Development of Demonstration Experiments for teaching Advanced Level electricity and Magnetism

A PROJECT REPORT PRESENTED BY

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Statistical data analysis of the advanced level examination results reveals that the performances in Physics at the advanced level examination is raised after the new educational reforms in 1997 but it is still lower than the biology subjects and chemistry although it is higher than the mathematics subjects.

From the questionnaire answered by the students, it was found that some of the units in the A/L physics syllabus are unpopular among the students. So it is necessary to make those units interesting for the students to get better results in physics at the A/L examination.

And also it was identified that most of the experiments mentioned in the A/L teachers' guide for physics were not done in most schools though the students' handbook for practical was followed. Time factor and the insufficient guidelines in the teachers' guide published by the National Institute of Education have been identified by the teachers as reasons for not doing all the demonstration experiments in the teachers' guide. But 50% of the practical or more in the students' hand book had been done in most schools.

Early researchers in education had pointed out that demonstrational experiments play an important role in science, which can be used for making the students understand science concepts easily. Keeping that idea in mind I developed some demonstration kits and demonstration experiments for explaining selected physics concepts in electricity and magnetism in the A/L physics syllabus. Most of the demonstration kits have been constructed using easily available low cost materials. Some demonstration experiments can be set up in few minutes and preparation prior to the lesson is needed.

The project report is extended as a teachers' guide to demonstration experiments. Detailed descriptions of the developed demonstrations are discussed in step by step in the order of the list of materials, set up, procedure of doing the experiment, observations and the discussion. The difficulties and reasons for the failures in these demonstration experiments have been explained and some steps have also been suggested to overcome these problems.

A students' manual with questions has also been prepared to assess the knowledge acquired by the students after following the demonstration sessions,