

374.2
R47

**ANALYSIS OF WATER QUALITY USING BIOINDICATORS AND
EFFECTIVE USAGE OF THIS KNOWLEDGE IN THE TEACHING &
LEARNING PROCESS OF A/L BIOLOGY COURSE**

A PROJECT REPORT PRESENTED BY
R.M.G.K.RATHNAYAKE

to the board of study in Science Education of the
POST GRADUARTE 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 PERADENIA
SRI LANKA
2006.**



698734

ANALYSIS OF WATER QUALITY USING BIOINDICATORS AND EFFECTIVE USAGE OF THIS KNOWLEDGE IN THE TEACHING & LEARNING PROCESS OF A/L BIOLOGY COURSE

R.M.G.K. Rathnayake
Postgraduate Institute of Science
University of peradeniya
Peradeniya
Sri lanka

The massive deterioration and pollution of water by man intern affects significantly on the life of the man, causing enormous hazards on them. Thus the consciousness of the above consequences is essential to avoid them. The particular consciousness development is a function of the system of education in a country. It is apparent that the system of education in our country has failed to cultivate adequate consciousness or attitudes in the people so far. In the rapidly changing world conditions the adopting of new knowledge horizons in the field of environmental science may be expected to provide the above consciousness.

To elucidate the views, attitudes and failures in the water pollution education in part, samples of 12 teachers and 35 students were used. All the students were tested to obtain an idea of their initial knowledge on basic concepts of the topic "water and its pollution". Selected 15 students of this sample were taught initially on the topic and the knowledge levels were again assessed. From this the knowledge difference between the two instances was determined.

A study was carried out on two different types of water bodies (e.g. Kandy lake & Mahaoya) to evaluate the quality using bio-indicators. The study involves the determinations of both physico-chemical and biological parameters and the emphasis was mainly on biological determinations. The physico-chemical determinations were taken as supplementary, to support the conclusions drawn from the study.

The results of the above surveys, tests, and the study were used to make a set of activities for A/L students involving a new approach, where students study and learn on pollution problems pertaining to the real world in the field. The 15 student sample, were taught the new approach and again for their knowledge enhancement. For testing the knowledge levels in the three instances the same paper was used.

The teachers highlighted common failures in the curriculum where environmental pollution was given little emphasis with few activities and fieldwork. However it was stated that, the time allocation was not sufficient to nurture even that knowledge. Both the students and teachers desired to have more fieldwork on the topic of water pollution. At the initial stage the students possessed very low attitudes and knowledge on the tested facts. The students showed some progress after learning the topic on water pollution given in the syllabus, but were not adequate to develop more desirable attitudes on water pollution it self.

After the students were made aware of the new approach, they showed high enthusiasm, became more active, and achieved relatively higher knowledge than before, although their achievement was not greater as expected. It may be due the incapability of students to engage fully in doing the whole set of activities and the acceptance of the new approach as matters out side their ordinary syllabus in an exam oriented circumstance.

The study on two different water bodies showed clear-cut differences in their nature as well as physico-chemical properties. These differences could be further elaborated using the biological properties. The Kandy Lake represented only pollution indicating organisms while the Maha Oya represented both pollution and clean water indicating organisms.