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Research Paper

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

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Key Words - Instructional materials, achievement, senior secondary school students etc.

Abstract

The aim of the present study is to find out the effect of instructional materials on achievement in science among secondary school students. To serve this objective a sample of 82 students were selected by purposive sampling techniques. The study was carried out in 64 senior secondary schools, Baripada, Odisha. In the study, Achievement Test on Science (ATS) was used to collect relevant data. Intervention programme of seven weeks, providing instructional materials to the experimental group of students. The analysis was done after the intervention programme and found that the experimental group on which the instructional materials had used were more academically achieved than the control group students on which traditional method had been used. Recommendations were made on the basis of findings obtained.

Introduction

Instructional materials are vital things which are supposed to make learning and teaching effective. Students can learn better when they are motivated properly through different teaching aids (Sharma, 2012). Teaching aids develop the proper image when the students see, hear, taste and smell properly. Teaching aids provide complete example for conceptual thinking and create interest among the students in teaching and learning. Further, it helps to increase the vocabulary and make learning permanent by providing direct experience to the

students (Gupta, 2010). The process of teaching - learning depends upon the different type 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). This study attempts to find out how well equipped the teacher are to impact knowledge to their students, taking cognizance of information made available from both the electronic and print media. A study carried by Bellow (1999) revealed that instructional materials influence both the learners and educator during the teaching and learning process in any given environment.

Hence, the present study was carried out to find the effect of Instructional Materials on Achievement in science among Senior Secondary school students.

Methodology

Design

The teaching based instructional materials, a seven weeks designed intervention programme is provided for senior secondary schools. The instructional materials prepared on the Botany Chapter '*Cell: The unit of life*' and provided to the students of experimental groups. Students were informed that the achievement in science would be used to measure the academic achievement in science of students. This achievement test questionnaire was administered as pre-test before the intervention programme. After completion of intervention programme on teaching through instructional materials, again the same questionnaire was used as post-test to both experimental and control groups.

Sample

The sample consisted of a total of 82 secondary school students from two different schools of Mayurbhanj district of Odisha. The experimental and control groups consisted of 42 and 40 students each.

Tools

A science achievement test self-developed was administered to measure the science senior secondary school students. It contains 50 questions based on short answer, true/false and fill in the blanks on the topic '*Cell: The unit of life*'.

Analysis and interpretation

Significance of Difference between the Mean Achievement in Science Scores of the Experimental and Control Group Students in Pre-Test

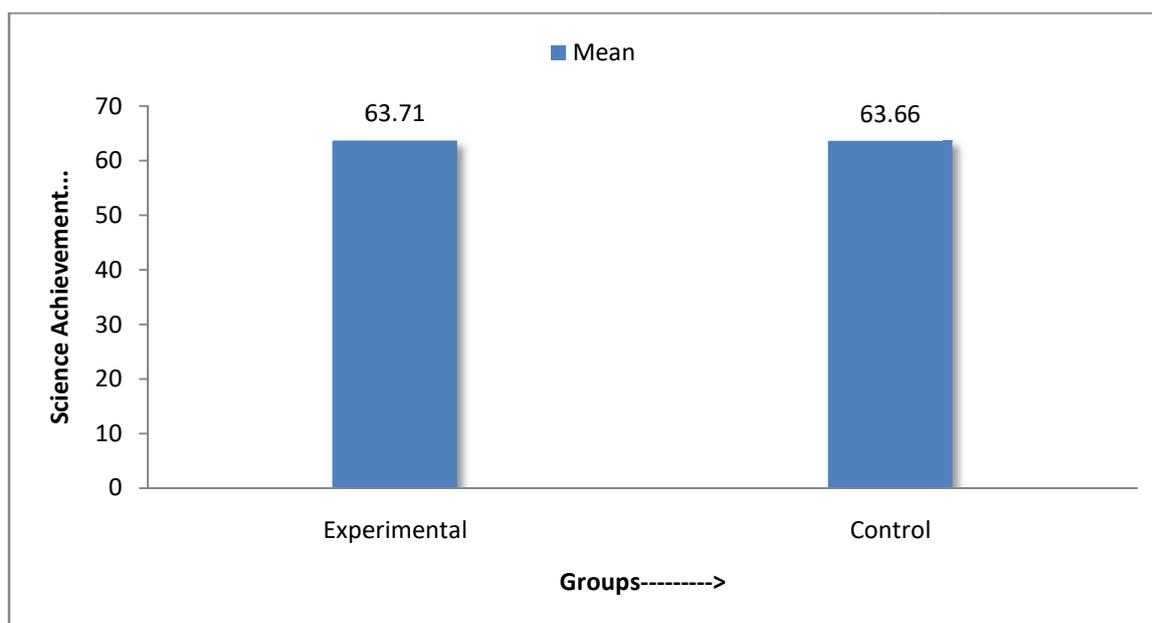
Groups	N	M	S.D.	t-ratio	Level of significance
Experimental	42	63.71	1.84	0.50	N.S.
Control	40	63.66	1.39		

Table-1 denoted that the mean scores of experimental and control group on science achievement test in pre-test are 63.71 and 63.66 with SDs 1.84 and 1.39. The t-ratio came out from above two groups is 0.50 which is not significant at any level of significance. That means both the groups did not differ significantly on the science achievement. It implies that there is no significant difference exist between both the groups of students on science achievement before the intervention programme i.e teaching through instructional materials.

The mean scores of the secondary school students belonging to experimental and control group on science achievement as depicted in the Table-1 is represented in the Bar Fig.1.

Figure-1

Comparative bargraph showing mean score on science achievements of pre-test of Experimental and Control group students



**Significance of Difference between Mean Scores of Science Achievement of the
Experimental and Control Group of Students in Post-Test**

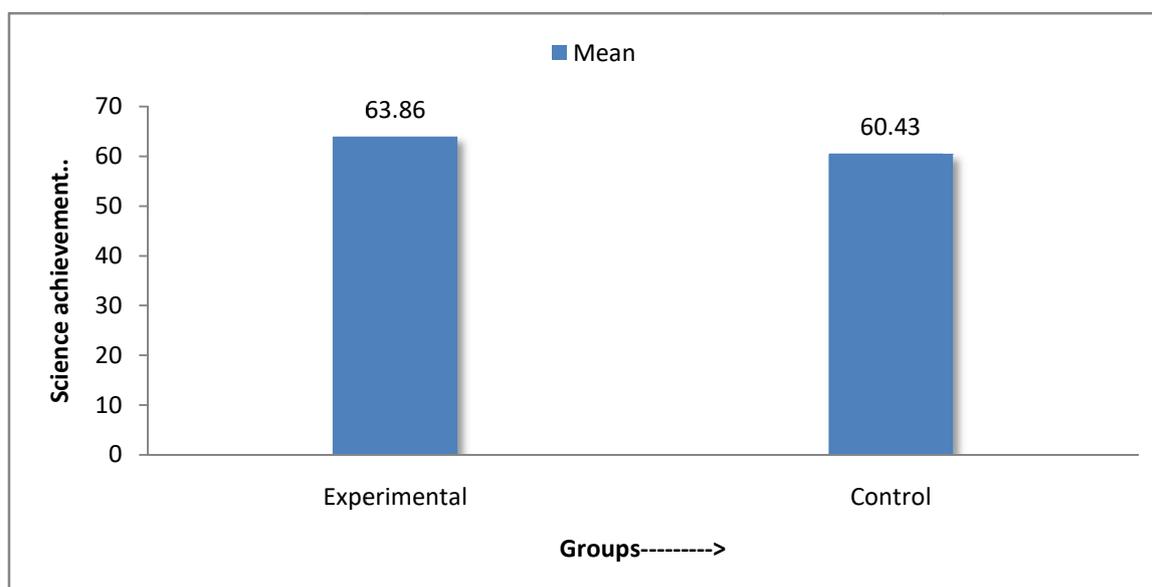
Groups	N	M	S.D.	t-ratio	Level of significance
Experimental	42	63.86	0.72	2.16	.05
Control	40	60.43	0.51		

Table-2 denoted that the mean scores of experimental and control group on science achievement in pre-test are 63.86 and 60.43 with SDs 0.72 and 0.51. The t-ratio came out from above two groups is 2.16 which is significant at .05 level of significance. That means there is significant difference between experimental and control group students on science achievement. The mean science achievement score of Experimental group is higher than the students of control group. It shows that the students of experimental group have good science achievement as compared to the students of control group. Thus, the hypothesis-2 that 'the teaching through instructional materials has significant effect on the development of science achievement among secondary school students' is retained.

The mean scores of secondary school students of experimental and control group on science achievement as depicted in the Table-2 is represented by the bar Fig.-2.

Figure-2

**Comparative bargraph showing mean science achievement score of post-test of
Experimental and Control group students**



Conclusion

The purpose of this study was to determine the effect of teaching through instructional materials on the development of science achievement among secondary school students. Result of the study shows that after receiving intervention programme on instructional materials, science achievement developed among the students. Specifically, result of pre-post means comparison were statistically significant on science achievement. So it is suggested to the school teachers, school authority, administration that they should adopt a good teaching strategies with appropriate teaching aids in the classroom for better comprehend of the concept by the students. The curriculum should also be framed in such a way that to enhance science achievement.

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