

# Enhancing environmental awareness through marine education

M.A.J. Collins

Department of Biology  
Memorial University of Newfoundland, St John's, Newfoundland, Canada A1 B3X5

## INTRODUCTION

Throughout this colloquium reference has been made to a number of environmental problems, most of them due to human activities (e.g. clearing mangrove forests, dynamite fishing, sewage pollution, etc.). While attempts are being made to correct these problems through new legislation and educating adults in more environmentally friendly practices, it is my thesis that we should be putting much more effort into the environmental education of young, school-age children since such efforts will, in the long run, have the greater impact on environmental awareness.

## AIMS OF ENVIRONMENTAL EDUCATION

According to Stapp et al. (1969) "Environmental education is aimed at producing citizens:

1. knowledgeable concerning their biophysical environment and its associated problems;
2. aware of how to help solve these problems; and
3. motivated to work toward their solution."

Environmental education, whether in the formal education setting (schools, colleges, universities) or in the informal setting (organisations, media, etc.), seeks to produce individuals with positive attitudes and values about their environment.

## ADOPTION OF NEW IDEAS AND PRACTICES

The research suggests that the adoption and implementation of new ideas and practices involves a number of different stages, namely awareness, interest, evaluation, trial and adoption (Rogers, 1962).

1. Awareness: The individual is exposed to a new idea or practice but lacks information about it.
2. Interest (or information): The individual becomes interested in the new idea or practice and seeks information about it.
3. Evaluation (or application): The individual mentally applies the idea or practice to his/her present and anticipated future situation and then decides whether or not to try it.

4. Trial: The individual uses the new idea or practice on a small scale in order to determine its utility in his or her own situation.
5. Adoption: The individual decides to continue full use of the new idea or practice.

It is clear then that the adoption of new ideas and practices is not something that can be done quickly — the process takes time. Of course many people will never actually adopt the new idea or practice. The research on adoption of new ideas and practices is primarily concerned with changing the practices of adults who have a direct impact on the environment through their work (i.e. fishers, wood cutters, etc.).

## ENVIRONMENTAL EDUCATION RESEARCH FINDINGS

Reviews of the literature from the field of environmental education have produced the following important conclusions:

1. Most attitudes are formed prior to secondary school; there is little change after that.
2. Even children of kindergarten age can form affective concepts (that is attitudes and values) regarding environmental issues.
3. While knowledge gained is often lost over time, attitudes and values remain, and often improve.
4. The media, particularly television, are powerful sources for influencing attitudes and values.

## CONCLUSIONS FROM ENVIRONMENTAL EDUCATION

While it is important to target adults as they are the ones having the greatest impact on the environment, it is important to recognise that the adoption of new practices can take a very long time. In addition, the evidence suggests that adults are less likely to change their attitudes to the environment than are young primary school-age children. I strongly believe that a greater effort should be made at introducing environmental education into the primary grades, as has been done in Zanzibar schools. This will have the greatest impact in the long term since there is the opportunity to affect positive environmental attitudes in the school children which will last into adulthood.

## RECOMMENDATIONS

### **Formal education**

- Incorporate environmental education into the primary school curriculum, concentrating on the affective domain (i.e. attitudes and values).
- Emphasise hands-on activities and outdoor experiences.
- Emphasise the cognitive aspects (i.e. concepts and knowledge) of environmental education in secondary school.

Examples of University of Dar es Salaam/Memorial University materials developed for schools:

- (a) Environmental education activities for Zanzibar primary schools — Standards I to III, 1996;
- (b) Zanzibar environment education workshop — Principles and methods of science and environmental education, 1997.

### **Informal education**

- Printed materials (books, brochures etc.); Displays (bulletin boards, charts etc.); Videos (VCRs, television). Examples: University of Dar es Salaam/Memorial University materials.

### **Publications**

Examples include:

- (a) 'An introduction to the coastal ecosystems of Zanzibar'. J. Shunula & A. Whittick, 1997;
- (b) 'The mangroves of Zanzibar'. J. Shunula & A. Whittick, 1996.

### **Videos**

Examples:

- (a) 'Mangrove forests: resources for all generations'
- (b) 'Beach erosion'
- (c) 'The garden of the sea: The coral reef'
- (d) 'Simple field activities in environmental education'.

## **FUTURE POSSIBILITIES**

With the lack of local resources (money, personnel, equipment, etc.), and the increasing use of the Internet, there is the possibility of developing materials on a regional basis, particularly at the secondary school/college/university level, e.g.:

- Correspondence courses (i.e. Memorial University's Biology 2041 'Environmental Science.'
- CD-ROM based materials (i.e. Biodiversity Identification Guides).
- Web-based courses (i.e. Memorial University's Biology 2041 'Environmental Science' —under development).
- Virtual Universities (i.e. University of the West Indian Ocean).

## **REFERENCES**

- Rogers, E. 1962. *Diffusion of Innovations*. New York: Free Press.
- Stapp, W.B., Bennett, D., Bryan W., Fulton, J., Harlick S., MacGregor J.M., Nowak P., Swan, J. and Wall, R. 1969. The concept of environmental education. *The Journal of Environmental Education* 1 (1): 30–31.

