

Gradual development of general chemistry concepts at school level

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It is very important to have a good understanding of the general chemistry section in the GCE (A/L) chemistry syllabus as it provides the knowledge in basic concepts in chemistry that are helpful to understand the other sections in the chemistry syllabus. However, it has been found out that most students and teachers consider learning and teaching this section poses problems for them. To understand the difficulties of A/L students and teachers it was needed to understand the way the concepts related to general chemistry are taught at the stages of junior secondary and senior secondary (GCE O/L.) This study was conducted to seek ways of fulfilling this need.

At GCE O/L science was taught as science and technology. To understand the teachers' views on teaching the general chemistry concepts from grades seven to eleven two questionnaires were administered among fifty five science and technology teachers and thirty one teachers were interviewed. These teachers were selected from type 1AB, type 1C and type 2 schools in the Kegalle district. Two hundred and four student answer sheets of grade ten and eleven end-term test papers for science and technology were analysed. They were also randomly selected from the above schools. Content of the relevant teaching materials too was analysed. By triangulating the collected data some of the students' misconceptions and the common errors made by them were identified. Several problems in the teacher guides and the textbooks were also identified which had created some obstacles in teaching and learning some concepts. Inadequate and wrong explanations in the teaching materials, presentation of subject matter in the textbook and suggested teaching sequences within lessons and among lessons in the syllabuses were some of these problems. Teachers were uncertain as to why some topics were included in the syllabuses. Several sections related to general chemistry were identified in the syllabuses from grades seven to eleven in which the content has to be reorganized vertically as well as horizontally to ensure smooth flow of facts. Suggestions were made to reorganize the content in general chemistry from junior secondary stage of education and to present the subject matter in the teaching and learning materials so that the students are able to build up knowledge on their own without any misconceptions.