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IDENTIFICATION OF LEARNING DIFFICULTIES IN PHASE EQUILIBRIA IN CHEMISTRY AMONG G.C.E (A/L) STUDENTS AND SOME SUGGESTIONS TO OVERCOME DIFFICULTIES IDENTIFIED

A PROJECT REPORT PRESENTED

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Phase Equilibria in chemistry is of fundamental importance because of their usefulness in the explanation of natural phenomena. The equilibrium of chemistry is included in one unit of 80 periods in the G. C. E (A/L) syllabus. Within this section, phase equilibrium constitutes a part which includes 20 periods of teaching time. Every year questions on these concepts appear in the G. C. E (A/L) chemistry paper. Even though it is not a difficult section, students face difficulties in answering questions due to misconceptions.

Many studies have been conducted in various parts of the world to identify the learning difficulties of students in phase equilibria. Yet, misconceptions continue to exist in the students' minds. This inspired the researcher to conduct a study to identify learning difficulties of students and to submit suggestions to overcome them.

Objectives based on the G. C. E (A/L) chemistry syllabus of phase equilibria were the content boundaries of this study. A diagnostic test was administered to 204 Advanced Level students from nine schools in the Trincomalee and Kandy districts to identify learning difficulties. A questionnaire was given to 15 teachers and interviews were held with 10 teachers of these schools to obtain their views on the difficulties they encounter in this field. Their suggestions to overcome these identified difficulties were also obtained.

From the analysis of the responses to the diagnostic test, it was observed that the performance of students was very poor in drawing, labeling and explaining the boiling point vs composition diagram, calculation aspects of the Raoult's law, concepts of distillation and partition coefficient. About half of the samples obtained below 39%, the mean marks. Students were unable to apply the concepts learnt earlier to a new situation. From the teachers' responses to the questionnaire and the interview, it was observed that they were overloaded with work and the small number of periods allowed for them to teach this section was insufficient. These obstacles prevented them from teaching this section efficiently.

The abstract nature of phase equilibria may be the basic cause of difficulties experienced by most students. Suitable experiences should be provided to the students to alter their misconceptions and proceed with the task of effective learning.