DEVELOPMENT OF NEW APPROACHES IN TEACHING THERMOCHEMISTRY

A PROJECT REPORT PRESENTED

BY

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ABSTRACT

This project report titled Development of New Approaches in Teaching Thermochemistry is submitted to the Post Graduate Institute of Science in partial fulfillment of the requirement for the award of the degree of Master of Science in Science Education of the University of Peradeniya

Investigations were carried out to study the students' understanding in basic concepts of thermochemistry by using interview protocol and concept maps and it was found that most of the G.C.E.A/L students had been conceived misconceptions about basic concepts in thermochemistry.

The prevailing methods of teaching/learning process was investigated by interviewing G.C.E.(A/L) students and teachers, and by the observation of students exercise books and practical record books.

The study reveals that thermochemical concepts are not developed in the way they ought to be but are learnt through definitions. The instruction style is mainly by expository in both class room teaching and laboratory activities. Experimental work is inadequate, it is not used to impart inductive reasoning or scientific thinking skills. The procedure is given to the students; they compare the results with predetermined out come. So it is mainly through deductive methods of experimentation.

Students were trained to construct concept maps. Students constructed concept maps were analyzed to investigate students personal conceptual frame works, ability in knowledge representation, improvement and evolution in their

conceptual frame work due to learning. I have constructed several concept maps as Teacher-constructed concept maps to use in the class room teaching at various stages of teaching/learning process.

Analysis of students constructed concept maps show that constructing concept maps in various stages of teaching learning process is a useful strategy to gain meaningful learning.

The laboratory instruction style is modified by improving both the traditional expository approach and nontraditional approaches such as discovery and problem based methods.

New experiments of thermochemistry were developed and experiments were carried out to find the ways to improve the methods to obtain accurate results.