EFFECTIVENESS OF SELF-INSTRUCTIONAL MATERIAL IN LEARNING OF SCIENCE AMONG IX STANDARD STUDENTS

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Abstract

Science teaching plays an important role in every classroom since, science has become an integral part in every day activity. The researcher in this research has attempted to study the effectiveness of self-instructional material in learning of science among IX standard students. The researcher has selected experimental research with a sample of 40 IX standard students selected using purposive sampling. The Research tool was self-constructed by the researcher. Mean, standard deviation, 't' test and gain ratio were used as the statistical techniques. Findings are discussed in the latter half of the study.

Background of the Problem

Science is a subject where the learner learns all the physical, chemical and biological nature of this whole universe. Science plays its own role in everyday life of an individual. We come across science in most of the activities we do regularly. Though science if an integral part of human life, learners find it difficult to learn science when it comes as a subject. Derivations, equations, dissections and logics are hard for the learner to understand. But it cannot be simply left out since, the learner has to make his professional career bright through science. The teacher from his/her side has to deliver the lesson innovatively so that it is easy for the learner to understand and study science with interest.

Need and Significance of the Study

There are a number of innovative teaching techniques and methods that are being implemented by the teacher in the classroom. Several learner centered and teacher centered methods have been introduced for the enhancement of the process of teaching and learning. Science can also be taught to students using such innovative techniques. The teacher can adopt any learner centered method to encourage the student to learn at his own pace and hence the researcher has decided to prepare a self-instructional material to facilitate individualized learning atmosphere to the learner.

Objectives of the Study

- To measure the effectiveness of Self instructional material in learning Science among IX standard students

Hypothesis of the Study

Hypotheses of the present study are framed as follows,

1. There is no significant difference between control group and experimental group in learning science using self-instructional material.

Method of Research and Research Design

The method of research selected for the study is experimental research. Two group pre-test – post-test experimental design is adopted to carry out this research. The students in class IX are divided into two groups namely, control group and experimental group. 40 students are divided into two groups consisting of 20 students in each group. The students are divided into two groups based on their achievement scores in Science in the previous monthly exam. Both the groups consisted of high, average and low achievers.

Tool Used for the Study

The tool used for the study is a question paper prepared to measure the performance of the learners. The questions taken are from the IX standard Science text book prescribed by the government of Tamil Nadu. The content selected for the study is from the grammar part of English. The question paper was set for 25 marks. The question paper consisted of 25 objective questions each carrying 1 mark. Right answer was given 1 mark and there was no negative mark for wrong answer.

Validity and Reliability of the Tool

Since the questions are taken from the prescribed Science text books, the question paper was given to the Science teachers in the school to establish the validity and reliability. The questions were framed as per the guidance of the Science teachers. Focus was given on objectives, difficulty level and content coverage while preparing the questions. Questions were framed to check the knowledge, understanding and application of the learners.

Population and Sample of the Study

The population of the study is IX standard students studying in Higher Secondary School in Madurai. The sample of the includes 40 IX standard students.

Sampling Technique

Purposive sampling is used as the sampling technique of this research

Administration of the Tool

Pre-Test

The developed tool was initially given to the students of class IX for pre-test and the students were asked to answer to the questions in a stipulated time of 30 minutes. The tool was then collected from the students and was evaluated and the marks were

entered. Each question in the tool carried 1 mark and no negative marks were given for wrong response. The students had no previous knowledge in the content selected for the pre-test.

Treatment Phase

After the pre-test, the content selected was taught to the students using traditional method of teaching and the students of experimental group were taught using specially designed instruction material self prepared materials.

Post-Test

The same tool which was administered for the pre-test was again given to both the control and experimental group students and were again asked to answer the questions in a stipulated time of 30 minutes. The tool was then collected from the students and was evaluated and the marks were entered. Each question in the tool carried 1 mark and no negative marks were given for wrong response.

Data Analysis and Interpretation

The collected data were analyzed to arrive at the findings of the research. The findings of the research are tabulated as follows,

Statistical Analysis

Hypothesis 1 - There is no significant difference between control group and experimental group in learning science.

Table 1: Significance of Difference Between the Mean of Gain Scores of Control Group and Experimental Group

Gain Score	N	Mean	Std. Deviation	't" Value	Significance
Control Group	20	3.22	2.08	10.31	Significant
Experimental Group	20	8.67	1.12		

From the above table, it can be inferred that the obtained 't' value 10.31 is greater than the table 't' value 1.96 at 0.05 level of significance. This clearly states that there is significant difference in the gain score of the control group and experimental group. Hence the null hypothesis, "There is no significant difference between control group and experimental group in learning science" is rejected. Further, it can be interpreted that the significant difference in the gain score of control and experimental group is because of the effectiveness of instructional material in teaching of science. This significant difference also states that the students in the experimental group are good at performance than the control group students.

Findings

From the above table, the findings of the study can be stated as follows,

1. There is significant difference in the gain scores of control group and experimental group in learning Science.
2. There is effectiveness in Self instructional material in learning of Science among students of class IX.

Educational Implications

The following can be considered by the teachers and academicians to help the students to improve their learning of Science

1. Self-instructional material can be used to teach the students about various aspects in Science.
2. Science subject teachers can be given special training in preparation of self-instructional material.

Conclusion

The findings of the present study state that Self instructional material instruction is more effective than the traditional method of leaning Science. The gain scores and the gain ratio of the experimental group is high than the control group. The students learn science in their own speed. So without any hurry they learn science concepts with interest. The teacher plays an important role to overcome lacking barriers and lift the students out of the trouble. The government in turn has to take steps to equip every teacher to prepare self-instructional material.

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