

GOAL MANAGEMENT AS AN ATTEMPT TO EVALUATE NATURE CONSERVATION CAMPAIGNS

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This paper reviews international approaches to evaluation research and attempts to apply this to the evaluation of the efficiency of environmental education campaigns in Southern Africa. It discusses the objectives of evaluation, looks into current practices in the evaluation of resident outdoor educational programmes in the USA and describes some methodological implications of evaluation research. A practical model for evaluation research in the field of environmental education is then proposed. This paper concludes with a personal view by the author of how environmental education programmes in Southern Africa should be developed in order to be effectively evaluated.

INTRODUCTION

One often hears extension officers in nature conservation and environmental education agencies stating that (in general) an organization can only be effective when launching campaigns once it has formulated its own goals for those campaigns. The basic premise then is that only through goal management can the effectiveness and impact of campaigns be assessed. This type of approach seems very logical, but has the disadvantage of possibly being an oversimplification of the reality at hand.

The aim of this paper is:

- to give an overview of the international state of the art in evaluation research being applied to environmental education (EE),
- to indicate that qualitative research designs in general, and action research particularly, would be preferable to quantitative research designs when assessing EE campaigns, and
- to illustrate, through research presently being undertaken by the author, how attempts to evaluate EE related campaigns can be relevantly applied within the Southern African context.

At the outset however it would be appropriate to discuss briefly problems facing people working in the field of EE in Southern Africa. The lack of a consistent national policy and resulting objectives causes a situation in which different agencies formulate differing goals and objectives. The result of this is that an overall integrated objective for EE and the conservation of natural and cultural resources sometimes seems impossible to achieve.

This problem is intensified by other factors which collectively are unique to Southern Africa. (Odendaal, 1985 a and 1985 b). Firstly, the multi-ethnicity of the peoples of this region leads to various (sometimes opposing) beliefs and attitudes concerning the environment. To reach all the peoples through the same campaigns would therefore be very difficult. Secondly, it is important to note that the rate of urbanization and overpopulation is approaching alarming proportions in this region. These two factors would, in the third instance, lead to the observation that Southern Africa is faced with the environmental problems normally associated with the first world, as well as the third world. Our urban areas are faced with problems such as stress, population density and pollution, while our rural areas are faced with problems such as poverty, soil erosion and over-utilization. It is clear that objectives for EE and resource management will in future have to address both urban and rural issues.

Finally, it appears that many people working in the field of EE still believe that the changing of attitudes will necessarily lead to changes in behaviour. This, together with too much emphasis on quantitative methodology, leads to the fact that several attempts at evaluation research in Southern Africa appear to be misguided and inappropriate (Odendaal and Scheulen, 1984).

These brief introductory notes point toward some factors influencing evaluation research in our region. Possible solutions to these problems will be suggested. An overview of evaluation research will now be given. In the first instance, the objectives of evaluation will be discussed.

THE OBJECTIVES OF EVALUATION

It is understandable that people regard EE as being notoriously difficult to evaluate. We live in a time of budgetary restrictions and many programmes being developed are likely to be cut if the benefits are not clearly illustrated through objective (and possibly independent) evaluation research. Extension officers in nature conservation and EE simply cannot afford to use the aesthetics of nature as the prime motivation force behind their work. Clearly an enthusiastic and informed generation of politicians and industrialists will have to be developed in order to ensure the viability of EE programmes in future. With this in mind, the following definition of EE is used as basis for this paper:

- "EE is the process aimed at producing a citizenry that is
- knowledgeable about the biophysical and sociocultural environment of which he is part;
 - aware of environmental problems and management alternatives of use in solving those problems, and
 - motivated to act responsibly in developing diverse environments that are optimal for living a quality life."
- (O'Hearn, 1983, p2)

This definition focuses on the basic premise of this paper i.e. any successful EE programme should:

- disseminate knowledge;
- create an appropriate awareness in people; and
- create a commitment in people to use (and live) that knowledge and awareness. The basic objectives of the evaluation of programmes would be to ensure such success.

With this general description in mind, it is imperative that specific objectives should be identified to serve as 'indicators' of a programme's impact. Understandably, evaluation must establish credible evidence of the value of the activities being undertaken during a programme. Clearly, the organization responsible for a programme will have to establish explicit goals for the programme so that the effectiveness thereof can be evaluated. The purpose of evaluation would therefore be to establish the value of the programme, or campaign. The 'value' or 'worth' of a programme is in the eye of the beholder and is therefore clearly subjective in nature. It is this subjectivity that brings about a severe methodological problem when evaluation research is developed. This issue will be discussed later.

The paper now moves to a brief review of international tendencies in evaluation research.

CURRENT PRACTICES IN THE EVALUATION OF RESIDENT OUTDOOR EDUCATIONAL PROGRAMMES

Chenery and Hammerman (1985) give a very good overview of the methods being used by administrators of resident outdoor education programmes in the USA. A survey questioning evaluation methods was sent to some 350 camps, schools and agencies. The results of this study point to some of the approaches in the USA. The results described in this paper are selective and illustrative.

The first group of findings referred to the evaluation methods being used by administrators. It appears from Chenery and Hammerman that 90,4% of the respondents used the observation of programmes as a method of evaluation. Unfortunately very little is explained by what is meant by 'observation'. This author feels that this method of evaluation runs the danger of being extremely subjective. Individual and group discussion, as well as written survey questionnaires were recorded as being used by more than 70% of the respondents. Logs or journals, self-designed tests and videotape, film or audio recordings were very seldom used and only 3,7% of respondents used standardized tests. The implication of these results is that very little evaluation research based on sound methodological principles is presently being done in the USA.

A second important finding was that the majority of questionnaires were completed by the teachers (78,4%) and the students (76,1%). Whereas the reactions of teachers would normally be subjective, one can assume that the results of the research will be biased if quantitative research designs are used. The administrators of the programme and the staff normally decided on the content of the evaluation system and performed the evaluation research themselves.

The above mentioned results clearly indicate that the evaluation of EE programmes is presently taking place rather haphazardly, without a sound methodological basis. It appears as if most of the research is qualitative in nature, and that most of these surveys lack the application of sound methodological principles. A lot of research has been done into the development of scientific qualitative research designs (Seamon, 1982). The author would further like to refer readers for example to the work of Giorgi (1984) and Kruger (1979). It should also be noted that Dr. Rex van Vuuren at the Centre for Psychology at the University of Pretoria, has developed a course in qualitative research which could be attended over a one week period.

Chenery and Hammerman concluded that the following points need to be considered when specific instruments for evaluation are designed:

- Questions should be related to programme objectives;
- the data generated should be related to research questions to be addressed and decisions to be taken in future;
- the instruments should be understandable to the respondents;
- the generated data should be easy to summarize;
- not every aspect of concern in the evaluation system needs to be addressed every time;
- the evaluation should focus on that which the staff really want to know;
- a systematic process for summary of the results, distribution of the summaries and the use of the results in decision making should be established.

The question that now arises is how these practical points can be considered against the backdrop of all the different methodological designs available to

researchers today. A brief overview of the various methodologies presently being applied in evaluation research now seems appropriate.

THE METHODOLOGICAL IMPLICATIONS OF EVALUATION RESEARCH

Several models exist in this regard. All look at evaluation research from differing perspectives. This section is introduced with a brief discussion of some of these approaches to evaluation research.

Evaluation of performance relative to objectives

This approach has its roots in curriculum evaluation for educational purposes. Tyler (1949) developed this model on the basis that a curriculum should be developed around explicit objectives and that the success of the programme should be judged on the basis of how well the students achieve the objectives. This model has been improved by Stake's Countenance model (1967), Provus's Discrepancy model (1971) and Popham's Instructional Objective model (1975).

It is clear that these models seem appropriate to formal education and that they are directed at formal learning. While it is true that most of the conservation agencies involved in EE do teach people things formally, it appears that these organizations also involve themselves in issues such as the development of an environmental and conservation ethic. The objectives approach cannot aid the evaluation of the qualitative impact of the programme. For this reason it is clear that this approach be left until such time as EE becomes part of the formal education system (if it ever does).

Evaluation to assist decision making

Evaluation can be developed to assist decision making. This process can only be achieved if the decision makers are truly committed to the scientific improvement of their programmes.

This form of evaluation, as described by Stufflebeam *et al.* (1971), depends on four basic stages of evaluation. Firstly, *context evaluation* has to be completed. Basic problems and needs have to be established during this stage and this is normally done through attitude surveys, viability studies etc. Once this has been completed, work can be started on the second stage of *input evaluation*. This stage focuses on the resources and strategies needed to establish the programme goals and objectives established during context evaluation. The third stage, *process evaluation*, collects evaluation data once the programme has been designed and put into operation. This stage evaluates the appropriateness of the decisions made in the first two stages. The final stage, *product evaluation*, establishes the extent to which the goals have been achieved.

The author is convinced that process evaluation, which is directed at concrete results, would be best achieved through quantitative designs. Product evaluation which is directed at the extent to which a programme has an impact on the participants will be best established through qualitative research designs.

The real issue in EE is therefore not whether quantitative and/or qualitative methods should be applied, but to design evaluation research so that it is applicable and appropriate in terms of needs and demands set by the agency developing the programme. The author proposes that a model based upon *action research* (Lewin, 1951) be used to develop a model for evaluation research in the broad field of EE.

A PROPOSED MODEL FOR EVALUATION RESEARCH IN THE FIELD OF ENVIRONMENTAL RESEARCH

Action research can be described as an intervention in the functioning of the real world and a close examination of the effects of such interventions (Halsey, 1972). Other features of this approach are that:

- It is *situational* -- it is normally concerned with evaluating a problem within a specific context and in attempting to solve those problems within that context;
- It is *participatory* - team members (or staff) take part directly and/or indirectly in the implementation of the research;
- It is *collaborative* - teams of researchers and practitioners work together on the project; and
- It is *self-evaluative* - the programme is continually modified as a result of evaluation research so that the ultimate aim of improving the programme in some way or another can be achieved.

The advantages of this type of approach is clearly that it involves a diagnostic stage and a therapeutic stage, as well as a curative and preventative stage. The practitioner can review the analysis of problems and the resulting hypotheses generated. The practitioner can then look for remedies to rectify shortcomings in his programme. On a wider scale (an within the specific context of EE) practitioners can start working on the misconceptions concerning conservation behaviour and environmental ethics, as well as developing a new generation of environmentally aware individuals on a preventative level.

The question that now arises is how the procedure for action research can be applied. The procedure will be discussed in eight stages as it would apply to environmental extension.

Stage 1

Identification

The problems and needs of the organization involved in EE should be clearly identified during this stage. These issues should be expressed as concretely as possible.

Stage 2

Discussion and negotiations

This stage entails discussions with all interested parties, such as administrators, teachers, researchers, advisers, sponsors etc. All possible ideas and solutions should be considered during this stage. It is best to integrate these discussions by means of a draft proposal.

Stage 3

Literature review

Studies which focus on comparable research should be reviewed at this stage. Emphasis should be placed upon objectives, procedures and problems encountered. This will help the researcher to work more effectively during his own work.

Stage 4

Redefinition of problem

In this stage the problems and issues identified during the first stage are modified to utilize the material accumulated during the second and third

stages. The assumptions underlying the project are made explicit during this stage. This stage has to answer the question: what do we really want to know?

Stage 5

Infrastructure

Issues such as sampling, administration, allocation of tasks, deployment of personnel and so on are decided upon and finalized during this stage.

Stage 6

Choice of evaluation procedures

The continuous evaluation procedures and the ways in which they will be modified if they fail are decided upon. It is important to note that operational research questions such as 'who', 'what', 'when' etc. will be met with quantitative research designs and that 'how' will be studied by means of qualitative research methodology.

Stage 7

Operational stage

The research is now implemented by means of the collection of data, monitoring of tasks and feedback to the researchers and the classification and analysis of data.

Stage 8

Conclusion

The data is interpreted, inferences are drawn and reports are drawn up. If at this stage the intensity of the impact of the programme is to be evaluated, a new series of studies focussing on qualitative research designs could be completed.

CONCLUDING REMARKS

The model of action research proposed above can be used in any programme decided upon by nature conservation agencies. The agencies' goals in terms of EE can easily be incorporated and then evaluated for effectiveness.

It is important to note that EE programmes should:

- Disseminate knowledge;
- Create appropriate awareness; and
- Create commitment in order to be successful. In order for this to happen practically, the following topics should be covered by the programme:
 - ecology, evolution, ethnology, natural resource conservation, protected areas and aesthetics.

The author agrees with Reilly (1985) that these topics should be taught with an emphasis on: soil erosion, veld management, pollution, population control and wild animal protection.

The basic issue then is that organizations working in the field of EE should on the one hand formulate their own goals for their programmes, but should, on the other hand, see to it that their goals work towards the holistic approach described above. The acceptance of basic environmentally orientated principles on a general level, will only become a reality once all organizations working in the field of EE start working towards the same general goals. One can only hope that the workshops in EE organized by EEASA and the CSIR for 1986 will work towards these common goals.

In the final analysis all strategies being used for the development of EE programmes should incorporate the following principles:

- An integrated approach should be followed. All programmes should include principles of balanced conservation and development as described by Hanks (1983).
- All programmes should be directed at the retention of the most possible options. Biogeographical variation must be ensured in this process.
- EE programmes should focus on curing and prevention. It is important to note that a sustainable programme of rural development should be integrated with conservation actions.
- EE programmes should focus on the causes as well as the symptoms of the problem at hand. Conservation principles should be integrated with developmental concepts from the beginning of the programmes.

The author thus stands for an integrated, holistic approach when evaluation research is considered. In the words of General Jan Smuts (1927): "What we want is some larger synthesis, some concepts that will bring together the vast details with which we have to deal. There has been an immense movement forward in thought, science, philosophy and all forms of human development. We are now running the risk of getting lost, becoming submerged in the details and it is all-important for us to get some larger view of all this vast mass."

REFERENCES

- CHENERY M.F. & HAMMERMAN W. 1985: 'Current Practice in the Evaluation of Resident Outdoor Education Programs: Report of a National Survey.' *The Journal of Environmental Education*. Vol.16 No.2 pp.35-42.
- CONYNE R.K. & CLARK R.J. 1980: *Environmental Assessment and Design: A Tool for the Applied Behavioral Scientist*. Praeger. New York.
- GIORGI A. 1984: *Phenomenology and Psychological Research*. Duquesne University Press. Duquesne.
- HALSEY A.H. (ed) 1972: *Educational Priority*. Vol. 1 HMSO. London.
- HANKS J. 1983: 'Conservation for Development'. *Quagga*. No.3 June.
- KRUGER D. 1979: *An Introduction to Phenomenological Psychology*. Juta & Co. Ltd. Cape Town.
- LEWIN A. 1951: *Field Theory in Social Science*. Harper. New York.
- ODENDAL A.W. 1985a: 'Meningspeiling en Evaluering met Spesifieke Verwysing na Navorsing in die Nasionale Krugerwildtuin.' *Publikasie oor die Sewende Interprovinsiale Kommunikasievergadering*. Berg-en-Dal.
- ODENDAL A.W. 1985b: 'New Perspectives on Man's Role in Nature Conservation Actions.' *Proc. of Conference: 'Man: Endangered Species?'* Pretoria.
- ODENDAL A.W. & SCHEULEN S.U. 1984: 'Die Houing van 'n Groep Studente jeens die Nasionale Krugerwildtuin: 'n Vergelykende Metodologiese Studie.' *Interne Verslag: Nasionale Parke-raad*.

O'HEARN G.T. 1983: 'What is the Purpose of Environmental Education?' *The Journal of Environmental Education*. Vol.13 No.4 pp.1-3

POPHAM W.J. 1975: *Educational Evaluation*. Prentice Hall. Englewood Cliffs.

PROVUS M. 1971: *Discrepancy Evaluation*. McCutchan. Berkeley, California.

REILLY T.E. 1985: *The Mlilwane Story*. Mlilwane Trust. Mbabane.

SEAMON O. 1982: 'The Phenomenological Contribution to Environmental Psychology'. *Journal of Environmental Psychology*. Vol.2 pp.119-140.

SMUTS J.C. 1927: 'The theory of Holism'. *Greater South Africa: Plans for a Better World*. The Truth Legion. Johannesburg 1940.

STAKE R.E. 1967a: *Curriculum Evaluation*. Rand McNally. Chicago.

STAKE R.E. 1967b: 'The Countenance of Educational Evaluation'. *Teachers College Record*. Vol.68 pp.524-540.

STUFFLEBEAM D.L., FDLEY W.J., GEPHART W.J., GUBA E.G., HAMMOND R.L., MERRIMAN H.O. AND PROVUS M.M. 1971: *Educational Evaluation and Decision Making in Education*. F.E. Peacock. Itasca, Illinois.

TYLER R.W. 1949: *Basic Principles of Curriculum and Instruction*. University of Chicago Press. Chicago.

Anyone familiar with the work and writing of Jean Piaget cannot help but be struck by his amazing productivity. A conservative estimate of his writing is over 40 books and more than 100 articles on child psychology alone. To these may be added numerous papers in philosophy, education and malacology. In his autobiography, Piaget attributed his productivity in part to his helpful colleagues, but the following passage also provides us with an interesting insight into one of the sources of his personal energy:

"And then, too, I owe it to a particular bent of my character. Fundamentally I am a worrier whom only work can relieve. It is true I am sociable and like to teach or to take part in meetings of all kinds, but I feel a compelling need for solitude and contact with nature. After mornings spent with others, I begin each afternoon with a walk during which I quietly collect my thoughts and coordinate them, after which I return to my desk at my home in the country It is this dissociation between myself as a social being and as a 'man of nature' (in whom Dionysian excitement ends in intellectual activity) which has enabled me to surmount a permanent fund of anxiety and transform it into a need for working."

Piaget J. (1952). *Autobiography* p.255 in Boring E.G. et al. eds. *A History of Psychology in Autobiography*. Vol.4. Clark University Press, Worcester, Mass.