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DEVELOPING OBSERVATION SKILLS AMONG VIII STANDARD STUDENTS THROUGH SCIENCE TEACHING

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Abstract

Development of observation skills among the school students is one of the major goals of Science Education. This study deals with the preparation of a strategy for Developing Observation Skills among VIII standard students through Science Teaching and testing its effectiveness.

Introduction

According to Gorman and Clayton (2005)'Observation involves systematic recording of observable phenomenon or behavior in a natural setting'. Though human senses are limited in range and are easily deceived, observation remains at the heart of science and is the final arbiter in constructing and testing scientific ideas. Observation in science is more than "seeing"; it refers to skills associated with collecting data using all the senses, as well as instruments that extend beyond the reach of our senses, and it is influenced by the assumptions and theoretical knowledge of the observer (Kretzschmar, 2009). The ability to make and record scientific observations is critical in order for students to engage in successful inquiry, and provides a sturdy foundation for children to develop higher order cognitive processes. Nevertheless, observation is taken for granted in the elementary classroom (Karinsa , 2013). Using the seasons in the science classroom increases student observation skills as they focus on subtle differences such as shades of color and differences in structures. Activities that encourage students to make and record observations will enhance and extend their learning (Sterling, 2006). It seems that in busy primary classrooms the opportunities to observe and to develop observation skills can easily be overlooked, but finding time for children to observe phenomena and to follow their own interests will pay dividends in supporting quality outcomes in all areas of scientific enquiry and understandings (Jane, 2009). The study of 'Upper Secondary School Students' Observations on Dehydration of Copper Sulphate Pentahydrate 'conducted by Jarkko et.al(2014) shows the need to carry out plenty of practical investigations both to improve the students' scientific observation skills and their ability to perceive the causal relationship between the observable phenomena and the scientific explanations.

Objectives of the Study

1. To find out the strategies used by the school teachers to develop observation skills among the VIII students through Science Teaching
2. To select the topics from VIII standard science textbook for developing observation skills among the VIII standard students
3. To prepare a strategy for developing observation skills among the VIII standard students

through Science Teaching

4. To test the effectiveness of the teaching strategy
5. To make the recommendations based on the results of the study

Hypothesis

The mean of the post test scores of Experimental group will be significantly higher than the mean of the post test scores of the Control group.

Methodology

A questionnaire was given to the VIII standard Science teachers from nine (15%) aided Marathi Medium High Schools from Kolhapur city of Maharashtra, to know about the topics from the VIII standard Science Textbook where there is a better scope for developing observation skills among the students and the strategies used by them.

Five topics from VIII standard Science Textbook (2012) published by Maharashtra State Bureau of Textbook Production and Curriculum Research were selected on the basis of the apparatus, material and time required for the experiment/activity to be performed by the students. Those topics were as shown in the following table.

Table 1

Topics and Subtopics Selected for Developing the Strategy

Sr. No.	Topic	Sub topic
1	Atmospheric Pressure (I)	Relation Between the Volume and Pressure
2	Atmospheric Pressure (II)	Characteristics of Flowing Substances
3	Magnet	Characteristics of Magnetic Energy
4	Soil	Soil Erosion
5	Heat	Effect of Heat on the level of Water

Based on selected topics the strategy for developing observation skills was prepared and its effectiveness was tested by using Post Test only Equivalent Group Design. Sixty nine VIII standard students from an Aided Marathi Medium High school in Kolhapur city (Maharashtra, India) were randomly divided into two groups(35 in one group and 34 in another).The variables controlled were content, the time of teaching, classroom environment, gender and the teacher.

Development of the Strategy

Following steps were used for developing the strategy

1. Preparing the Rough Format
2. Science Teachers' Suggestions
3. Modifications as per the suggestions
4. Pilot Study
5. Final form of the Strategy- Ready to use and test the effectiveness

Using the above mentioned steps a strategy for developing observation skills among the VIII standard students through Science Teaching, was developed which is presented in the following table.

Table 2

The Strategy for Developing Observation Skills among the VIII Standard Students

Sr. No.	Phase / Step	Activity
Phase I-Preparation		
1	Introduction	The teacher introduces the topic
2	Statement of Aim	The teacher explains what exactly the students are going to learn and why should they learn it.
3	Making Groups	The teacher makes five groups of eight students each. The proper seating arrangement is made so that in a single classroom five groups can do the experiment/activity without disturbing each other.
4	Providing Required Material	Teacher provides the material required for the experiment/activity
Phase II-Performance by the student		
5	Experiment/ activity	Students perform the experiment/ activity and try to make inference. The teacher observes the students' activity.
6	Presentation by the group leader.	The group leaders present the inference made in their related groups.
7	Discussion	Teacher conducts discussion based on the performances of and inferences made in different groups. He points out the mistakes happened during the observation.
Phase III-Re-Do		
8	Providing the (same) Material for the Experiment/ activity	Teacher provides the same material for the Experiment/ activity.
9	Making of the observation chart and guidance for observation	Teacher makes on the Blackboard observation chart with the help of students and guides for the accurate observation.
10	Providing the Printed Observation Charts	Teacher provides the Printed observation charts in the groups.
11	Re - Experiment/ activity	Students perform the same experiment/ activity and try to make inference. The teacher observes the students' activity.
12	Re - Presentation by the group leader.	The group leaders present the inference made in their related groups.
13	Re -Discussion	Teacher conducts discussion based on the performances of and inferences made in different groups. He points out the method and importance of accurate observation.

Analysis of the Data

The data was analyzed by using't' test.

Table 2

Statistical Analysis for't' Value

Group	No. of Students (N)	Mean Score	Standard Deviation	df	't' Table Value	't' Calculated	Decision
Experimental	35	30.45	6.78	67	2.66	8.61	Reject Null Hypothesis
Control	34	20.29	4.44				

Result

It was found that the strategy prepared for developing observation skills among VIII standard students through science teaching is effective.

Concluding Remarks

Observation skills are central to the development of scientific knowledge. In the survey it was found that no specific strategy was used by the teachers to develop observation skills among the VIII standard students. Therefore, a specific strategy was very much essential. This study provides a strategy for developing observation skills among the school students. Other than observation skills, it may contribute in developing cognitive skills such as attention, memory, reasoning, problem solving etc., because these are the inbuilt processes of the strategy. Thus, use of this strategy will definitely enhance the quality of Science Education in schools.

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