DEVELOPMENT AND EVALUATION OF ACTIVITY BASED LEARNING FOR G.C.E (A/L) BIO SCIENCE CURRICULUM ON WATER QUALITY ANALYSIS

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Water pollution has become a global crisis today, due to fecal contamination and various other factors resulting in ground water becoming unfit for human consumption and resulting in water borne diseases. Therefore, the necessity of saving our water sources and knowledge of drinking water quality is evident. The G.C.E (Advance level) Biology syllabus includes 'Water pollution' (sub unit 12.1.6) and utilizes the microbial concept in drinking water (sub unit 13.2.1). The main objective of the current study was to evaluate the effectiveness of Activity Based Learning (ABL) on the A/L water pollution and related units, to enhance students' awareness regarding water pollution and educate students on proper usage of water, a limited resource.

The study was conducted with 30 students in the grade thirteen biology class from two schools in Batticaloa-Paddirupu Educational zone after the floods in 2011. The students consisted of two groups, one being the experimental group, taught by ABL method and the other the control group taught by the conventional method (CM). The study included a survey including 10 teachers, students' pretest, water quality analysis of 10 wells (contaminated and uncontaminated) in the flooded area of Battticaloa District. Water analysis included, physicochemical (Temperature, Turbidity, Colour, Conductivity, pH, BOD and, COD) and biological parameters (Total and Fecal coliforms). A supplementary guide consisting of a set of activities was prepared to develop and teach ABL. Finally a post–test was given to both groups of students.

The teachers' survey revealed that 90% of biology teachers have an undergraduate degree, while 20% of them had an MSc qualification. Most of the teachers used the CM of teaching. However, it was expressed that the preferred method of teaching was the ABL method. The group of students of experimental (ABL method) and control group (CM) achieved similar results ($p>0.05$) in the pre-test. There was a significant difference ($p<0.05$) of the average marks of the post test of the experimental group (ABL method) when compared to the marks of the students taught by the CM of teaching. Furthermore, the ABL group of students was motivated, enjoyed the learning experience and actively participated in the lessons. The study concluded that ABL is effective to teach the biological concepts of water pollution and related effects than the conventional method. Further the ABL method of teaching created awareness among the students of the need to protect the limited water resources available.