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Impact of Mixed Pedagogical Techniques in Learning Chemistry

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Abstract

The present study was explored to find out the impact of mixed pedagogical methods to learn chemistry of 9th standard students. Methodology: Descriptive survey method was used. Sample: 34 IX standard students were selected as a sample by using purposive sampling technique from government school and matriculation school in Coimbatore district. Statistical Techniques: Data was analyzed by t-test and F-test. Results: Findings showed that there is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their gender and age. There is a significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their locality.

Key Words: Pedagogy, Buzz Session method, Embodied Learning Method, Fish bone Technique.

Introduction

Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. Understanding basic chemistry concepts is important for almost every profession. Chemistry is part of everything in our lives. Every material in existence is made up of matter even our own bodies. Chemistry is involved in everything we do, from growing and cooking food to cleaning our homes and bodies to launching a space shuttle. Chemistry is one of the physical sciences that help us to describe and explain our world. Educational technology is one of the greatest resources we have to help our students learn. While chemistry is a part of our everyday lives, students have found that chemistry can be difficult to understand. If a student is found to be weak in one area, additional support should be given to help that student strengthen their weak area so that they too can have an opportunity to realize their full potential. Technology is not only beneficial to struggling students; rather, it is beneficial to all

students. By using technology, teachers can bring chemistry to life and students will be able to visualize abstract concepts and test new learned concepts in chemistry. The National Academy of Sciences (2008) "The use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process."

Need and Significance of the Study

Chemistry is considered as a difficult subject for young students by chemistry teachers, researchers and educators, chemistry scholars and researchers have been trying to explain how students could be helped to understand chemistry better. Tsaparlis(1997) revealed that a majority of secondary school students have difficulties in learning chemical concepts related to periodic table, chemical bonding, chemical equations, chemical formula, organic chemistry, mole and chemical calculations, liquids and solutions. The difficulties concept are due to the abstract, unobservable, particulate basis of chemistry and the need for rapid transfer among the macroscopic, submicroscopic and symbolic levels of thought. This may in turn lead to anxiety towards chemistry learning and loss of interest in the sciences.

Statement of the Problem

Science is a subject having four parts. Students should study science from an early age with great interest. Students need to feel that the study is not just about learning and applying through life. Parents and teachers regard mathematics and science as the most difficult subject. So students study the mathematics and science with great fear. The science should be read with interest and enthusiasm. In science there are four sub categories of physics, chemistry, botany and zoology. Chemistry course from an early age should be understood by students. Chemistry consists of organic chemistry, inorganic chemistry, physical chemistry and many more. College students take it into separate sections.

Students need to know about the atomic mass, atomic number and molecular mass of elements from Sixth class. Students should understand and read it. Pedagogical techniques are used to improve the student's achievement and attitude towards the chemistry subject. Students will learn Buzz Session Method, Embodied Learning Method and Fish Bone Technique to improve the chemistry learning attitude. Science has brought many works to the world. It should not be

controlled by childhood fear. Therefore the researcher selected her topic "Effectiveness of mixed pedagogical techniques in learning Chemistry at standard IX".

Interactive Learning Method

Learning methods play an important role and receive special attentions in our life. We live in digital era, where everyone wants something efficient, effective, dynamic, fast and interactive. The term 'interactive' appears in two distinct strands of educational research discourse: one concerning pedagogy and the other concerning new technologies in education. Teaching students with traditional method where there is only one way of communication is no longer effective. The word interactive is the key to have an effective and efficient teaching and learning process where the teacher can grab students' attention and students can learn more in comparison to that of the traditional method.

Buzz Session

Participants come together in session groups that focus on a single topic. Within each group, every student contributes thoughts and ideas. Encourage discussion and collaboration among the students within each group; everyone should learn from one another's input and experiences.

Embodied Learning Method

The aim of this Embodied learning is to build a bridge between theoretical and applied advances in the field of embodied learning research as it pertains to learning and education. We will present the major theoretical roots of current Embodied Learning research, discuss whether embodiment approaches have been found to enhance learning processes in applied empirical studies, and offer an interpretation concerning the meaning of these findings for theoretical models. In addition, we aim to develop a taxonomy that can be used to classify the highly diverse implementations of EC in the field of learning and instruction.

Fishbone Technique

This is a visual tool for organizing criticalthinking which is a good approach for problem solving in science. The fishbone diagram helps to teach students about the root causes leading to a problem and quantifying the relationship between the effect and cause. This is more effective when

teaching a group. In this diagram approach, the head of the fish represents the change, the ribs show the reason and riblets have the supportive evidence. The defect is shown as the fish's head, facing to the right, with the causes extending to the left as fish bones; the ribs branch off the backbone for major causes, with sub-branches for root-causes, to as many levels as required. The basic concept was first used in the 1920s, and is considered one of the seven basic tools of quality control. It is known as a fishbone diagram because of its shape, similar to the side view of a fish skeleton.

Objectives of the Study

- To find out the significant difference in the impact of mixed pedagogical methods to learn chemistry of 9thstandard students based on gender, locality and their age.

Hypothesis

- There is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their gender.
- There is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their locality.
- There is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their age.

Research Method and Sample

Survey method was used for this present study. The purposive sample consisted of 30 9th standard students from Government School and Matriculation School students in Coimbatore district.

Description of the Tool

Impact of mixed pedagogical method was developed by the researchers. This scale is 4-point scale with 48 statements.

Data Analysis

Table: 1 There is no significant differencebetween in pedagogical methods of learning chemistry at 9th standard students with respect to gender.

Gender	N	Mean	SD	t-value	Remark
Male	12	43.25	15.621	0.822	Not Significant
Female	22	37.36	13.865		

Table: 1 shows that the calculated t-value 0.822 is not significant at 0.05 level. Hence the hypothesis 1 is accepted. Thus there is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their gender. By comparing the mean values, male students have the high impact of pedagogical methods towards chemistry.

Table: 2 There is no significant difference between in pedagogical methods of learning chemistry at 9th standard students with respect to locality.

Locality	N	Mean	SD	t-value	Remark
Rural	21	35.00	14.471	0.156	Significant
Urban	13	46.62	11.969		

Table: 2 show that the calculated t-value 0.156 is significant at 0.05 level. Hence the hypothesis 2 is rejected. Thus there is a significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their Locality. By comparing the mean values, urban students have the high impact of pedagogical methods towards chemistry.

Table: 3 There is no significant difference among three types of agein pedagogical methods of learning chemistry at 9th standard students.

Age	N	Mean	SD	F	Remark
14	18	35.00	14.377	1.738	Not Significant
15	12	45.75	12.920		

16	04	40.50	16.361		

Table: 3 show that the calculated F-value 1.738 is not significant at 0.05 level. Hence the hypothesis 1 is accepted. Thus there is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their age. By comparing the mean values, sixteen age students have the high impact of pedagogical methods towards chemistry

Findings

1.There is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their gender.

2. There is a significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their locality.

3. There is no significant difference in pedagogical methods of learning chemistry at 9th standard students with respect to their age.

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