

ENVIRONMENTAL EDUCATION PROGRAMMES OFFERED BY DELTA ENVIRONMENTAL CENTRE: SOME RESEARCH FINDINGS

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Environmental education has developed over time in South Africa with environmental education centres playing a significant role. However not enough is known about how such centres operate. This article presents some of the findings of a research project that documented and evaluated the programmes presented by Delta Environmental Centre, in Gauteng, South Africa.

RESEARCH CONTEXT

It is common knowledge that environmental education has not been a distinctive part of the old policy of education of this country. Until fairly recently, formal curricula in the South African education system have largely ignored environmental principles (Yeld, 1993:42). It was in fact in 1995 that environmental education was mentioned for the first time in the *White Paper* of the National Department of Education:

Environmental Education involving an interdisciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources (*White Paper on Education and Training*, 1995:22).

Environmental education was initially confined to nature reserves, where only ecological information could be offered and issues which appeared to question government affairs were mostly avoided. The situation has changed completely.

In the early days of environmental education in this country, emphasis was on conservation education (Irwin, 1990:4). The main emphasis was on ecological instruction and simplistic notions of attitude change through awareness creation so as to change behaviour. Such views were strongly influenced by the notion that the environment was in a crisis in terms of ecosystems being at risk and endangered wildlife which was to be protected in nature reserves. Therefore, people needed to experience nature in the wild protected areas and had to be provided with information and simply made aware. O'Donoghue and Janse van Rensburg (1995:4) mention that the idea was simply to make people aware of the envi-

ronment as a natural ecosystem. Teaching of ecology and environmental education was not differentiated. Visits to environmental field or education centres in nature reserves were prominent and these centres had a significant role.

Environmental education for responsible behaviour through experiences in 'wild' areas fits the narrow view of environmental education and fails to address the demands of sustainable living (Fien, 1993b:65; Yeld, 1993:43). Lotz (1995:24) acknowledges the fact that environmental problems are complex and include political, economic, social and bio-physical systems. The implications of this is that environmental education can no longer be concerned with ecological issues only, but should be broader in approach so as to achieve education for sustainable living and sustainable development with minimum impact on the ecological environment.

LACK OF INFORMATION ON CENTRES

Given the significant role which environmental centres played in the development of environmental education, historically, a major part of South Africa's environmental education resources has been channelled into such centres (Janse van Rensburg, 1992:2). Unfortunately there is a gross lack of information about environmental centres in this country. This state of affairs is not unique to southern Africa, but also applies to centres in England. "There is a basic lack of published information about the centres" (English Nature Report, 1992:14). Thomas (1990:3), writing in America, also states:

Education programmes must be evaluated in order to assess their worth and monitor performance. Few environmental education programmes at centres have been evaluated for several reasons, including lack of a suitable evaluation method.

While the environmental education centres are utilising a substantial amount of resources, information

about the programmes and their effectiveness is inadequate.

From a study on research priorities in southern Africa conducted by Janse Van Rensburg (1994:5), it is clear that programme evaluation at centres is called for: Several interviewees regarded the development of research strategies for different contexts as a priority. Another priority identified was the evaluation of environmental education programmes, especially in centres, for their effectiveness.

SOME LIMITATIONS OF CENTRES

Around 1993, although not extensive or based on full scale research, and often verbally articulated, some criticism levelled against centres had emerged in South Africa (O'Donoghue, 1993:35; Jacobs, 1992-1993:93-100). One of the issues raised was accessibility. Too many centres are inaccessible to their main clients who are often school children. This is because in the majority of cases, centres are situated in nature reserves which are located far from major urban areas where most people reside. This results in expensive transportation with the result that very few pupils and teachers visit these centres (Aitchison, 1990:2).

It is also alleged that many education officers at centres are not trained as teachers and do not have an educational background (Janse van Rensburg, 1992:3). This is largely exemplified by the popularity of the Gold Fields Environmental Education Course which intends to bridge the identified gap between what the officers do at the centres and their theoretical understanding of educational theory.

Many of the organisations in which these environmental centres are located, may not be readily in favour of programme evaluation and criticism by others (Janse van Rensburg, pers. comm., 1996). One may, therefore, suspect that progressive and critical ideas which challenge government conservation establishments in particular, do not often influence the centre's programmes. Opportunities to enrich the experience of the visitors to such centres are therefore minimised. These statements are made with caution as the situation here, may have changed with the new democratic dispensation.

Given that most environmental centres are run according to set programmes, issues addressed are limited in scope and available opportunities to explore issues more widely may not be fully realised

and utilised. Experience at the centres is usually irregular and brief without further consolidation. Follow-up mechanisms between the centre and the school and home situation are necessary. In addition, the needs of the visitors are often not considered and in fact may be poorly understood.

There is clearly a need for some measure of detailed information about the programmes and services provided by environmental centres, either to confirm or refute these criticisms and create greater understanding.

It is my view that information gathered and compiled in a formalised way according to the requirements of formal research may influence and contribute to the further development of centres. The value of the research project was reported here envisaged to lie in its potential to contribute to environmental education in general by providing essential information about aspect pertaining to centres, improving practice and uplifting practitioners at centres.

A further benefit, though indirect, was thought to be that information gathered could be used to guide decision-making on further expenditure in respect of establishing and sustaining environmental education centres. Properly researched information can be used, *inter alia*, to lobby for more recognition and support for centres. It is against this background that the research was initiated.

RESEARCH AIMS AND OBJECTIVES

Based on the issues and needs articulated above, the research was formulated and focused on a critical evaluation of environmental education programmes in selected field centres in South Africa as the initial little. The main aim was an evaluation of the programmes to identify a basis for the improvement of the practice of education officers at centres and to document their educational programmes or activities at the institutions so as to address the lack of information. A pilot project was initiated and resulted in a change of focus to environmental education offered by Delta Environmental Education Centre. Essentially the refined focus was necessitated by the realisation (through the pilot process) of the diversity in approach at centres and historical backgrounds and the philosophical uniqueness of various centres. The personalities of the personnel who run centres also presented a problem in determining commonality between the centres. Also, the different centres

serve different clientele making it extremely difficult to make comparisons and make sense of issues about the centres. In essence, the original aims of the project did not change except that the research focus was now only on one education centre.

The principal objective of the research project was to evaluate the environmental education programme which is offered by Delta Environmental Education Centre.

This was to be achieved by means of :

- * A comprehensive description and documentation of the various features of the programme.
- * Eliciting/exploring the views, claims and concerns of the environmental education officers, the visiting pupils and teachers, other stakeholders (the chairman of the Board, the president of the centre, the former chief executive of the centre, the former educationalist and sponsors of the centre) and establishing how these individuals feel about and affect the education programmes.
- * Grounding the study in the theory of evaluation known as fourth generation evaluations as advocated by Guba & Lincoln (1989a).
- * Identifying factors impinging on the programme, as articulated by the officers and,
- * Recommendations for improving the programme.

Basic assumptions on which the research was based:

- * Due to the nature of environmental education, conventional evaluation procedures where achievement of objectives and product outcomes are emphasised are not appropriate for evaluation in environmental education.
- * Evaluation is only meaningful if it seeks to understand an issue from the multiple perspectives of all those who have a stake in the programme (Guba & Lincoln, 1988:18-85).
- * Therefore, the research had to recognise the importance of involving the actual practitioners as they are the main stakeholders in the evaluation (Guba & Lincoln, 1988:18-15). Other individuals were included as and when they were identified to have a significant influence on the programme (Parlett & Hamilton, 1976:92).
- * An effective evaluation of the environmental education programme at the centre encompassed various faces of the establishment and

had to be approached with an open mind so as to be sensitive to the issues which might have an indirect impact on the programme.

METHODOLOGY

The choice of a research method depends largely on the presumed character of the object of the research (Keeves, 1988). In environmental education, Robottom & Hart (1993) state in no uncertain terms that traditional educational research methods underpinned by the scientific world view provide an inappropriate framework for the challenges confronting environmental education. In a non-positivist paradigm value is placed on the subjective, speculative, metaphysical and experiential dimensions of research where these may either be a range of 'truths' or none at all (Irwin, 1993).

An appropriate form of environmental education research is one which includes consideration of both human consciousness and political action in order to answer moral and social questions about educational programmes which the scientific approach is unable to answer (Robottom & Hart, 1993:54). Human ideas, experience and intentions are not totally objective things like molecules and atoms (Wals, 1992:47). Qualitative research that emphasises description, induction, grounded theory and eliciting people's understanding and opinions, is therefore the ultimate alternative. "The liberation of the qualitative research is everyday life and cannot be contained in a test tube, started, stopped, manipulated, or washed down the sink" (Morse, 1994:1).

Many terms, such as constructivist approach, interpretative approach, post-positivist or post-modern perspective (Creswell, 1994:4) are used to describe qualitative research. Guba & Lincoln (1988:82) speak of the naturalistic paradigm. They cite its characteristics and benefits as for example, that it offers a contextual relevance and richness unmatched by any other paradigm. In the nature of this research which was aimed at evaluating the programme at Delta and understanding in precise form the officers' views, experiences, perceptions and attitudes, it seemed appropriate to assume the greater appropriateness of the naturalistic approach.

Research Design

According to Merriam (1991:6), deciding on a particular research design is to a large extent influenced by what the research question is and how it is shaped

with consideration to what the desired product of the research is.

In addition, the type of research design can be distinguished by whether or not it is based on the performance of experiments or not experimental. This is determined by the ability of the researcher to manipulate variables and control the situation under investigation and whether cause and effect and relationships discovery are the primary aims. The non-experimental design is appropriate in situations in educational research where it is not possible to control all variables of interest during the investigation. Merriam (1991:7) maintains that

Non-experimental or descriptive research is undertaken when description and explanation (rather than prediction based on cause and effect) are sought, when it is not possible or feasible to manipulate the potential causes of behaviour and when variables are not easily identified or are too embedded in the phenomenon to be extracted for study.

Based on the information provided about the research aims, it is clear that this research was non-experimental and lent itself towards qualitative and descriptive types of research. The research aims were to describe and evaluate the programme and to identify issues peculiar to the centre.

Also, because the investigation centres on the one centre, it follows without doubt that it is a case study, an examination of a specific phenomenon such as a programme an event, a person, a process, an institution, or social group (Merriam 1991:9).

Yin (1989:20) mentions that research strategies are not mutually exclusive and that case studies are more appropriate when "a 'how' or 'why' question is being asked about a contemporary set of events, over which the investigator has little or no control".

If you need to know how and why a programme works, a case study design is most suitable and in the case of Delta and the objectives of this research the mentioned issues are applicable. This research took the form of a case study as it is:

- * Particularistic (contextual), meaning that the study concentrates on a particular situation, event programme or phenomenon,
- * Descriptive, i.e. 'rich' with description of the phenomena under study. The description is a

complex, literal exposition of the incident or entity being investigated,

- * Heuristic, meaning that the case study illuminates the reader's understanding of the phenomena under study, and
- * Inductive/exploitative, referring to generalisations, concepts or hypotheses which emerge from an examination of data, which are grounded in the context itself (Merriam, 1991:11)

Sampling

Research based on a case study design examines a single specific problem in a specific setting. For this research project, purposive sampling was adopted and the Delta centre was selected on the judgement of the researcher (Cohen & Manion, 1989; Henry, 1990). According to Patton (1987) purposeful sampling invites the selection of information-rich cases for in-depth study. Information rich cases are those from which we can learn a great deal about issues of central importance to the purpose of the evaluation.

In South Africa at the time of writing, there were approximately fifty five environmental education centres. These are obviously situated in different parts of the country, some in urban areas and the majority in nature reserves in rural areas. Even though all these centres claim environmental education as the fundamental reason for their existence, they are characterised by many differences.

The centres have distinct features as they have all been established for different reasons, by different organisations with varied organisational philosophies and for different clients. The staff's personalities and structures differ and they have different historical backgrounds. With such differences trying to make comparisons or attempting to study these through a single project would be nothing short of disaster.

Fraenkel & Wallen (1993) maintain that much information can be obtained by studying one situation if it is unique. Delta is unique in the sense that unlike most of the centres located in rural areas and run by government agencies, this centre is independent and situated in an urban area. As a Section 21 company it raises its own funds through sponsorships and donations and is run largely by part-time education staff. It is essentially a Non-Governmental Organisation (NGO).

Based on the experience gathered in the pilot study and the re-focusing of the research, this centre was

then chosen from the approximated fifty five. Another reason for the selection of this centre is that the environmental education officers at Delta had indicated their willingness to participate and support the study and total rapport was established (Patton, 1987).

Interviews

Interviews were used as the main method for data gathering. Though desirable, it is rarely possible to interview every participant, except in small programmes or with large research teams. Interviewees must therefore be selected randomly or by means of purposive sampling where informants or particular groups who many have special insight, or whose position make their view points noteworthy, are identified.

Given the difficulty of interviewing everyone individually, focus group interviews were utilised. For the purposes of this research, semi-structured focus group interviews and individual interviews with identified significant stakeholders were conducted.

In essence, the interviews were aimed at eliciting individual opinions and perceptions about almost all facets of the programme. Five group interviews were held with the environmental education officers and the numbers varied from three to five per interview depending on the availability of the officers. In total twenty environmental education officers participated. In addition to the rest of the staff at Delta, the present chief educationalist was interviewed separately from the rest of the staff because of her position as supervisor of the others. She was asked the same questions as the other officers.

In the case of stakeholders, *viz.* the chairman of the Board, the president, past chief executive director and the past chief educationalist, as they were not directly attached to the programme, they were not able to comment extensively on the programmes and were probed by asking further questions (Kerlinger, 1986).

In addition to the interviews mentioned above, other interviews were held with sponsors individually and with pupils visiting the centre.

Altogether twenty seven interviewees participated in the interviews. All the interviews were recorded on tape to preserve the information and served as a permanent record of what was said instead of what the

interviewer thought was said (Yin, 1989). The tapes were transcribed and typed for analysis and data validation.

FINDINGS

Obviously this section is not able to present the findings in details and in any comprehensive manner but provides an outline for some of the results. The manner in which programme is presented at the centre depends among other things on the available resources for teaching, the training of the environmental education officers, their experience, the conditions of service, the mission and objectives of the centre and the reasons for the establishment of the centre and its vision.

The level of involvement of the officers in the development of the centre in terms of its vision and philosophy is note worthy. It has emerged clearly that participation of the officers in the drawing up of the mission and the vision has many advantages, some of which are ownership and commitment to the programme.

There seems to be three distinct ways in which environmental education can be promoted and developed: through non-formal or informal approaches and through the formal education system. Non-formal environmental education may be regarded as the type of education that occur at centres like Delta where there are no 'set rules'; groups come and go and the programme is flexible to meet the requirements/objectives of the institutions only. It can be safely said that the environmental education programme at Delta falls in the non-formal category. Even though the programme is diversified, the research has revealed that it is largely directed to school pupils. The largest group of visitors to the centre has been and is the school pupils, a trend that is recorded in the earliest annual reports of the centre.

The question of change at Delta

The research has identified the fact that over the years the centre has changed, that it is still changing and that the change is positive. The centre is a dynamic institution and the reasons for this major influence are varied. In the information gathered, the increased numbers of pupils visiting the centre has been highlighted. This has influenced both the programme, and full involvement of the staff by the board to bring inputs for the programmes has been a

significant factor in the development of new programmes. More significantly, was the changes of the mission and objectives of the centre on which the entire transformation of the programmes has centred. As far as the research could establish, there has always been a willingness from the Board to allow full participation by the offices in determining the direction of the centre. The collective understanding has resulted in a progressive establishment with a progressive education programme. It is concluded that the Board is responsive to the inputs of the officers and are amenable to respond to changes in environmental education and education in general. This largely characterises the centre as a dynamic and living organisation.

It is only recent that the centre started to encompass a broader variety of environmental issues. In addition to ecological topics, political, economic and social issues are included in the programme objectives. This is in keeping with the current understanding of what environmental education is and how it should be achieved. The performance of the centre is strongly associated with continuous evaluation. The study demonstrated the value of continuous self-evaluation and the role of the involvement of the actual practitioners in programme development.

The officers are able to identify potential problem areas and are empowered to come up with the appropriate corrective measures. The situation at Delta seem to suggest that where there is full involvement of officers with limited rigidity from management, positive and effective implementation of action is facilitated. This is perhaps why the centre is able to innovate and come up with new programmes with creative approaches to environmental education.

This situation is unique to Delta as a Section 21 company. Most of the environmental centres in the country operate under the auspices of government departments which are characterised by heavy bureaucracy, and adherence to government policies which can be a great impediment to creativity and inputs by the officers. The officers often have to contend with ideas imposed upon them by seniors who many not necessarily be competent in environmental education. The seniors' beliefs and agenda's often over-ride what the officers on the ground may deem important and this only suppresses creativity.

Methodologies at Delta

Environmental education overtly demands approaches where co-operation and active participation is at

the highest level. At Delta the research has shown that the approaches to teaching and learning has been closely associated with the changes in both environmental education *per se* and the changes at the centre in terms of change in philosophy and focus. In the majority of cases, the officers have varied teaching experience and are able to incorporate a diversity of teaching aids. The settings where the teaching takes place is carefully selected to suite the type of activity. In addition to readily available teaching resources, the officers improvise in order to make the activities most interesting and relevant to the pupils. The methods include learning by doing - through first hand experience, hands-on activities, direct experience inside and outside the classroom, focusing on what is real and relevant to students, learning through discovery.

Closely related to how the officers teach is what they teach. The officers conceded that their knowledge of what the pupils know and expect from the programme is limited and lacking. The relevance of the programme is compromised by this lack of information. The only information available to the centre before the groups arrive is brief and relates to the booking procedure. There is no evidence of any research effort or process to establish the pupils' needs, whereas these are important for the selection of suitable methods and content of a particular activity. The research established further that the pupils do bring along expectations and they do possess some knowledge about environmental issues; in some cases the level is quite sophisticated and ignorance cannot be taken for granted.

Issues of most concern to the pupils centre largely around health, aesthetics and general attitude towards the environment. Other issues pupils mentioned were poverty, lack of food, lack of medical care, lack of land utilisation planning in residential areas and population increase. Pupils expect to learn, more about the environment in general and to be introduced to strategies to solve problems. There are also those who indicated that seeing animals and 'nature' was their main expectation. In some cases expectations related to specific school subject areas.

Even though the prior knowledge, the expectations, and the needs of the visiting pupils are not known to the staff, the programme at the centre still has great value, as the pupils gain knowledge. Generally, a high degree of confidence and enthusiasm about the programme was displayed by both the pupils and the officers. The officers understand fully the role of the

centre and therefore the programme priorities, which are awareness creation for the visitors, and syllabus related topics. The centres programme also encourages pupils to take action and be actively involved in solving environmental problems. The centre can only encourage pupils to take action and is not in a position to ensure that this actually does take place. This conclusion is drawn from the fact that the visitors spend a very limited time at the centre and in most case are visiting it for the first time.

It is fair to say that it is within reach of the centre to promote and influence positive attitudes about the environment. The ultimate value of the centre and its programme lies in its potential to allow the participants to reflect on and rationalise the information they receive, as they are provided the opportunity to comment and form opinions on the information they receive. An emphasis on the understanding of how things fit together the opportunity to promote the desired environmental ethics and behaviour. The centre is encouraged to go beyond the presentation of ecological information only and to focus on issues that affect the quality of life such as pollution, recycling, the influence of population growth and many others. A number of recommendations have been made by both the officers and other stakeholders in this regard.

CONCLUSION

The manner in which Delta is run is no doubt the reasons for its ability to change and be able to keep up with developments in environmental education. This centre is able to focus in the future and is able to position itself appropriately through its dynamic programmes.

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