



## DIFFICULTIES IN TEACHING-LEARNING PROCESS IN CHEMISTRY

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### ABSTRACT

Chemistry is considered as central science because it connects together the subjects like mathematic, physics, biology, medicine, geography and environment around us. It is the science of matter and changes taking place in or with matter. It is said that biology at molecular levels is chemistry. Any substance or matter present on earth is finally a chemical which indicates the depth of the subject. Chemistry is considered as difficult subject because of its vastness and handling of chemicals during practical. The present paper involves the difficulties in teaching, learning of chemistry and suggestion are given to minimize the problems.



**KEYWORDS :** mathematic, physics, biology, medicine, geography and environment.

### I. INTRODUCTION

Chemistry is the subject which gives ways of conversion of natural substances into synthetic new material having totally different properties. It can change color of the substance, can prepare medicine and poison. The number of process we do in our daily life which are chemical process or actual chemical reactions i.e. we all are chemists. Chemistry explains how soap can clean the fiber or surface, can analyze any substance an earth, can explain the problems in the plants, or property of any material on earth.

As compare to other subjects chemistry is the most productive and faster growing subject in science. Chemistry topics are based on structure of matter. Chemistry not only studying the substances on earth but preparing large number of new chemical substances for example there were some hundreds of substance in 1800 but it is expected that by 2050 it will reach 300 million.

As tremendous research is going on in chemistry subject number of new branches are emerged for studying the chemistry like phytochemistry, supramoleculor chemistry material science, food chemistry, agrochemistry, dairy chemistry, drug chemistry, nuclear chmistry etc.

## II. DIFFICULTIES

**1) Curriculum /syllabi:** If we observe the secondary school education science and mathematics are the compulsory subjects. In higher secondary level there are different subjects of science like physics chemistry, mathematics, biology, geography etc. at this level due to vastness of the subject there are near about 30 units in class XI & XII. At this separate subject level chemistry syllabus is too heavy as compare to other science subjects. The teacher find difficulty in completion of the syllabus in stipulated time. Another big challenge is the strength of class i.e. 120. As such number of students having different backgrounds and different level of previous subject knowledge. It very difficult to explain or teach the syllabus. At this level student are unable to understand the subject and afraid about it.

At graduation level there are about six different main courses of chemistry. All these courses have vast syllabus and in number of colleges teachers of each main specialized subjects are not available. So teacher having master degree in different specialization has to teach the other subject and there is difficulty to give justice to the students.

**2) Overload of students working memory space.** The working space memory is limited capacity (Baddeley 1999) (4) Use of it is different for individuals. This memory space is useful for storage of information in long term memory. To avoid the overload of working memory space student should develop skills for organizing the ideas. Miller 1956 (5) suggested the idea of chunking. Chunking is the ability which use strategy to bring together the number of items into one meaningful unit, this reduces working space demand.

In India teaching of science subjects involves more theory part and there is insufficient material, glass wares and equipments available in learning institutes. It results in poor understanding of laws, concepts and principles.

Due to higher strength of class and poor student teacher ratio access for student to teacher becomes difficult.

**3) Language and Communication.** In India high School level education is in the state language. When these students enter in junior college they have to learn in English. This language problem creates difficulties in understanding of the student moreover due to big strength of 120 in class. Students does not dare to ask their difficulties in class and it result in rote learning i.e. mugging the content and writing it in examination without understanding and getting good marks.

Language problem includes unfamiliar vocabulary use high sounding language. It is said that the education given in mother language is always more effective. Johnstone and sleepeing in 2001(1) observed that when second language is used for teaching the usable working memory space is dropped by one unit. Use of non-technical words in science causes the misunderstanding for students (Cacssel & Johnstane 1980) (2)

Cassel and Johnstone 1984(3) observed that language also influences on thinking process require for finding solution on any problem. They observed that one memory span is determined by grammatical structure and not by number of words. Meaning of the sentence is the important factor. Misconceptions and confusions are developed due to use of nontechnical words.

## III. EXAMINATION

Examinations are conducted at the end of term from which performance of the student is declared. Due to high strength there are limitation in conducting the examination and testing the performance of student.

- **Poor previous knowledge.**

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As chemistry is vast subject there are number of principles, laws, equations, formulas and concepts. Due insufficient previous knowledge student can't understand the ongoing teaching.

#### IV. CONCLUSIONS:

Teaching learning process will be successful when teacher and learner are ready for the process. Without interest of student teaching is useless.

#### SUGGESTIONS FOR SUCCESSFUL TEACHING-LEARNING PROCESS.

- 1) Teacher should test the previous knowledge of students before teaching particular topic. He should use proper words while teaching and avoid possibility of developing misconception and confusions.
- 2) Proper distribution of work load for each course should be done in departments for effective teaching.
- 3) There should be use of charts, models in teaching rather than chalk and board method.
- 4) Discussion method should be used in teaching so all student can participate and clear their ideas which avoids rote learning.
- 5) Working space overload can be avoided by presenting the information in such a way that learner can develop his personal chunking skills.
- 6) Motivation is very important factor for successful learning. It can change the attitude of learner and create interest in learning.
- 7) Material should be presented by considering the way of learner to gain the knowledge.
- 8) There should be maximum use of ICT in teaching learning which gives more access to student at anywhere any time. Different apps are available for conducting repeated examination which makes practice of student, can attract student towards subject. The use of audio-visual aids enhances the understanding of students where there is less possibility of mistakes, more accuracy, labelled figures and graphs. Use of ICT in examination enhances correctness, save times.

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