INTRODUCING "SCIENTIFIC METHOD" FOR G.C.E. (ADVANCED LEVEL) STUDENT PROJECTS USING MONKEY MENACE AS AN EXAMPLE

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ABSTRACT

This study was an effort to introduce the "Scientific Method" to G.C.E. (A/L) "student projects" as a new approach to secondary education. Conventional teacher centered teaching- learning process at all stages of education was common in schools in Sri Lanka, in the past. This system is highly examination oriented, teacher centered and as a result, teacher is unable to identify capabilities, skills and weaknesses in students. On the other hand, students do not get exposed to sufficient opportunities to improve their skills. Students lose several integral values of education, by practicing conventional education system which could be attributed to increasingly observed unbalanced personalities in society today. 'Student projects', which was re- introduced with education reforms in 1997, can be used as an effective and a feasible tool in teaching to overcome above mentioned short comings in education. The "student projects" were especially introduced in these reforms, to all the Advanced Level courses, as a partial requirement to be fulfilled by all students.

Objectives of this study were to introduce the "Scientific Method" for G.C.E.(A/L) student projects through a practical procedure. In detail, training to explore a real problem, suggesting a socially acceptable, environmental friendly and a productive solution and utilization of integrated knowledge imparted through different taught disciplines, in solving the problems, were included in objectives.

The current problem of "Monkey menace" observed in many public places, was selected as the example to teach/introduce "Scientific method". Seven (7) monkeys who had become a threat to public at different locations in and around Kandy were captured, surgically sterilized/castrated and were reared in individual cages. Subsequently, they were introduced into a specially made cage complex in which they were made into one artificial troop over a period of 5 months, to be re-introduced into the wild.

Thirty seven (37) G.C.E. (A/L) students from 12 schools in and around Kandy were selected "conveniently" as the sample for the study. Before they participated in the project, their "pre-experiment" knowledge was recorded using a questionnaire (with 12 questions) on the awareness of projects, the "Scientific Method" and the integration of knowledge in different study disciplines. The problem of the "Monkey menace" and "solutions" were discussed in the light of the "Scientific Method" with active participation and contribution of the above participating students. Subsequently, students recorded observations on the behavior of monkeys in the cage complex for 10 weeks.

At the end of the observation period, the previous pre experiment questionnaire was added with 5 additional open-ended questions as the "post experiment" and responses were recorded from the same groups of students. The pre and the post experiment results were analyzed and the responses for same questions of pre and post experiment were also compared using the chi-square test (at 5% significance level and degree of freedom 1). Questions of pre and post experiment were again compared after categorizing respondents by their stream of study in Science, Commerce and Arts.

A significant proportion of respondents had improved their knowledge on projects, in selecting the definition of projects, on awareness of the lay out of a project report and on the evaluation criteria of projects, during the period of this study. Substantial improvements were recorded on the awareness of the "Scientific Method", number of steps involved in the method and on the ability of identifying steps of the "Scientific Method". A reasonable proportion of students was aware of the need of carrying out projects for Advanced Level courses and the objectives of introducing projects for Advanced Level streams even at the inception of the study. Significant results were obtained at identifying the steps of the 'example study' according to steps of the "Scientific Method" and the way they utilized integrated knowledge of different disciplines at solving the example problem.

All participants were able to identify such integrated disciplines (subjects as taught in schools) in the 'example study'.

It is important to note that the participating students dealt with a current and a real life problem in which the solution required an integrated approach from several disciplines. It can be stated that the "Scientific Method" can be successfully understood by students and, therefore, its inclusion in the G.C.E. (A/L) may help students address any given problem rationally, which would improve their scientific thinking. In addition, such inclusion would produce fruitful and productive people to the society making the "educated", "useful".