



Effect of Instructional Materials on Achievement in Science among Senior Secondary School Students

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ABSTRACT

The present research work explores the effectiveness of instructional model on students' academic achievement in science. This research was conducted on 64 students studying in class 12th MPC Senior secondary schools, Baripada, Odisha. In the study, Achievement Test on Science tool was used. The teaching through instructional materials was given to afterpre-test. The findings of the study revealed that instructional materials have significant effect on the achievement in science among students. Recommendations were made on the basis of obtained findings of the study.

Keywords: Instructional materials, science achievement and senior secondary school students

Introduction

Instructional materials can introduce demonstration in the classroom which is synonymous with taking the learners to parts of the world they could not otherwise experience having in the classroom situation, a teacher with special expertise, etc. Mayer (2010) claims that visual materials play an important role in assisting instruction in order to clarify, define and explain the related teaching point. Instructional materials help in creating social awareness related to the learning process (Bonska, 2010). Students retained information for a longer time if they taught through instructional materials.

Teaching aids develop the proper image when the students see, hear taste and smell properly. Teaching aids provide complete examples for conceptual thinking. The teaching aids create interest, increase the vocabulary and make learning permanent. So teaching aids provide direct experience to the students. They can also be defined as materials or tools locally made or imported that could make tremendous improvement of a lesson if intelligently used. The process of teaching-learning depends upon the different types of equipment available in the classroom. There are many aids available these days like, audio, visual and audio-visual aids. They have very much importance in TLP (Teaching-Learning Process). Sharma (2012) revealed that the effective use of instructional materials in the classroom draws the attention of students due to its multisensory experiences. The utilization of improvised instructional materials promotes and enhances the effective teaching-learning process (Oladejo, et al, 2011).

This study attempts to find out the effect of instructional materials on the academic achievement of students.

Methodology:

Taking into consideration the nature of the study the investigator used the Pre-test and Post-test one group experimental research design to explore the facts related to the study regarding the effect of instructional materials on the achievement in science of senior secondary students.

Experimental research design:

The present study is a Pre-test and Post-test questionnaires experimental design. Teaching through instructional materials, a 12 days designed intervention program for Senior Secondary School students is provided before applying the Pre-test on science achievement. After the intervention program is provided, the achievement test on science is administered again on a Post-test survey.

Population and Sample

In the present study, the population constituted all the +2 2nd year science students of Mayurbhanj District. Here in the present study, the investigator will take Senior Secondary Students of Mayurbhanj as the population. In the present study, the researcher will follow the purposive sampling technique in order to select the sample. Thirty senior secondary students of Mayurbhanj will be selected as a sample of the study

Tools used:

The investigator selected Instructional materials for teaching related to science subjects. Further, one achievement test developed by the investigator to collect necessary data. Investigator prepared an achievement test in science for senior secondary school students. The test includes different types of questions like Multiple choice questions, Fill up the blanks, Match the following, True or False, and one-word answers. The test contains 40 questions representing 40 marks. The reliability of the test was calculated by Split-half method. The co-efficient of reliability calculated by Spearman-Brown the formula comes out to be 0.76 which is insignificant at a 0.01 level of significance. Hence the tools are highly reliable. The tools are checked by the language and subject expert to find out the content validity of the tools. According to the expert, the tools are valid and appropriate to measure the achievement level of students towards science. Every correct answer should be given a (1) mark and a zero(0) mark for every wrong answer. The minimum and maximum scores are 14 to 35.

Table-1

Significance of table in mean score pre-test and post-test of achievement in science among students

<i>Test</i>	<i>N</i>	<i>Mean</i>	<i>Sds</i>	<i>SEd</i>	<i>t-value</i>
<i>Pre-test</i>	32	25.36	7.19	1.53	4.10
<i>Post-test</i>	32	31.76	6.12		

It is revealed from Table- that the mean scores of pre-test and post-test achievement tests among students are 25.46 and 31.76 with SDs 7.19 and 4.35 respectively. The SED that came out from the above two tests is 1.53. The t-value is found to be 4.11, which is significant at both 0.01 and 0.05 levels. That means there is a significant difference between pre-test and post-test on achievement among senior secondary school students. It suggests that the students have achieved more marks in post-test using instructional materials than pre-test.

Discussion and conclusion

From this analysis and interpretation of the data, it was clearly found that students achieve more in post-test than the pre-test, which signifies that the use of instructional material in between the student is more beneficial for the study. And also it is found that girl students achieve more than boys students by using instructional material. It is clear that instructional materials are important tools for the teaching-learning process. It helps the teacher to present the lesson effectively and students learn and retain the concepts better and for a longer duration. The use of instructional material improves critical and analytical thinking. It helps to remove abstract concepts through visual presentation. Therefore, teachers should be well trained through in-service training to maximize the benefits of using these aids. The curriculum should be designed such that there are options to activity based learning through instructional material

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