and rural students taught sciences with Teacher Task Oriented Approach.
3. There is no significant interaction between teaching method and location of schools on students' attitude in science.

DISCUSSION OF FINDINGS

Table 1 results testified that both experimental and control groups showed similar attitude to science in the pretest, however, the experimental group exhibited better attitude after treatment (Post test). The result of hypotheses testing further authenticated this finding by showing a significant difference between the mean attitude scores of both groups in the favour of the experimental group. Also the mean attitude score of the experimental group was more reliable as shown by the lower standard deviation value.

This result showed that Teacher Task Oriented Approach generated better attitude in the students than the expository method. This further affirms the findings of Ogbu (2006) Ozofor (2001) who respectively found Teacher Task Oriented Approach is very useful in generating and sustaining interest and good attitude in sciences among secondary school students. However, the findings are not in agreement with the findings of Kim (2007) and Mayer (2001) who found the contrary.

The pre test and post test mean attitude scores and standard deviations as shown in table two show that no tangible difference existed between both urban and rural students. Likewise the standard deviations showed that the means for both groups were equally reliable. Table 3, shows that there existed no significant interaction between method of teaching and location in students' attitude towards sciences. Hence school location did not affect students' attitude in sciences significantly.

These results agree with the findings of Mpegi (2001), Mbaegbu (2002), Stuz (2005) and Nwoye (2005) that there is no significant effect or interaction between location, teaching methods and students' attitude towards sciences.

Conversely, the results contradicted the claims of Nduka (2001), Oluremi (2001), Banjo (2004) and Okeke (2005) in their various studies where they held that school location is a major player in students' attitude in secondary school sciences. Possibly, manipulation of extraneous variables may have accounted for the conflicting results.

RECOMMENDATIONS

Consequent upon the findings of this study, the following recommendations have been deemed necessary;

1. Teacher Task Oriented Approach should be used in teaching sciences in our secondary schools.
2. Science teachers should be trained adequately on the use of Teacher Task Oriented Approach.

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