

## **PROBLEMS IN LEARNING GENERAL CHEMISTRY FROM GRADES SEVEN TO ELEVEN**

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Education system in Sri Lanka introduces science concepts from grades seven to eleven under the subject 'Science and Technology.' In these classes students learn some of the general chemistry related topics under Science and Technology. According to most Advanced Level chemistry teachers students who start to learn chemistry in grade twelve do not have a proper understanding of some of the basic concepts in general chemistry. The analysis of the examiners' reports of the GCE (A/L) chemistry papers too shows that most students experience difficulties in answering questions that are related to this section. According to most A/L chemistry teachers this problem has arisen as a result of not providing adequate knowledge on general chemistry related concepts from grades seven to eleven. This study was aimed to understand the problems experienced by the teachers and students when they teach and learn the relevant concepts in these classes and to make suggestions to overcome the identified problems.

A content analysis of the relevant teaching and learning materials was conducted to understand how the concepts related to general chemistry are presented to the students from grades seven to eleven. To obtain the views of the teachers on teaching general chemistry related topics in these classes, unstructured interviews were conducted among thirty one Science and Technology teachers. Using the findings in the content analysis and the unstructured interviews, two questionnaires were prepared. One questionnaire was administered among hundred and ninety-five Science and Technology teachers of grades seven to eleven and the other was given to sixty seven Science and Technology teachers of grades ten and eleven. These teachers were selected from types 1AB, 1C and type 2 schools. The answer scripts for the term test papers of the grades ten and eleven students were analyzed to understand the way the students answer questions related to general chemistry.

By triangulating the collected data some of the students' misconceptions and the common errors made by them were identified. Reasons for students' difficulties were also identified, such as problems of the teachers related to their subject matter knowledge and subject matter presentation. Several problems in the teacher guides and the textbooks were also identified which had created some obstacles in teaching and learning some concepts in this section. Some of these problems were inadequate and wrong explanations in the teaching learning materials and problems with the suggested teaching sequences. Suggestions were made to reorganize the content in general chemistry in these classes to present the subject matter so that students are able to build up knowledge on their own without any misconceptions. To strengthen the abilities of the teachers it was recommended to provide more background knowledge for them and to conduct activity-based workshops.