LEARNING DIFFICULTIES IN ADVANCED LEVEL ELECTROCHEMISTRY AND SUGGESTIONS TO OVERCOME THEM

A PROJECT REPORT PESENTED

BY

NAVARETNAM KONESHAMOORTHY

To the Board of Study in Science Education of the

POSTGRADEUATE INSTITUTE OF SCIENCE

In Partial fulfillment of the of the requirement

for the award of the degree of

MASTER OF SCIENCE IN SCIENCE EDUCATION

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

2007

LEARNING DIFFICULTIES IN ADVANCED LEVEL ELECTROCHEMISTRY

AND

SUGGESTIONS TO OVERCOME THEM

N.Koneshamoorthy

Main Street,

Thambiluvil-02

Electrochemistry is the study of interchange of chemical and electrical energy and it involves oxidation-reduction reactions that can be brought about by electricity or used to produce electricity. It deals with many applications in our day to day life.

The applications of electrochemistry are widespread. Batteries, which produce electrical energy by means of chemical reactions, are in almost anything portable and electronic. In the laboratory, electrical measurements enable us to monitor chemical reactions of all sorts, even those in systems as tiny as a living cell. In industry, many important chemical - including liquid bleach (sodium hypochlorite) and lye (sodium hydroxide) are manufactured by electrochemical means. If it weren't for electrochemistry the important structural metals of aluminum and magnesium would only be laboratory curiosities and most people would see them only in museums.

Teachers and students often do not show enough interest in teaching and learning of this subject area considering it as a very difficult, even though it is one of the most important units. This research was done with the aim to find out the apparent learning difficulties faced by the students and their causes. Hundred and eighteen students were selected from four schools in Batticaloa and Amparai district for this study. Whole area of Electrochemistry in the G.C.E (A/L) syllabus was taught to all students, and then some questions were prepared based on taught subject area and given to the students to evaluate their attainment as pretest and post test in part-I and part-II. Marks of the each student in the pretest and post test were analyzed.

Then it was found that they had many misconceptions and difficulties in the pretest. But, post test marks indicated that they had overcome the learning difficulties and got rid of misconceptions. Still some students faced difficulties in identifying electrodes, charge of electrodes, and also in understanding oxidation and reduction reactions based on the standard electrode potential. Based on the results of this research, it can be mentioned that all the students can not grasp this unit equally.