

**SEEDING CHEMISTRY SUCCESS: ASSESSING STUDENTS' PERFORMANCE AND PROBLEMS IN CHEMICAL CALCULATIONS AT G.C.E. ADVANCED LEVEL EXAMINATION**

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Chemical calculations are used in chemistry education to enhance the students' ability of applying chemical concepts along with the mathematical concepts to solve problems which involve numerical calculations. However, it has been found that the achievement level of students in chemical calculations at General Certificate of Examination (Advanced Level) is considerably low. As such, this study was aimed at finding the problems faced by the students in chemical calculations. This is a mixed methods study. Thus, question papers and interview schedules were used to collect data. Question papers were administered to a sample of 140 Grade 13 students selected from two provinces in Sri Lanka. Student sample included students from National Schools. A sample of selected students, school teachers, and national evaluators of General Certificate of Examination (Advanced Level) were interviewed to get their opinion on students' performance in chemical calculations. Quantitative data on students' performance and weaknesses were analyzed through basic statistical procedures. Thematic and content analyses were used to analyze qualitative data. Among other things, students' performance in solving numerical problems in structured and unstructured formats was compared. Descriptive statistics showed that the frequency of students' mistakes was lower in the students' answers for the structured questions than that for the unstructured questions. Data gathered through interviews reveal that most of the students have difficulties in applying chemical concepts along with the mathematical concepts in chemical calculations. Findings of the study also indicate that many students haven't properly understood most of the chemical concepts and students have problems in basic mathematical operations. Hence, the results of the study suggest that the ways of assessing the students and the existing chemistry classroom practices need to be re-evaluated with a view to use more appropriate teaching, learning, and assessing methodologies in order to improve students' logical intelligence in chemical calculations.