



## **A CASE STUDY ON PREVAILING PRACTICES OF CLASSIFICATION SKILL IN SCIENCE AMONG THE STUDENTS OF STANDARD VIII**

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### **Abstract**

*It is important that science is highly creative and dynamic in nature by which man can attempt to search of knowledge. Many sources to know about science but teachers are one of the main source. Teaching of science is one of the effective way to make the students to understand the scientific concepts and skills. Inculcation of scientific concepts and process skills among students are equally important. National policies and curriculum recommended that the emphasis should be more on process skills than products. It is very important to develop process skills, classification is one of the process skill very essential to develop among students but unfortunately teachers in school giving less importance to develop skill. Hence the present study is an attempt to know prevailing status of students' classification skill in one of the school.*



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### **Introduction**

Science is built from curiosity, experience, analysis, and finally the expression of discovery. Science is a term that encompasses many field or disciplines. Inculcation of scientific knowledge and skills to the school students to university students is very essential however understanding of basic scientific concept are the foundation for understanding the higher level science. Teachers are the most important source for inculcation of scientific knowledge in any educational system in general, particularly school education. The outcome of science teaching in schools should be make the students to understand the basic scientific concepts, facts and principles, process skills/methods, to develop scientific attitude, and apply the basic scientific concepts and skills in their daily life. Teachers role not only transaction of products of science but also equally develop process of science that is process skills of science. The process skills includes basic and integrated. The basic skills such as observation classification communication measurement prediction and inference. Integrated skills such as formulation and testing of hypothesis, identifying cause and effect, designing and conducting experiments, manipulating variables. The basic skills are very foundation for acquiring integrated skills. Upper primary school students are very active in demonstrating basic process skills. Classification skill is one of the basic skill very often demonstrate by students

at any place, example, classifying into smaller bigger, solids liquids, gases, plants animals, vertebrates invertebrates, conductors insulators etc. Classification is the process of sorting, grouping, ordering or arranging objects on the basis of similarities and differences, larger or smaller and other common characteristics. The classification can be qualitative as well as quantitative. Qualitative classification based on size shape colour habit and habitat and the nature of substances such as smoothness roughness hardness softness opaqueness transparent solids liquids gases etc. Quantitative classification is based on number for example: age, number of leaf or petals in a flower. The classification can be binary or multistage. In binary classification system a set of objects or things are classified into two subsets for example (i) living being is classified into plants and animals (ii) animals are classified into vertebrates and invertebrates. Binary classification is the most basic form of classification. In multi-stage classification each subsets follows consecutive binary classification or succession of binary classification for example, subset animals further classified into mammals birds lizards reptiles and so on. Classifications of things or objects or substances are not only unidirectional, it can be multidirectional also i.e. grouping or arranging them into more than one category based on presence and absence of certain attributes. For example: a group of living organisms are classified into birds' reptiles' insects unicellular multicellular herbivores carnivores omnivores terrestrial and aquatic animals vertebrates and invertebrates mammals etc. Objects, things, substances and organisms can be classified in different ways. Classification helps the students' to retrieve information from a conceptual scheme. Classification skills develop creativity and also develop divergent thinking. It was stated by National Curriculum framework (2005) that science teaching should provide ample opportunity to develop observations, classification and other skills. Hence by realising the importance of classification skill, a study has been conducted by setting the following objectives in one of the school in Tamilnadu to know how far upper primary students able to classify the substances or things.

### **Objectives of the Study**

1. To Study the Prevailing Practices of Classification skill in science among VIII standard students.
2. To Study the existing status of science teaching and its influence on acquisition of Classification skill in VIII standard students.
3. To study opinions of VIII standard students towards existing teaching learning process.

### **Research Questions**

1. To what extent students of standard VIII acquired classification skills in science?
2. Is there any impact of present science teaching process in acquiring classification skill?

### **Design of the Study**

Case study method was followed. For the present case study, there were 28 students from upper primary students has been selected from Gudalur Government Higher Secondary School situated in Gudalur Taluk, Nilgiri District, Tamilnadu.

### **Statement of the Problem**

A Case Study on Prevailing Practices of Classification Skill in Science among the Students of Standard VIII

### **Explanation of the term**

**Observation Skill:** It is one of the Basic Science Process Skill. Classification is the process of sorting, grouping, ordering or arranging objects on the basis of similarities and differences, larger or smaller and other common characteristics. The classification can be qualitative as well as quantitative. Qualitative classification based on size shape colour habit and habitat and the nature of substances such as smoothness roughness hardness softness opaqueness transparent solids liquids gases etc. Quantitative classification is based on number for example: age, number of leaf or petals in a flower.

### **Delimitation of the Study**

- Study was delimited to Classification kills in science.
- Study was delimited to students of standard eight in the academic year 2011-12
- Study was delimited to Gudalur Government Higher Secondary School situated in Gudalur Taluk, Nilgiri District, Tamilnadu.

### **Sample and Sampling technique**

Sample was students of standard eight (English Medium) from Gudalur Government Higher Secondary School situated in Gudalur Taluk, Nilgiri District, Tamilnadu. The sample consists of 28 students (7 Girls and 21 Boys) and purposive sampling method was adopted.

### **Data Collection**

Researcher collected data by administering the following tools and techniques after validation of experts. Brief descriptions of administration of tools and techniques are given below.

**Open ended Questionnaire:** It was performance based test. The test consist of eighteen items wherein pictures, specimens' diagrams, chemicals, substances were shown/kept to

students for classification. Students observed and classified the same based on the similarities and differences.

**Close ended Questionnaire:** This test has been administered to know their knowledge about classification skill in science.

**Rating Scale:** Four point (always, sometimes, most of the time and never) rating scale was administered in students. This test has been administered to know how far students practiced the classification skill in during science teaching.

**Observation Technique:** Participatory observation technique were done by researcher when the students engaged in the process of classification skill and the same recorded in the field note.

**Focus Group Discussion:** In order to know students opinion towards present teaching learning process and its influence on practicing classification skill, focus group discussion was conducted.

#### **Data Analysis and Interpretation**

Collected data has been analysed and interpreted qualitatively using rubric, content analysis, frequency percentages and data triangulation.

#### **Findings**

**The following table shows classification skill status item wise**

<b>Item No</b>	<b>Parameters of Classification Skill</b>	<b>% of Students in Beginning Stage</b>	<b>% of Students in Developing Stage</b>	<b>% of Students in Accomplished Stage</b>	<b>% of Students in Proficient Stage</b>
1	Classify into conductors and insulators	(04) 14.28%	(17) 60.71%	(06) 21.42%	(01) 3.57%
2	Classify into magnetic and non magnetic substances	(01) 3.57%	(14) 50%	(10) 35.71%	(03) 10.71%
3	Classify animals based on common attributes.	(24) 85.71%	(03) 10.71%	(01) 3.51%	-
4	Classify into solids liquids and gases.	(08) 28.57%	(20) 71.42%	-	-
5	Classify into pure, impure, opaque, and transparent substances.	(17) 60.71%	(10) 35.71%	(01) 3.57%	-
6	Classify into metals and non metals	(02) 7.14%	(18) 64.28%	(05) 17.85%	(03) 10.71%
7	Classify into hydrophytes, mesophytes& xerophytes.	(08) 28.57%	(24) 50%	(05) 17.85%	(01)3.57%
8	Classify into aerial, arboreal and cave animals.	(13) 46.42%	(12) 42.85%	(01) 3.57%	(02) 7.14%
9	Classify into transparent, translucent and opaque materials.	(07) 25%	(13) 46.42%	(05) 17.85%	(03) 10.71%
10	Classify into herbivores, carnivores and omnivores animals	(20) 71.42%	(08) 28.57%	-	-
11	Classify into soluble, insoluble and slightly soluble substances.	(13) 46.42%	(15) 53.57%	-	-
12	Classify into unicellular and multicellular organisms.	(12) 14.28%	(20) 71.42%	(03) 10.71%	(01) 3.57%
13	Classify into reptiles and amphibians.	(04) 14.28%	(24) 50%	(05) 17.85%	(05) 17.85%
14	Classify into vertebrates and invertebrates.	(06) 21.42%	(15) 53.57%	(06) 21.42%	(01) 3.57%
15	Classify into acids and bases.	(05) 17.85%	(17) 60.71%	(06) 21.42%	-
16	Classify into first order, second order and third order levers	(13) 46.42%	(15) 53.52%	-	-
17	Classify into food materials into pulses and cereals	(10) 35.71%	(14) 50%	(04) 14.28%	-
18	Classify the fruits into dry and fleshy fruits	(09) 32.14%	(12) 42.85%	(05) 17.85%	(02) 7.14%
Overall Performance		33.33%	49.80%	12.50%	4.36%

## Overall Performance of Students in Classification Skill



From the graph 4.2, it can be observed that

- ❑ 33.33% students classification skill was in beginning stage wherein students could not correctly classify the objects, materials, organisms, substances, fruits based on presence or absence of some common properties, characteristics, and similarities and differences (Picture\_4.2).
- ❑ 49.89% students' classification skill was in developing stage wherein very few objects, substances, materials, organisms, seeds and fruits were correctly classified based on similarities and differences, however most of the things, substances, and organisms were incorrectly classified.
- ❑ 12.50% students' classification was in accomplished stage wherein students correctly classified most of the objects, substances, materials, organisms, seeds and fruits based on similarities and differences, presence and absence of certain properties, and characteristics, however few of the objects, substances, materials, organisms, seeds and fruits could not classify correctly.
- ❑ 4.36% students' classification skill was in proficient stage wherein all the objects, substances, materials, organisms, seeds and fruits were correctly classified based on the similarities and differences.
- ❑ From the above observations, it can be inferred that most of the students' classification skill was in developing and beginning stage; very less students were proficient in classification skill. It reveals that the prevailing teaching learning process not providing much opportunity to engage the students in classifying the things.

- ❑ The findings reveals that the existing science teaching process was largely mechanical and lecture method wherein teachers not provided specimens, pictures, substances, chemicals etc to classify based on similarities and differences.
- ❑ Findings reveals that the teachers primarily focussed to deliverer the products of science and the process of science was neglected therefore students lacking behind classification skill.
- ❑ Findings reveals that the students dislikes the traditional lecture method of science teaching, they prefer to do experiments in the laboratory. They opined that the teachers should provide hands on experience wherein the specimens and picture are to be classified according to shape, size, colour, number and particular characteristics.

### **Suggestions**

- ❑ Teacher need to adopt constructive method of teaching such as “learning by doing” method experiential learning method, ICT based approach, cooperative learning etc wherein materials, substances etc to be given to students for classification.
- ❑ More emphasis should be given for Process aspects science than product of science for developing science process skills.
- ❑ Teacher need to take the students outside to observe the environments and they should classify the things based on some characteristics.

### **Conclusion**

Scientific knowledge and skills can be learned through various ways. How school students learn science best? School students always desire to do experiments by their own. Learning becomes concrete and meaningful when there is interplay between learner and learning experiences. Students of upper primary stage were in a position to observe, classify, communicate, measure, predict and infer. Classification skill very much essential in students. This is the skill which support the leaner to understand the concepts. Also, it develop other higher order thinking skills as well. Hence the science teaching need to focus more on the developing process skills.

### **Reference**

- Basker. (2012). Efficacy of constructivist approach on Science process skills learning. Educational research & Extension national level journal Vol. 49(1) Jan –March.*
- Bhatt, P. C. (1983). Cognitive appraisal of the processes of eighth grades students- with special reference to the central schools. An Unpublished Doctoral thesis. In Buch, M. B. (Ed.). Third Educational Surveys, NCERT*
- Chunawala. (2006). In Sixth Survey of Research in Education, New Delhi: NCERT.*

- Dawson, C. C. (1999). *The effect of explicit instruction in science process skills on conceptual change: The case of photosynthesis. International Dissertation abstract. University of Northern Colorado.* [www.uni.com/citaion](http://www.uni.com/citaion)
- Dillshaw, F. G & Okey, J. R. (1980). *Test of Integrated Science Process Skills for secondary science students. Journal of Science education* 64(5) 601-608.
- Fitzpatrick, F.C. (1960). *Policies for science Education. New York: Bureau of Publications.*
- Harlen, W. (1992). *UNESCO source book for science in the Primary School: A workshop approach to teacher education: National Book Trust in association with UNESCO. New Delhi, India.*
- MHRD. (1993). *National Policy on Education 1986 (as modified in 1992). New Delhi: MHRD.*
- NCERT. (1990). *Minimum levels of learning at Primary stage, New Delhi: MHRD.*
- NCERT. (2005). *National Curriculum Framework, New Delhi: National Council of Educational Research and Training.*
- NCERT. (2006). *Position Paper National Focus Group on Teaching of Science, New Delhi: National Council of Educational Research and Training.*
- NCERT. (2010). *Journal of Indian Education Volume XXXVI Number 1: Published by NCERT: New Delhi, India.*