

**A STUDY OF CHILDREN'S VALUATIONS OF THEIR EXPERIENCES AT A
RESIDENT ENVIRONMENTAL EDUCATION FIELD CENTRE**

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ABSTRACT

This study explores children's valuations of their experiences at an environmental education field centre in the Eastern Cape, South Africa. Patterns and tendencies in these valuations are described and discussed in relation to theoretical issues, the results of studies in other contexts and contextual factors which may have influenced valuations. The primary aim is to inform programme development at the field centre studied, but findings could also be useful for field centres in general and could contribute to the debate about environmental education at field centres. The open-ended worksheet, a regular programme activity, used as a data source is discussed and recommendations made regarding its potential use in evaluation and research. Examples are described to illustrate ways in which some preliminary findings of the study had been implemented at the field centre. The need for further research at the field centre is stressed.

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PREFACE

This study was supervised by Eureka Janse van Rensburg of the Murray and Roberts chair in Environmental Education at Rhodes University. The researcher is much indebted to her for her willingness to undertake an additional supervisory task at short notice. Her perceptive and incisive comments were indispensable.

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CHAPTER 1

INTRODUCTION

1.1. Background to the study

Many environmental issues and problems are facing the modern world and the very survival of humankind may be increasingly at stake. Environmental education is widely regarded as one of the most important means of equipping people to deal with escalating environmental problems [Irwin 1990].

Internationally it is generally accepted that the formal education sector should carry the primary responsibility for environmental education [see e.g. Marcinkowski 1991].

Historically, however, the impetus behind the development of environmental education often came from the non-formal education sector and particularly from conservation agencies [Ford 1981, Irwin 1990]. The contribution of these agencies often included the establishment of resident [i.e. providing dormitory and kitchen facilities] field centres to provide learning experiences for children and adults in natural settings. Especially during the 1960's a large number of resident centres was developed, particularly in the United States of America, but also in the United Kingdom and the Scandinavian countries.

In due course the resident centre concept established itself also in South Africa, perhaps stimulated by the success of the Umgeni Valley Project in Natal [Irwin 1990]. Day centres, which do not provide overnight accommodation, were also developed in response to environmental education needs. At present visits to environmental education centres still provide many South Africans with practically their only environmental education experiences [Slade 1992].

Seen in this light it seems strange that South African resident and day environmental education centres have attracted very little research attention. In contrast a wealth of published research is available from the United States and increasingly also from the United Kingdom [see Chapter 3]. The South African literature provides very little research information useful to field centre practitioners and funding agencies. The study reported here represents an effort to address this apparent void and to stimulate debate about resident centre programmes. O'Donoghue [1989:12], in evaluating certain field centre activities, pointed out that these activities may have "...acquired a mystique that tends to reject close critical symbolizing" and that there are "loose" areas in field centre programmes "...that need considerable descriptive engagement and clarifying discourse."

1.2. Goals of the study

The primary goal of this project is to explore and describe children's 'valuations' of their experiences during an environmental education programme at a resident field centre. The term 'valuation' as used here refers to the value[s] a programme participant places on experiences during or on aspects of an environmental education programme. The researcher was for example interested to explore the relative significance attached to aspects such as recreational activities, aesthetic experiences and ecological field work. The use of the term 'valuation' is further discussed in Chapter 3.

The study will describe emerging patterns in these valuations and attempt to explore patterns and tendencies by relating these to contextual factors which could have influenced the valuations of children. The in-school

environmental education experience of participants and their previous experience of learning in a natural setting are two background factors which will receive particular attention. An attempt will also be made to illuminate observed patterns with reference to theoretical insights gained from the literature. In the light of the lack of critical discourse about field centre programmes, relating observations to aspects of educational theory [in particular learning theory] will be an important subsidiary goal of the project. The ultimate purpose is to inform programme development at the centre where the researcher is employed, but results may also be useful in a wider field work context.

A routine programme activity was used to gather data. This aspect will receive considerable attention in Chapter 4 [Research approach and methods] and in Chapters 9 and 10 where the practical applications of the methodology will be critically discussed.

1.3. Context of the study

The study locality is the Thomas Baines Goldfields Environmental Education Centre situated in a nature reserve near Grahamstown, South Africa. In the literature, and especially in practice, there seems to be confusion and diverse views about field centres and their programmes [Paton 1991]. This situation is perhaps compounded by conceptual difficulties around terms such as 'outdoor education', 'environmental education', 'field work', 'field centre' and 'recreation education' [O'Donoghue 1990].

This study was conducted at a specific type of field centre and thus in a very specific context. A brief overview of the development of field centres internationally will put this context into a broader perspective. In addition it was

deemed necessary to clarify some of the concepts mentioned above and to briefly discuss the characteristics of a number of different types of field centres.

1.3.1. An historical perspective on field centres

The value of outdoor experiences in complementing and enhancing the formal curriculum in primary, secondary and tertiary educational institutions has long been recognised. In the United States of America Joseph Cogswell is credited with the initiation of the first documented 'outdoor education' programmes between 1824 and 1832 [Ford 1981]. In that country the concept of outdoor education evolved through a number of phases which progressively emphasised camping and outdoor adventure [before 1900], 'nature study' [1920's] and recreation [from about 1940 to the early 1950's]. During these early phases American summer camps and school camps emphasised outdoor-living skills and programmes were rarely related to school curricula [Ford 1981].

During the 1950's outdoor education [term defined below] in the United States became strongly curriculum-orientated and field excursions were generally highly structured. Aspects such as group interaction, individual growth and social adjustment tended to be focal points in outdoor education programmes. At the same time there seems to have been a rapid trend towards the establishment of so-called 'resident outdoor education centres' on a large scale. These were usually located in relatively unspoilt natural areas and programme emphasis was almost totally restricted to the utilisation of natural environments for broad educational purposes. In South Africa this conception of outdoor education is still prevalent and a number of programmes, for example the Outward Bound Programmes [Paton 1991], are based on the original American models.

The deepening environmental crisis and growing concerns about the depletion of natural resources gradually caused the incorporation of ecology into outdoor programmes. Initially programmes were restricted to 'teaching about natural resources'. The term 'conservation education' is often used to describe programmes with this emphasis [O'Donoghue 1990]. A further development during the 1960's was the extension of outdoor education and conservation education towards the concept of 'environmental education'. [Ford 1981]. According to Ford the most important shift in emphasis was the expansion of the concept of 'environment' to encompass the total human environment, both natural and man-made.

1.3.2. Clarification of concepts

In this report a number of terms are used which are open to different interpretations. Defining these terms can be difficult and would require a comprehensive discussion which falls outside the scope of this study. Terms are therefore briefly discussed to establish how they will be used in this report.

Outdoor education

The term outdoor education refers to programmes which attempt to use natural environments to foster educational goals such as the development of social skills and the facilitation of personal development [Cooper 1992].

Environmental issues may or may not form part of the goals of these programmes and, when addressed, tend not to be the main or only focal points in the programmes.

Environmental education

The term environmental education refers to programmes which attempt to conform to the following criteria:

- * programmes are designed to be holistic in approach, i.e to emphasise the total human environment in terms of its biophysical, political and socio-economic dimensions
- * programmes focus mainly or exclusively on environmental issues and aspects of social and personal development may or may not form part of the formal programme goals

Environmental education centre

This term indicates an educational facility of which the programmes conform to the two criteria listed above. Although not debated formally in the southern African literature, there is a trend to move away from referring to 'environmental education centres'. It is argued that this terminology could foster the notion that 'environmental education' takes place exclusively at centres in nature reserves, and not also in schools and local communities [Slade 1992]. The term '**field centre**' will be used in this report to indicate an environmental education centre situated in a 'natural' area.

Resident centre

The American term 'resident centre' refers to a facility which specialises in offering courses of more than one day in duration. The term, therefore, implies that sleep-over facilities are provided at the centre. Although rarely used in South Africa, the researcher finds the term useful and it will be used in this report.

Group[s] as used in this report

The term 'group' refers to a number of individuals who visit the centre together. There are thus no cultural or racial connotations attached to the term as used here.

1.4. Thesis in outline

This study is interpretive in approach in the sense that positivist notions of objectivity and generalisability [Howe 1992] does not underpin the research approach. The results and conclusions are contextual in nature and no attempt will be made to generalise findings into other contexts.

Potential users of the findings should evaluate the validity and usefulness of the study for their own contexts ["user or reader generalizability" according to Merriam 1988:174]. To facilitate evaluation, Chapter 2 is devoted to a detailed description of the context of the study.

A review of the literature relevant to the goals of the study is presented in Chapter 3. This review focuses on field centres in general, research on field centre programmes, pertinent aspects of learning theory and on the use of the term 'valuations'.

The research approach and methods are described in Chapter 4 and the method of data analysis in Chapter 5. In Chapter 6 the results on the valuations of participants are reported and patterns described and discussed. Two aspects were identified for more in-depth analysis and discussion. These were the environmental concerns expressed by participants [reported in Chapter 7] and their valuations of 'animal encounters' which are discussed in Chapter 8.

The study was based on data which had been collected since September 1990 over a period of 13 months and it was possible for the field centre staff to implement some of the findings on an experimental basis during the study. In Chapter 9 some of these practical applications are critically discussed to show how results could be used. The conclusions and recommendations of the study are presented in Chapter 10, which includes an assessment of the validity and usefulness of findings.

CHAPTER 2

THE THOMAS BAINES FIELD CENTRE IN CONTEXT

In Chapter 1 it was emphasised that a field centre functions within a specific context. This context should at all times be taken into account when the results and conclusions of the present study are evaluated. A wide and complex range of factors could influence learning experiences at a field centre. Factors which were considered to be relevant, based both on the literature review [Chapter 3] and on the personal experience of the researcher, are identified and briefly discussed in this chapter.

2.1. Locality and natural features

The Thomas Baines field centre is situated in a small [1000 hectares] provincial nature reserve which is located approximately 15 km from Grahamstown, South Africa. The nature reserve is centrally located in the Eastern Cape and is within 150 km driving distance from major urban centres such as Port Elizabeth, East London, King Williams Town and Queenstown [Appendix 1].

Typical Eastern Cape Valley Bushveld is the main vegetation type in the Thomas Baines Reserve. This vegetation generally consists of spiny thickets and can be unpleasant to work in, especially for people who are experiencing outdoor learning for the first time. The reserve is well stocked with large game animals including buffalo, eland and square-lipped rhinoceros. Programme participants generally see a variety of large mammals during their visit, but not necessarily all the species present.

An important feature of the nature reserve is the location of two major storage dams within its boundaries, one of which provides opportunities for water-related recreational activities such as canoeing and swimming. In addition a small river, which is extensively used for ecological water studies, runs through the reserve.

2.2. Buildings and facilities

Infrastructure at the field centre include two dormitories which can each accommodate about twenty people, separate living quarters for teachers/group leaders, an ablution block with hot showers and a modern kitchen. A full range of modern audio-visual equipment is provided, including a large-screen video-projector. Recreational equipment include seven canoes, life-jackets, snorkels and goggles for diving and a spotlight for game-viewing at night.

2.3. Staff at the field centre

The centre staff comprised of two graduate teachers [both males], including the researcher himself, and a diplomate nature conservator [female] with long experience in outdoor teaching. During the study period all courses at the centre were conducted by one or both of the formally qualified teachers on the staff. All staff were employed by Cape Nature Conservation, the official nature conservation agency of the Cape Provincial Administration and thus had personal commitments towards the conservation of natural environments. This is an important aspect of the context, as centre staff could have unintentionally conveyed their own personal commitment towards 'nature', and particularly towards game animals, while conducting programmes. Field centre staff personally plan and conduct all courses offered

to visiting groups, mainly due to the difficult terrain and the presence of potentially dangerous animals. Teachers/ Group leaders were encouraged to get involved by participating with their pupils.

It is important to emphasise that the researcher was personally involved in programmes offered to the majority of visiting groups during the study period. Personal involvement provided opportunities for observation which are perhaps rarely available to researchers. On the other hand it also placed a strong responsibility on the researcher to maintain honesty and rigour during data analysis.

2.4. Utilisation of the field centre by visiting groups

During the study period tariffs charged at the field centre were low [R1,50 per student per night], but high transport costs made it very difficult for people from disadvantaged communities to use the centre. This problem was aggravated by the fact that demand was extremely high and that reservations needed to be made up to one year in advance. In addition high schools found it very difficult to fit long visits to field centres into their full curricula. Resulting from these factors, the centre was predominantly used by relatively affluent schools and by outdoor clubs associated with schools or youth movements.

Visiting group leaders determined the length of stay and courses varied from 2 to 4 days in duration. The average course length during the study period was 3 days, with two nights spent at the centre. While group size varied between ten and fifty individuals, groups generally comprised of about thirty pupils.

Another factor to be taken into account when results are interpreted is that, while the majority of centre programmes took place during the week, some of the groups included in the study were week-end visitors. Week-end groups could conceivably have had different expectations of the centre experience in that they might have had a more 'recreational orientation' towards the visit.

2.5. Approach to outdoor environmental education, teaching methods and programme content

2.5.1. Approach and aims of field centre programmes

Wright [1988] suggested that field centre programmes in South Africa tend to evolve gradually in response to evaluation and to changing needs in society. This also applies to programmes offered at the Thomas Baines field centre and shifts in emphasis and teaching approach are both inevitable and desirable. Irwin & Janse van Rensburg [1991:4] have stressed the difficulties involved in "...evaluating a programme which may be constantly changing to adapt to the needs of participants". Although not an evaluation or empirical investigation, this study did attempt to explore patterns in the way groups and individuals seemed to interpret relatively similar field centre experiences. From this point of view it was considered advisable to select a study period during which programmes were fairly consistent in both approach and content.

The aims of the field centre programmes, as stated in the centre management plan, were as follows:

- [a] To provide a wide range of 'hands-on experiences' in the nature reserve environment, supplemented by relevant background information and clarification of concepts.

- [b] To stimulate reflection on and discussion about these experiences, in the hope that this would lead to individuals critically reassessing their personal views about human/environment relationships.

In addition to these broad aims, a number of specific ideas were consciously and explicitly promoted during field centre courses. These included:

- [a] The notion of 'total environment' with an emphasis on clarifying concepts such as 'environment' and 'nature'.
- [b] A strong emphasis on human/environment interactions, and in particular the relationship between rural and urban environments.
- [c] A focus on human needs as a rationale for responsible behaviour towards the environment. The underpinning ethic of programmes was thus largely homocentric and utilitarian in nature.
- [d] A strong emphasis on the importance of involvement in local action to address environmental issues.
- [e] Efforts to avoid giving the impression that environmental education is primarily concerned with the conservation of endangered species.

2.5.2. Teaching approach- models and methods

The teaching approach of the centre staff was eclectic in nature and included a range of teaching strategies. In the centre management plan the following aspects were encouraged:

- [a] An emphasis on an Interaction model of teaching [Brady 1985]. This involves experiential learning in an interdependent relationship with the teacher and other pupils.

- [b] A balance between active social or physical involvement and opportunities for reflection and individual engagement in learning situations.
- [c] Programme balance between recreation/adventure activities and 'cognitive learning' activities.

2.5.3. Programme content

During the study period the following aspects were more or less consistent in all programmes offered to visiting groups. [See example in Appendix 2].

- [a] A recreational component, which almost always included canoeing, game viewing at night and one or more hikes along different routes. The prevailing weather obviously influenced these activities and some groups took part in swimming and snorkel diving while others did not.
- [b] An 'aesthetic appreciation' aspect which generally included activities such as star-gazing, quiet night walks or solitaires and listening to night sounds.
- [c] Ecological studies, with an emphasis on natural resources of direct relevance to human physical well-being. These included studies on air, soil and vegetation, living space and water. Virtually all programmes had a strong emphasis on water as a natural resource. Water was emphasised because it is a resource of critical importance for a relatively low-rainfall area such as the Eastern Cape.
- [d] Discussions around the relationship between humans and their environment, with an emphasis on clarifying terms such as 'environment' and 'nature'. Consistent efforts were made to emphasise the notion of a 'total environment' which is seen to encompass both natural and human-made features. Audio-visual material was generally used as background to discussions about the influence of people on their environment.

Because some teachers used requested specific additional activities, some programmes also included the following:

- a] Geology and basic geo-morphology, which involved a 'hands-on' study of the relationship between geology, soil types and vegetation.
- [b] A forest study which involved a day visit to the Alexandria Forest Nature Reserve approximately 40 km from the field centre.
- [c] During the study period two teachers requested a study of the intertidal zone on a rocky sea-shore.

2.6. The backgrounds of visiting groups

If one assumes that the existing knowledge and previous experience of learners could significantly affect learning in a new context [see Chapter 3], the background of participants becomes an important contextual issue. Some factors which could be relevant to this study include:

- [a] Previous outdoor learning experiences of groups.
- [b] Previous visits to field centres in nature reserves.
- [c] The approach of the school/organisation to environmental education.
- [d] The language proficiency of participants.
- [e] Socio-economic factors such as access to television and transport [Opie 1990] which could influence the scope of the "world of experience" [Clacherty 1989:11] of a person.

Some of the background factors listed above will be discussed in more detail in Chapter 3, and in Chapter 5 a summary is provided of the main characteristics of each group of pupils included in the data analysis.

2.7. Other contextual factors

Experienced teachers and field officers are usually aware that 'each group has its own chemistry' and that learning processes during field excursions are often unpredictable and even unpleasantly surprising! [Opie 1989]. The overall quality of the field centre experience, and thus the 'valuations' of participants, could be influenced by aspects such as the behaviour of group leaders, group discipline and dynamics, the number of individuals in a group, the gender composition of the group and even the prevailing weather conditions during a course.

CHAPTER 3

LITERATURE REVIEW

Four main areas of the literature are considered to be relevant to this study:

- 3.1. Environmental education field centres in general.
- 3.2. Relevant research in education, from the point of view of qualitative-interpretive approaches and methodology.
- 3.3. The findings of previous studies on field study experiences, related to constructivist notions about the nature of learning.
- 3.4. The use of the construct 'valuations'.

Literature relevant to the specific methods used in this study will be discussed in Chapter 4.

3.1. Field centres internationally

Ford [1981] provided an excellent overview of the development of environmental education field centres in the United States of America. There can be little doubt that the field centre idea originated in the United States and that field centre programmes have been, and still are, one of the main approaches to environmental education in the U.S. The bulk of the literature on field centres is therefore American in origin and the *The Journal of Environmental Education* provided many of the references used in this study.

In a recent paper Cooper [1992:5-8] critically discussed the role of field centres in environmental education in the United Kingdom, and suggested that field centre programmes in Britain emphasise either outdoor pursuits or scientific fieldwork. He argued that both these approaches could be

ineffective in promoting the goals of environmental education and claimed that "there is little evidence to suggest that outdoor centres are succeeding in encouraging a greater awareness and concern for the environment". The present researcher found little evidence of rigorous studies of field centre programmes in Britain.

This literature review was hampered by the lack of accessible material from Europe. Sokolov & Khramov [1988] described the extensive system of field centres in the former Soviet Union and Voordouw [1988] briefly discussed the use of field centres in Europe. The researcher is aware that outdoor environmental education is particularly popular in the Scandinavian countries, but it seems that research reports from these countries are rarely published in english-medium publications. Israel has a strong national emphasis on environmental education [Marshall 1988] and extensive use is made of field centres in a variety of settings. With a few exceptions, e.g. Zoller [1985], the researcher has not had access to work from Israel reported in english.

The lack of relevant southern African research was pointed out earlier and the student of field centres is confronted with a body of literature of predominantly American origin.

3.2. Field centre studies- approaches and methods

O'Hearn [1982:1] has pointed out that American environmental education research tended to be underpinned almost exclusively by quantitative, empirical-analytical [Howe 1992] approaches, perhaps as a result of pressures to 'prove' the effectiveness of programmes to funding agencies. He questioned the value of "using statistically driven models in something as 'diffuse' as environmental education". In spite of O'Hearn's caution, practically all

American studies reported since have been quantitative in approach and have emphasised aspects such as isolating variables [Hungerford & Volk 1990] and measuring changes in knowledge, attitudes and behaviour [Shephard & Speelman 1985]. As a result the reported studies seldom embody qualitative insights into programme processes. In South Africa measurement-oriented studies are regarded by some as inappropriate and relatively valueless in environmental education. O'Donoghue & Taylor [1989:8] stated that:

A useful rule of thumb for the collection of empirical ["Hard"] data on human behaviour is that "measurability" tends to be directly proportional to the triviality of the facts.

This view is currently supported by many South African environmental education researchers and the majority of investigations reported recently are qualitative and descriptive in nature. Examples are Clacherty [1989], Schreuder [1990], Janse van Rensburg [1991] and Barrett [1991]. Other researchers believe, however, that 'measurement-approaches', such as environmental attitude surveys, can provide useful information [Mouton & Harilall 1990], and Opie [1990:3] has criticised what he described as a subjective element in qualitative research. The 'quantitative-qualitative' debate, as it affects the research approach followed in this study, will be more comprehensively discussed in Chapter 4

This being a qualitative study, the researcher was faced with the dilemma that the bulk of reported research findings relevant to field centres could be seen to be of limited validity and usefulness. The researcher believes, however, that, even if they may not have yielded particularly valuable insights into **programme processes**, the reported empirical/analytical studies did **raise issues** which should

not be ignored. Some of these issues are discussed in the next section of this review.

3.3. Field centres from a learning theory perspective

3.3.1. General

From the literature it seems that in South Africa environmental education learning is increasingly viewed from constructivist perspectives [Clacherty 1989, O'Donoghue & McNaught 1989]. This perspective on learning is perhaps encapsulated by Snively [1986:20] who stated that:

Because students have experienced and thought about the world, they come to class with a complex cluster of ideas, beliefs, values, and emotions which they use to understand the world....it is the potential match between these existing cognitive commitments and the new information which determines how the students will respond to instructional inputs.

There is however also an increasing tendency to emphasise the social nature of learning. According to Clacherty [1989:11] "...understanding emerges from a dialogue with one's world of experience and with significant others...". [See also 3.3.5.]. A person's "world of experience" in a field centre context could include existing knowledge and possible previous learning experiences in natural settings, while "significant others" might include field centre staff, teachers and fellow students.

3.3.2. The importance of previous learning

Constructivist theorists generally emphasise the notion that: "The most important single factor influencing learning is what the learner already knows" [Ausubel 1968 in Novak 1978]. According to White & Gunstone [1992:13] "The person's understanding develops as new elements are acquired and linked with the existing pattern of associations between

elements of knowledge". Given the emphasis on 'hands-on', self-discovery activities in field centre programmes, it is perhaps also important to note that "...discovery teaching approaches do not guarantee meaningful learning" [Novak 1978:1], since participants may lack appropriate knowledge to generate links [Osborne & Wittrock 1985].

Recognising the importance of prior knowledge, a number of American field centre studies have concluded that pre-visit preparation by teachers is crucially important to "... provide a scaffolding for subsequent learning" [Marshdoyle *et al.* 1982] on field trips. "Scaffolding" used in this sense implies the provision of appropriate frameworks to make sense of new knowledge. This does not always happen because some teachers do not see environmental education as part of their responsibilities [Opie 1986, Simmons 1988, Slade 1992].

Existing knowledge and experience can be influenced by a wide range of factors other than learning in a formal educational setting [Eagles & Muffitt 1990]. Opie [1990] concluded that factors such as the means to experience the world by travelling, going on holiday or even by the enriching aspects of a family owning a television set could be important.

3.3.3. Previous learning experiences in the outdoors

The participants in the present study varied with regards to previous experience of outdoor learning in a natural setting, including simply being away from home. Some pupils were familiar with learning in a field centre context while for others it was a novel experience. Many researchers have concluded that this factor is of considerable importance in influencing the nature of learning in field trip contexts [see e.g. Falk 1983].

Falk [1983:138] claimed that the novelty of the setting relative to the learner can affect learning and that "lack of familiarity with forested settings placed a learning constraint upon the urban children" in his sample. He however made the important point that, in novel settings, significant learning did occur, but **not necessarily the type of learning planned by programme initiators**. Opie [1989: 66] also pointed out this phenomenon, asserting that teacher and pupils may have different ideas about what was relevant in field trip learning experiences. Falk's research seemed to show that children who were familiar with outdoor learning easily grasped the meaning of ecological concepts, while those in a novel situation rarely did so. Ford [1981:72] maintained that:

Many people, adults as well as children, are not ready to learn ecological principles because the outdoors does not interest them, because they are ill at ease, or because they are so absorbed in staring wide-eyed at the endless and confusing variety of life outdoors that their minds cannot focus on one thing.

The issue of learning in unfamiliar settings has been commented on by *inter alia* Marshdoyle *et al.* [1982] and Mahape & Irwin [1988], with many authors suggesting that repeat visits to the same site may be required if learning is to be maximised. Another factor which could affect the extent to which programme goals are realised, is the length of a programme. Ford [1981:73] suggested that programmes could be too short to develop an "at homeness" which would facilitate meaningful learning, while Keen [1991] similarly concluded that Australian *Sunship Earth* programmes may have been too short in duration. Referring to *Outward Bound* programmes Gillett *et al* [1991] suggested that field trips shorter than 2,5 days in duration seemed to be less effective in fostering Outward Bound goals than longer trips.

Another perspective on the issue of learning in unfamiliar settings was provided by Clacherty [1989: 13], who suggested that meaningful learning could best occur when learning experiences were "situated" in the **actual conditions and context of the learners**. If valid, this claim could have important implications for field centre programmes which are almost always set outside the immediate local context of participants. It is regrettable that this issue has not been critically debated in the South African environmental education literature. The question for example arises of what criteria would determine whether a learning situation is 'situated' or not.

3.3.4. Piagetian perspectives on field centre learning

When data obtained from different age groups visiting the field centre is interpreted, it may be necessary to take into account insights derived from developmental research. Applying Piaget's developmental stages to field centre learning, Rejeski [1982: 29] claimed that: "The emotionality and complexity of many environmental issues would be a perpetual riddle to the child who was incapable of some degree of affective displacement". Rejeski found fundamental differences between senior primary school pupils and adolescents in the way that certain issues were conceptualised.

Opie [1989: 62] claimed that in primary school classes "most children will ... be unable to define abstract ideas". In contrast adolescents would be capable of reflecting on their own thoughts and would generate their own personal interpretations of reality [Rejeski 1982]. It is also possible that the nature of peer group interactions could vary between different development stages [Rejeski 1982] and that group dynamics may significantly affect learning [Ewert & Heywood 1991].

There seems to be increasing doubt that cognitive and moral development should be seen as rigidly stage or age related [see e.g. Phillips 1987] and the claims by Opie and Rejeski quoted above cannot be accepted at face value. The possible effect of 'developmental stages' on the responses of participants in the present study is therefore unclear, and illuminating this issue would be beyond the scope of this report. As a result no attempt will be made to relate the valuations of participants to age or developmental stages.

3.3.5. Learning theory: some direct implications for the present study

Viewed in relation to the goals of this project as outlined in 1.2., the following premises [working hypotheses] seem to emerge from the literature review [see also 6.4.]:

- [a] The literature reported implies that **each individual participant could be expected to make different sense of the experience** and that this would be reflected in their worksheet responses.
- [b] It could however also be premised that similarities in the responses of individuals from similar backgrounds may appear in the data. Since practically all the groups included in the study were school classes or outdoor clubs from schools, individual groups were relatively homogeneous with regards to **experience of environmental education within the school and experience of learning in natural environments** through school field trips. If the conclusions of work reviewed were warranted, it could be surmised that differences **between groups** might become apparent in the data recorded for the present study.

[c] In much of the literature reviewed, it is claimed that the 'sense' made by a learner of a new learning experience is strongly influenced by prior knowledge and experience. If these claims are warranted, it would mean that field centre staff need to be sensitive to possible varying learning needs amongst both **individuals and groups of individuals from similar backgrounds**. This issue directly affects the ultimate goal of this study, which is to **inform programme development at the Thomas Baines field centre**.

Evaluative comment

The researcher is aware that the theoretical issues raised in the literature review are contentious. The work of several environmental education researchers [see e.g. Clacherty 1989, O'Donoghue 1990 and Robottom 1991] is increasingly underpinned by aspects of critical theory and informed by the theories of authors such as Papagiannis *et al.* [1982]. These authors tend to emphasise the **social context of learning**, using constructs such as " 'grass roots' reconstructive action" [O'Donoghue & McNaught 1989]. Although not explicitly stated in the literature, the researcher suspects that at least some of these researchers may regard an emphasis on the prior knowledge and experience of learners as both irrelevant and counter-productive.

This theoretical debate places the present researcher in a dilemma, since the issues require comprehensive discussion beyond the scope of this study. It was therefore considered appropriate to simply summarise the researcher's own theoretical position. The researcher believes that:

[a] Learning occurs through very complex **interactions** between the **conceptual structure of the learner** [which is influenced by previous learning experiences], **individual engagement with new learning experiences** and **'social learning' through dialogue and debate with 'significant others'**. This view is to some extent influenced by the work of Vygotsky [Kagitcibasi & Berry 1989].

This view implies that the valuations of participants in this study could have been influenced by their **background**, by the **formal field centre programme** and by a complex range of **contextual factors**, e.g. group size, peer group interactions, relationship with field centre staff and the behaviour of teachers. The processes involved are so complex that it is impossible to isolate any of these factors in terms of **establishing direct links between e.g. background and valuations** [see also 6.3].

[b] Given this view, the researcher believes that all the factors mentioned in [a] need to be addressed through research. The present study attempted to explore observed patterns in valuations by **tentatively** suggesting the possible influence of certain **background factors**. It is accepted that in-depth qualitative studies are required to illuminate learning processes at the field centre.

It is important to point out that this study explored possible relationships between the background of participant groups and their **'valuations' of learning experiences**. The **'learning outcomes'** of the field centre programmes were not investigated and a possible link between background and **what the children had actually learnt** was not explored.

3.4. The use of the construct 'valuations'

Various constructs have been used in attempts to encapsulate the way people understand issues, react to and interpret learning experiences and express their feelings about issues and experiences. Snively [1986:290] used the term orientation, meaning "... an individual's tendency to understand and experience the world through an interpretive framework embodying a coherent set of beliefs and values." Snively's "orientations" were **aesthetic, scientific, utilitarian, spiritual, recreational, health and safety**. Orientation was also used by Schreuder [1990], implying a combination of values, cognition and action. The construct 'orientation' therefore seems to embody "deeply rooted aspects of our conceptual system" [Snively 1986:3].

The term 'valuation' used in this study refers to more superficial aspects in the sense that it does not claim to reflect the products of a "coherent set of beliefs and values". A degree of congruence between the valuation categories used in this study [Chapter 6] and Snively's "orientations" was nevertheless interesting to note. Valuation simply implies that, when given an open-ended choice, an individual **considered some aspects as worth mentioning and others not**. A central assumption is that **participants would have mentioned only those aspects which were considered to be most significant and meaningful**.

It is important to emphasise that participants may have gained valuable insights and could have valued learning experiences **other than those mentioned in their worksheet responses**. It is assumed that participants had 'rank-ordered' their experiences and had mentioned only those aspects which had made a particularly strong impression on them. This issue is discussed further in Chapter 9.

CHAPTER 4

RESEARCH APPROACH AND METHODS

4.1. Research paradigm and approach

In Chapter 3 it was mentioned that empirical-analytical approaches have tended to dominate field centre research, particularly in America. Recently a number of South African researchers have questioned the appropriateness and feasibility of measurement-oriented research designs in environmental education. Schreuder [1990] initially attempted to derive statistically valid generalisations from a carefully designed evaluation instrument, but was forced to shift towards an approach which was essentially qualitative and interpretive in nature. Similarly Janse van Rensburg [1991:17] argued that "...many questions in Environmental Education cannot, and should not, be addressed by means of the positivist approach to research". O'Donoghue [1990], while researching environmental education resource materials, began to question the basic assumptions of his initial research design and shifted towards a qualitative, case study approach.

From the literature it would seem that there is a general trend for environmental education researchers to favour 'New Paradigm' [Potter 1991] research approaches. The premises of such 'post-positivist' approaches which seem to be most relevant to the present study are summarised below. The discussion is based primarily on the work of Reason & Rowan [1981], Merriam [1988], O'Donoghue [1990], Holderness [1991], Janse van Rensburg [1991], Potter [1991] and Howe [1992].

- [a] Research is contextual in nature and emphasises the development of meaning within a specific context. The research aim is not to attempt to establish 'laws' or to arrive at 'valid' generalisations, but to describe and interpret data within a specific context. Potential users of findings should thus evaluate the value of findings for their own contexts [reader generalizability according to Merriam 1988].
- [b] "... scientific objectivity is in many respects a myth..." [Janse van Rensburg 1991: 17]. It is contended that social research more often than not is fundamentally interpretive in nature and that subjectivity can never, and should not be seen as having to be, eliminated. Potter [1991: 21] however stressed the need for "controls of rigour" within qualitative approaches. According to Reason & Rowan [1981] New Paradigm Research requires 'objective subjectivity'.
- [c] The researcher can not be 'objective' and need not be detached from the research context. On the contrary, the direct involvement of the researcher in the social processes being investigated may lead to a better understanding of the total research context and thus to greater internal validity [Merriam 1988].
- [d] The most appropriate data gathering techniques will differ from those characteristic of empirical/ analytical approaches to social research. The emphasis is on innovative techniques aimed at depth and richer insights rather than on standardised tests and other quantitative methods of collecting information, from which it is intended to derive generalisations such as the establishment of causal links between variables.

4.2. The research design: some guiding principles

Taking into account the specific context of this study, the implications of a 'New Paradigm' research approach and also the needs of colleagues at the Thomas Baines field centre, the following principles were established to guide the research project:

- [a] The primary aim of the research should be to help to improve environmental education practice at the Thomas Baines field centre.
- [b] No attempt should be made to standardise programmes for research purposes or to interfere with their normal processes.
- [c] Data gathering should be non-intrusive and should not interfere with programme processes. This motivated the decision to use a worksheet emanating from a routine programme activity as a primary source of data.
- [d] Field centre staff were concerned about what is commonly referred to as the Hawthorne Effect [Ewert & Heywood 1991]. This phenomenon refers to the fact that participants may be inclined to 'answer to please' **when they are aware that the programme in which they are participating is being researched or evaluated.** This concern supported the decision to use an activity worksheet which was not associated with research or evaluation.

4.3. Background to the main data source

Consistent with the aims and approach of the research project and in line with the guidelines established in 4.2, a routine programme activity was selected for research purposes.

The use of a data source which is not seen by participants as intended for research purposes raises ethical questions

[Nachmias & Nachmias 1987]. Participants and their teachers were informed that responses would be analysed for research purposes only after they had anonymously completed the questionnaire. No negative reactions were encountered from children or teachers and in many cases quick superficial analyses were made and the results shared with participants. Detailed feedback was often given to teachers. Ethical considerations were nevertheless consistently kept in mind in the reporting and discussion of research findings. Groups were for example coded to ensure the anonymity of schools and organisations.

4.4. The worksheet employed as data source

The primary source of data for this study was an open-ended worksheet which was completed by participants during a routine programme activity [see Appendix 3]. It's purpose was to give participants an opportunity to reflect on their experiences at the field centre and to clarify their thoughts about these experiences and about issues which may have been raised during the programme. In the opinion of the researcher, participants tend to enjoy the activity and to value the opportunity provided for personal reflection. Similar exercises are commonly used at field centres in South Africa [Wright 1989].

Content analysis of routine programme material is a recognised technique in research and evaluation [Holderness 1991] and is commonly used when a non-intrusive approach is required [Burrus-Bammel *et al.* 1988]. This technique has been used by *inter alia* Kirk & Karbon [1986] and Cade [1989]. O'Donoghue & Taylor [1989] however warned against the dangers of selective interpretation and oversimplification through quantification of data. These warnings are considered to be very relevant to the present study and will be comprehensively discussed in later chapters.

4.5. Using the worksheet

4.5.1. Timing in the programme:

During the study period this activity was always used on the last day and as near to the end of a specific programme as possible. As a rule the worksheet was therefore completed by participants after all the main programme elements had been completed and before the final summary by the programme facilitator.

4.5.2. Instructions given to participants:

Instructions for completion of the worksheet were always given by the main facilitator of a particular programme. Although no effort was made to establish a standardised procedure, the researcher is reasonably certain that all groups received the following instructions:

- * The purpose of the exercise is for participants to reflect on the field centre experience, to clarify their thoughts on important issues and to consider possible personal meanings emanating from the experience.
- * Participants should aim to complete the activity in approximately 30 minutes, but should not allow time constraints to hinder them in any way. The majority of individuals did complete the worksheet within the time suggested.
- * Individuals are free to decide where to complete the worksheet, either indoors at a table or outside if they prefer. Participants exercised this freedom and some went into the natural bush near the centre or sat next to the dam adjoining the field centre complex.

- * Discussion with friends should be avoided and only personal views given. It was impossible to ensure that 'consultation' did not occur and the only way to deal with this problem was for the facilitator to form a subjective impression through observation. During data analysis the researcher constantly checked for 'plagiarism' and impressions and conclusions will be discussed when the methods are evaluated in Chapter 10.

In addition to the worksheet which formed the main data source, a number of secondary sources of information was used. These sources are described below:

4.6. Background information on participant groups: pre-visit teacher questionnaires

In order to gather more contextual information about participating groups, a questionnaire was sent to each teacher/group leader to be completed and returned before they brought their pupils to the field centre. The questionnaire was designed to provide the following information:

- * number of participants and age or school standard, including variations in age within the group
- * gender composition of the group and ratios where applicable
- * previous field work experience of the group, if known to the teacher
- * previous visits to field centres by the group or individual group members
- * the expectations of teachers and their aims and objectives with regards to the field centre visit
- * specific characteristics of the group which group leaders considered to be relevant e.g. learning problems, discipline and expected level of interest

This questionnaire was often supplemented by additional correspondence, telephonic discussions and pre-visit interviews with teachers. In addition, the researcher was already familiar with some of the schools involved, through previous working relationships with them. The researcher thus had a reasonably good understanding of aspects of the background of each group. In Chapters 6, 7 and 8 this data will be referred to when the valuations of participants are described and explanations for observations suggested.

4.7. Course reports and observations:

After completion of each field centre programme a course report was completed by the staff member responsible for the facilitation of the particular programme. This report was based on general observation and consisted of subjective evaluations of the following aspects:

- * The appropriateness of the programme for the specific group in terms of content, approach and educational level
- * The response of the group as a whole with regards to discipline, interest shown in programme activities, level of knowledge and understanding and degree of interaction with field centre staff
- * The interest and involvement demonstrated by the teacher/group leader, including apparent interest in environmental education
- * Comments about unusual aspects which might have influenced programme processes, such as weather conditions, relationships with the group, specific peer group interactions within the group and changes which may have had to be made to the original course programme
- * General comments based on impressions of programme processes

CHAPTER 5

BACKGROUND TO DATA ANALYSIS

5.1. Groups selected for inclusion in the study

The worksheet on which this study is based, is completed by most pupils visiting the Thomas Baines field centre, but not by all. Groups excluded from this particular activity, and thus also from the present project, are:

- * Children below Std 3 level. These children usually make drawings which are analysed using a similar technique to the one employed in this study. Although results are of interest, they are not reported here
- * Participants in adult workshops, such as courses for teachers or environmental educators. These courses are usually evaluated by means of conventional questionnaires
- * Participants in leadership courses and other specialised programmes
- * Groups who find it very difficult to complete the worksheet in either english or afrikaans

This study was limited to a discreet period of approximately 13 months. The study period, September 1990 to October 1991, was selected to co-incide with a period of relative stability in programme content and teaching approach. It was thought that a study period with relatively stable programmes would enable the researcher to identify and describe patterns in the responses of participants over an extended period.

During the study period the field centre was visited by 45 groups of which 30 were school groups ranging from Std 3 to Std 10. Of these 30 school groups eligible for inclusion in the study, five groups completed only the first page of the worksheet and could not be included. A total of twenty-five

school groups, which represented a total of 627 individuals, were therefore included in the study.

5.2. The characteristics of groups included in the study

While not fully representative of schools in the Eastern Cape, groups from a wide range of backgrounds and contexts were included in the study. It should be emphasised that, while the qualitative nature of this study did not require a representative sample suitable for statistical analysis and generalisation, it was nevertheless decided to include as wide a range of groups as possible. This decision was in line with the **conscious decision that the study should be a broad one and should aim towards describing patterns rather than towards illuminating a small number of issues in depth.** The researcher particularly wished to gain broad insights into the valuations of a wide range of participants before, at a later stage, initiating in-depth studies focussing on small numbers of participants [see also discussion in 5.5. and comments in Chapter 10].

Table 1 summarises the composition and most relevant characteristics of the groups represented in the study. The information was gleaned from the teacher questionnaires [4.6.] and the course reports [4.7.] as well as from personal experience of working with particular schools or groups.

TABLE 5.2.: Characteristics of groups included in the study

Code	N=	Days	Week?	Lang.	Background	Environmental education experience
3A	41	3	W	E	Affluent urban girls school	Extensive EE, no field trips
3B	34	2	W	E	Rural private school, co-ed	Little EE, extensive OE
3C	19	3	W	E	Inner-city co-ed school	Little EE, no field trips
3D	24	2	W-E	X	Enrichment programme	No EE, no field trips
4A	20	3	W	E	Rural girls private school	Extensive EE, no field trips
4B	22	2	W-E	A	Outdoor club: rural town	No EE, extensive camping
4C	36	4	W	E/A	Rural school, co-ed	Little EE, no field trips
4D	34	3	W	E	Inner-city school, co-ed	Little EE, no field trips
5A	45	4	W	E	Affluent urban school, co-ed	Extensive EE and field trips
5B	45	4	W	E	Affluent urban school, co-ed	Extensive EE and field trips
5C	50	2	W	E	Rural private school, co-ed	Little EE, extensive OE
5D	33	3	W	A	Rural school, co-ed	Little EE, no field trips
5E	14	2	W-E	X	Local farm school, boys	Little EE, no field trips
7A	26	2	W-E	X	Township wildlife club	Little EE, no field trips
7B	20	2	W	E	'Gifted class', urban school	Some EE, extensive field trips
8A	15	3	W	A	Geography class, rural school	Some EE, geography field work
8B	26	3	W	A	Geography class, rural school	Some EE, geography field work
8C	9	2	W-E	E	Outdoor club, urban area	Extensive camping experience
9A	23	3	W	E/A	Urban geography class	Some EE, extensive field trips
9B	15	2	W-E	E/A	Township hiking club	Little EE, extensive hiking
10A	12	2	W-E	A	Cultural society, urban	Little EE, some field trips
10B	20	2	W-E	A	Urban outdoor club	Little EE, extensive hiking
10C	17	2	W-E	X	Enrichment programme	Little EE, some field trips
10D	13	2	W-E	X	Enrichment programme	Little EE, some field trips
10E	15	2	W-E	X	Enrichment programme	Little EE, some field trips

NOTES:

- Abbreviations: Number in code indicates school standard
W and W-E refer to week- and week-end courses
E indicates English, A Afrikaans and X Xhosa
EE refers to known emphasis in curriculum
OE refers to Outdoor Education as defined in this thesis
- Field trips refer to long over-night excursions

5.3. General impressions of worksheet responses

For easier reference the questions asked in the open-ended worksheet [see Appendix 3] used in the study are summarised below:

At Thomas Baines I experienced something that is precious to me ...[Draw or write about your "something precious" in the space provided below]

It is precious to me because...

Complete the following sentences...

- * I realised that ...
- * I was glad that ...
- * I wonder why ...
- * I wonder how ...
- * I wonder if ...

In general children exercised full 'artistic licence' in completing the worksheet. Many made drawings, others made factual statements and some even responded by composing poems and songs! Very few participants restricted their responses to questions to one item only. The majority for example interpreted the 'most precious' question in a very broad sense and responded by mentioning a number of aspects or by drawing their impressions of the field centre experience. Drawings were usually of a composite nature and thus included a range of aspects

The result was that responses were difficult to analyse consistently and that the task of working through nearly 700 worksheets proved to be a daunting one! At the same time the researcher was constantly struck by the richness and

sincerity which seemed to characterise the majority of responses. The analysis was therefore also an enriching experience which convinced the researcher that a wealth of worthwhile information was available in the responses.

An overall impression was that only a small proportion of participants were dishonest and insincere in their responses. Most of the participants seemed to have tried to convey their thoughts and feelings truthfully.

5.4. Towards delineating the data analysis

Due to the large number of worksheets analysed and the complexity of responses, it soon became clear that the data could be viewed from a number of different perspectives and with a wide range of specific research questions in mind. Considering the information requirements of the field centre staff and the necessity to restrict the study to the scope of a half-thesis, a number of questions were formulated to define a particular perspective on the data.

Restricting data analysis to these basic questions made it possible to look for only a few aspects in a complex set of responses. While making the task a more feasible one, this approach made it inevitable that the researcher would look at the data from only one perspective. Other perspectives and a large body of information were thus inevitably lost to this study in the process of analysis.

The specific questions investigated were the following:

1. Which experiences, programme aspects or personal reflections tended to be mentioned by participants?

It is assumed that participants would mention those aspects which made an impression on them, had particular meaning to them and were valued in a positive sense [see also 3.4.].

2. **Did patterns seem to emerge from the responses? Could such patterns be related to educational theory, the results of other studies or to contextual factors which could have influenced valuations?** In spite of the recognised danger of oversimplification [O'Donoghue & Taylor 1989], it was decided to investigate possible patterns by quantifying responses in terms of percentages. This is a common practice in content analysis [Cohen & Manion 1985] and was considered to be essential in the context of this large-sample study. Even if analysis is qualitative and interpretive in nature, it could, in the opinion of the researcher, still be necessary to determine how common certain responses are, i.e. whether they are isolated perceptions of individuals or whether they represent patterns. The researcher is aware that this is a contentious issue and that many researchers might disagree with the approach taken in this study. The issue is discussed further in Chapters 9 and 10.
3. **Were there certain patterns in responses which seemed to justify investigation in greater depth?** [The basis on which the above were identified is explained in Chapter 6].

In the next section [5.5.] of this chapter the data analysis technique used is discussed in broad terms. Considerations specific to the further analysis of certain categories of responses will be discussed in the appropriate chapters.

5.5. Data analysis technique- general considerations:

It seems that there are two broad approaches which can be used to analyse and present data of an open-ended nature, such as the raw information obtained from the worksheets used in the present study [Cohen & Manion 1985].

The first approach would be to work with a small sample and to organise and present the data in a qualitative, descriptive way without attempting to quantify responses at all [Merriam 1988]. Such an approach would provide detailed insights into the perceptions of a small number of participants, but would not allow the investigation of possible large-scale patterns/tendencies in responses from a wide range of participants.

The second option is a form of content analysis [Cohen & Manion 1985, Sanders & Pinhey 1983]. This technique is perhaps the most commonly used method of describing qualitative data emanating from open-ended data sources in 'quantitative' or numerical form. It is particularly useful when large volumes of data in the form of narratives of varying length has to be described, as was the case in the present study. This technique seemed to be the most suitable one to employ in the present case, because the main aim of the study was to identify and describe broad patterns in the valuations of a large number of participants.

The following steps in content analysis were followed to analyse responses:

1. A small sample was carefully read to acquire a feel for the nature of the responses.
2. Keeping in mind the basic research questions, about 30 questionnaires were carefully worked through and some initial categories established into which responses could be grouped.
3. A pilot analysis was undertaken on about 50% of worksheets. Some categories were then rearranged and others added or eliminated.
4. A set of key words and concepts was developed for each category in order to ensure that responses were categorised as consistently as possible.

CHAPTER 6

CHILDREN'S VALUATIONS AND EMERGING PATTERNS

6.1. Data analysis:

6.1.1. Introduction

For easier reference the basic research questions which were delineated in 5.4. are summarised below:

1. Which experiences or programme aspects tended to be mentioned by participants in their worksheet responses?
2. Did patterns seem to emerge from the responses? Could such patterns be related to educational theory, the results of other studies or to contextual factors which could have influenced valuations?
3. Did certain patterns seem to justify further investigation?

In order to investigate these questions a broad content analysis was carried out of the worksheet as a whole, treated as a single narrative and ignoring the breaks between the responses to the various questions in the worksheet. Categories of analysis were developed through a number of trial analyses which showed fairly clear patterns in responses. Categories were not imposed on the data and the analysis involved building up a set of categories from the responses of participants. The categories established and definitions for these categories are discussed in 6.1.2. Once categories were established, assigning some responses into specific categories proved to be a difficult task. Vague responses such as 'nature is important' or 'the environment is precious' were difficult or sometimes impossible to interpret when participants did not provide clear reasons for making a statement.

6.1.2. Categories of analysis

In line with the main goal of the study, the data was viewed from the perspective of the explicit valuations of participants. Only clear and unambiguous statements were assigned to categories and the researcher did not attempt to 'read between the lines'. Where the researcher was unable to interpret the meaning of a statement, it was marked 'vague' and ignored. This occurred when participants did not illuminate statements by giving reasons for statements made. This means that the data presented, for example in Table 3, represents only responses which were regarded as relatively clear in meaning. Less than 2% of worksheets contained responses which were discarded.

'Recreation'

All responses which seemed to indicate that participants valued programme experiences from a 'fun' perspective, was assigned to this category. This included experiences such as canoeing, 'mud fights', games during free time, the food provided and the enjoyment of facilities such as hot showers. It is important to note that responses about for example canoeing could be assigned to two different categories. A statement such as 'canoeing was fun' was assigned to the recreation category, while 'learning how to canoe was great' was placed in the 'skills learning' category.

Novelty of the experience

All responses which clearly referred to 'first-time' experiences were assigned to this category. Responses in this category were generally easy to identify.

Aesthetic/Emotional valuations

This category proved to be one of the most difficult to define and it ended up as a 'repository' for a wide range of responses, some of which tended to be broad [for example 'I

love nature']. All responses which seemed to show that aesthetic aspects of the field centre experience were valued, were placed in this category, including statements such as 'nature is beautiful', 'it was wonderful to breathe fresh air' and 'it was lovely to hear the sounds of birds'.

An equally wide range of responses seemed to be emotional in nature, but not really separable from an aesthetic perspective. 'I loved Thomas Baines because I think animals are beautiful' was a typical example of this type of response. Statements such as 'I love the earth' or 'animals are cute and I love them' were assigned to the aesthetic/emotional category.

Cognitive Learning

This category was used for responses which indicated that the participant had valued experiences such as acquiring new or more information, gaining increased understanding of and insight into environmental issues and having the opportunity to explore new perspectives on important issues. Responses in this category were generally easy to identify.

Responses were only assigned to this category if the participant **directly** stated that it was the learning experiences **at the field centre** which were valued, e.g. "I loved learning more about nature". Many other responses also referred to aspects of cognitive learning, but without explicitly stating that it was 'learning about' that was valued. Responses such as "I realised that the balance of nature is important" or "I realised that everything on earth is connected" could imply that learning experiences were valued, but were assigned to categories such as 'ecological perspectives' or 'environmental concern' [see elaboration of these categories]. When the total valuation of 'cognitive learning' is assessed, these three categories should be viewed together.

Skills Learning

Responses which referred to the value of learning how to use a canoe made up the bulk of statements assigned to this category. Two other skills which were mentioned by a small number of participants were those of swimming and orienteering using a map. This was thus a narrowly defined category which did not present interpretation difficulties.

Ecological Perspectives

This category was used to assign responses which showed that the participant was interpreting the field centre experience from an ecological perspective. Although not as clearly a 'valuation' as some other categories, these statements did in the opinion of the researcher imply that participants regarded ecological aspects as significant and meaningful. In this sense they were 'valuations'.

Three broad groups of responses were included in this category. These groups of responses were not analysed separately, but in retrospect it would have been useful to have done so. The three response groups were:

1. Responses in which participants demonstrated a global perspective, typified by statements such as 'everything on earth is connected' or 'I realised that I am part of nature'.
2. Responses which focussed directly on the dependence of humans and other living organisms on natural resources such as water, vegetation, soil and clean air.
3. Mention of ecological principles such as food webs, trophic levels, energy flow and ecological cycles.

Environmental concern

Many participants focussed their responses on environmental issues, indicating that they valued the opportunity to explore these issues. Statements referring to environmental concerns were easy to identify consistently. In addition a separate record was kept of responses which referred to concerns about the nature and behaviour of humans. This category is discussed fully in Chapter 7.

Personal growth

Responses which seemed to indicate that participants had valued opportunities to 'reflect on their lives', 'discover themselves' or to overcome personal fears were assigned to this category. Due to a clear pattern, which is discussed in 6.2.9., religious dimensions of 'personal growth' was assigned to a separate category.

Religious and ethical perspectives

Some participants directly linked their valuations of the field centre experience to their religious beliefs, and responses referring to 'discovering God' or 'getting closer to my Creator' was assigned to this category. A separate record was kept of responses which seemed to indicate an awareness of environmental ethics [see 6.2.9].

The value of social interactions

This category included aspects such as 'making new friends', 'being in nature with my friends', 'getting to know the teacher better' or 'learning to work together'.

6.1.3. Categorising responses: analysis technique

Each of the ten categories described in 6.1.2. was assigned a colour or letter code, for example 'ecological perspectives' was coded green and 'environmental concerns' red. Data was recorded per group on a large poster sheet. When a particular response type was identified in a

completed worksheet, a tick was made in the appropriate block on the recording sheet. An individual was only awarded one score for each category mentioned. This means that the recorded data represents the number of participants, expressed as a percentage, who mentioned aspects assigned to each of the ten categories used.

6.2. Results: emerging patterns

Results obtained are shown in Table 2 below:

TABLE 2. Valuations in ten categories of analysis

Category	No	%
Aesthetic/Emotional	307	49
Environmental Concern	288	46
Ecological Perspective	244	39
Cognitive Learning	175	28
Recreation	175	28
Novelty of experience	156	25
Personal growth	132	21
Religious/Ethical	106	17
Social Interactions	31	5
Skills Learning	31	5
N=627		

An underlying assumption of the technique used in this study is that participants committed to paper those insights and perceptions which were most meaningful and valuable to them. It is assumed that aspects mentioned reflected their 'valuations' of experiences and programme aspects [see discussion in 3.3.5.].

The data shown in Table 2 for example means that 175 participants [28% of the sample] considered recreational activities as significant enough to mention when they reflected on their experiences, but it does **not** imply that the other 72% did not enjoy these activities. The latter group presumably simply thought that other aspects were more significant and thus did not mention recreational activities.

In 6.2.1 to 6.2.10. the data shown in Table 2 is discussed and some observations investigated in further detail. Two aspects, the environmental concerns of participants and their responses about encountering animals, were of particular interest to field centre staff for reasons which will be discussed in Chapters 7 and 8. Data pertaining to these two issues is presented and discussed in these chapters.

The discussion which follows is illustrated by direct quotes from completed worksheets. The researcher had difficulty in deciding from which group[s] to draw excerpts, and ultimately decided to select quotes from groups 10C, 10D and 10E. It was thought that this would enhance the value of the study, as it would provide qualitative insights into the responses of a small group of participants.

6.2.1. Recreational experiences

175 respondents [28% of the sample] explicitly mentioned that they valued recreational experiences. The fact that 72% of participants seemed to have considered **other** dimensions of their experience to have been more significant may be an encouraging observation, given the environmental education goals of the field centre. It seems justified to conclude that children do not only value the "fun" aspects of a field centre visit.

During the analysis of this category it became apparent that there were interesting differences between groups which could justify further investigation. The data obtained from all the groups included in the study is depicted in Figure 1 below:

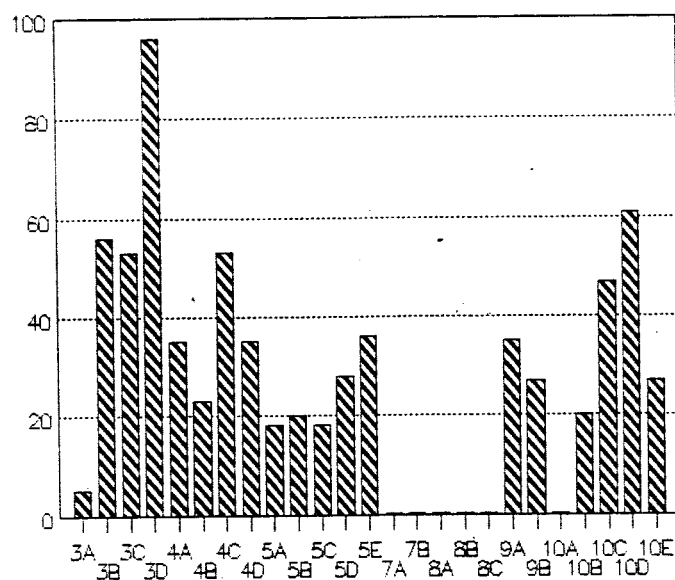


FIGURE 1: Recreational valuations

From Figure 1 it is clear that there were significant response frequency differences between groups. It is especially interesting to note that for six of the high school groups a nil response frequency was recorded in the recreation category. While this does not imply that these children did not enjoy recreational activities, it does tend to show that high school participants, many of whom had had previous experience of outdoor pursuits, may have regarded other programme aspects as of greater significance. This interpretation is supported by the fact that 5 of the 6 high school groups from which responses were recorded, were from low-income areas and generally had 'first-time' experiences at the field centre. The following quotes from groups 10C, 10D and 10E illustrate the type of responses which were interpreted as recreational valuations.

"The most thing I like was to swim..."

"...the most exciting thing to me was to go to the dam and drive the canoes..."

"...I enjoyed my meals very nicely."

"...the townships don't have facilities for such an activity, I really enjoyed it."

6.2.2. Novelty of experience

"It was my first time day in my life to swim in a dam."

"It is my first time in my life to go and touch trees."

"As it was my first day to go to a nature reserve, I've experienced and admired a lot of fascinating things."

"It was my first time to play such a game...so I was very proud of it."

Twenty-five percent of participants in the study made statements similar to those quoted above, with a strong emphasis on the perceived value of the 'first time' experiences which they had at the field centre. 19% of participants singled out seeing wild animals for the first time as being particularly significant to them. Data pertaining to valuations of 'animal encounters' is presented and discussed in Chapter 8.

6.2.3. Aesthetic/Emotional Experiences

In 6.1.2. it was mentioned that responses which related to this category were often broad and even vague. In many cases it would have been necessary to have interviewed participants to determine what certain statements meant, and such responses were ignored. The following excerpts from groups 10C, 10D and 10E illustrate the nature of responses

which were interpreted as aesthetic/emotional valuations and thus assigned to this category.

"I hear the sound of trees, birds and fresh air..."
 "Even the air of this place makes me feel happy."
 "I learn how to make the land so beautiful."
 "...Thomas Baines is the most wonderful and peaceful place that I had ever been in my entire life."
 "I never know how beautiful Thomas Baines is, and the two big Rhino's in front of us."
 "A game reserve is such a lovely lonely place."

Given the high frequency of responses similar to those quoted, the researcher believes that it would be warranted to claim that as many as 50% of participants placed a very high value on experiences of an aesthetic or emotional nature. Although this aspect was not investigated in more detail, a general impression was that high school groups tended to record substantially more responses in this category than did primary school groups.

6.3.4. Cognitive learning

175 participants [28% of the sample] explicitly mentioned that they valued experiences assigned to this category. Seen in conjunction with the 'Ecological Perspective' and 'Environmental Concern' categories, the number of responses in this category seems to indicate that a substantial proportion of participants, between 30% and 40%, placed a high value on the field centre visit as a learning experience. It seems significant that more respondents mentioned learning experiences than did a recreational activity such as canoeing. Some examples of cognitive learning valuations, drawn from groups 10C, 10D and 10E, are given below:

"The nature reserve is not just a place for holiday, it is a place where people can learn a lot."

"This is a nice place for students to visit for better education and knowledge."

"... a great opportunity for us ... to be well understanding about nature."

"We learn how the water gets to Grahamstown".

"In the evening I learn about stars."

Seemingly significant differences between groups emerged in this category and variation between groups is shown in Figure 2 below:

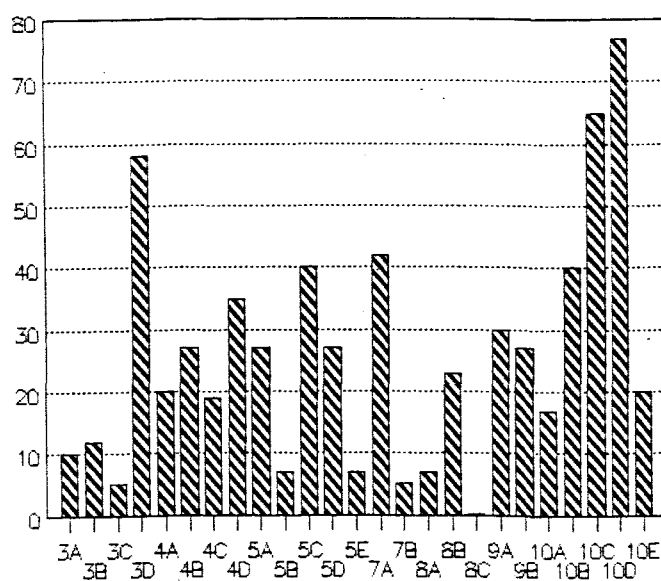


FIGURE 2: Cognitive learning per group

The most significant pattern apparent from the data shown in Figure 2, seems to be that in six groups 40% or more of the group mentioned that they particularly valued the cognitive learning aspects of the field centre programme. Five of these six groups were from township schools in Grahamstown and three of the five groups comprised of pupils involved in academic enrichment programmes. Although qualitative data which could have illuminated this observation was not

collected, the researcher did engage in extensive personal discussions with many of these pupils. Based on these discussions there could be two related explanations for the high value placed on cognitive learning by participants in these groups:

1. These students seemed to have had a strong perception that their normal school education was inferior and inadequate. They may therefore have been particularly motivated to make full use of the enrichment opportunities available at the field centre. The quality of teaching and the availability of sophisticated audio-visual equipment may also have been significant factors.
2. The fact that three of the groups were involved in academic enrichment programmes may have created particular expectations amongst participants. In all these cases enrichment programme teachers did extensive preparatory work.

6.2.5. Learning Skills

While only 5% of the sample [31 individuals] recorded valuations in this category, the distribution between groups was striking. A comparison between all the groups in the sample is shown in Figure 3:

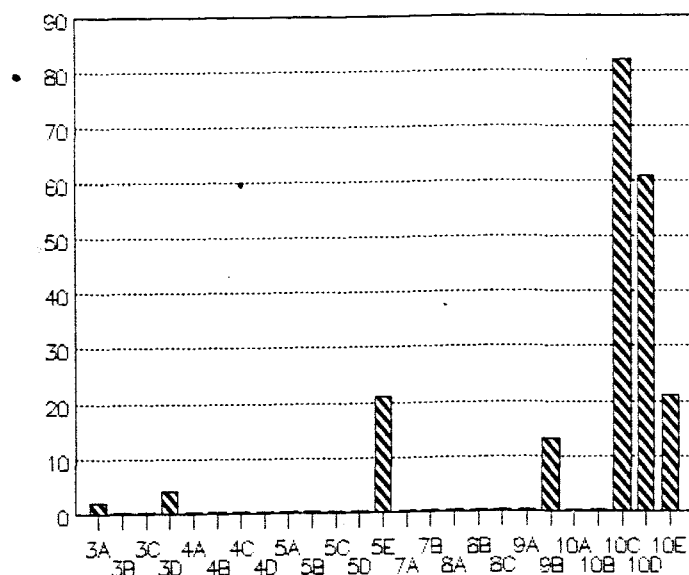


FIGURE 3: 'Skills' learning per group

The data shown in Figure 3 indicates that responses in the 'skills learning' category were recorded only from participants from low-income areas who were experiencing outdoor pursuits such as canoeing for the first time. The exception was group 3B which comprised of a group of affluent urban girls on a first field trip.

One should bear in mind that the home environments of some children do not provide recreational opportunities and, especially in townships, children seldom have the opportunity to develop psycho-motor skills [Moller 1991]. It was therefore not surprising to find that participants in these groups placed a high value on being taught how to "drive a boat"! For these children the outdoor recreation aspects of the programme seemed to have been highly meaningful learning experiences which were perceived to have been of far higher significance than mere 'fun' [see also Paton 1991].

The completed worksheets contained a wealth of qualitative insights pertaining to the claims made above. Due to the limited space available in this report, it was decided to include only a small number of comments from participants in groups 10C, 10D and 10E to illustrate some of these claims. The type of statement quoted was recorded from the majority of the participants in the groups concerned. The researcher believes that these students derived significant benefits in terms of increased self-confidence and sense of self-worth [Ewert & Heywood 1991].

"I never thought in my life I can ride a boat..."

"I never imagined myself riding on a canoe before as I am very scared of rivers and dams but here at Thomas Baines I gained the confidence to do it and it makes me feel some confidence in myself and I'm also proud of myself for gaining that confidence."

"Some of us were unable to swim, but now we can."

"...we learn how to use a canoe. ... always taught us first".

"It was a very good and interesting tour ever in my life because I did something that I didn't think I could do in my life."

"I often thought that paddling with a canoe is a most complicated thing...[but]... I've manage to do that in a matter of seconds!"

"I learnt how to use a map and if you are lost you can get a direction from the stars."

"There are many ways to save the person when is drowning, you can pull him with towel, and you can tell him to brith in."

6.2.6. Ecological Perspective

There was evidence that 244 individuals [39% of the sample] included ecological considerations in their interpretations of the field centre experience. Responses in this 'Ecological Perspective' category varied from simplistic [and sometimes incorrect] statements to very sophisticated insights. It would have been useful to have investigated these ecological responses in detail to establish qualitative differences between responses. This would however have entailed a major project and could not be fitted into the scope of a half-thesis. This study thus did not address the ecological understanding of children or their ability to apply principles in problem-solving situations. Webb & Boltt [1989] published the only study on

this topic found in the southern African environmental education literature and their work should be followed up.

Although not part of the present study, the researcher had previously noted an interesting observation with regards to the ecological category of responses. In earlier years the researcher strongly emphasised basic plant- and animal ecology with an emphasis on biodiversity. When content analysis of the worksheet used in this study was first introduced at the field centre, the absence of ecological insights in responses was striking. Programme emphasis was then shifted towards the basic needs of people and towards global life support systems, and 'ecological' responses immediately began to appear in the questionnaires. The researcher and colleagues believe that, with the earlier approach, children struggled to relate to concepts which they may have perceived to be irrelevant for their every-day lives.

It seems significant that nearly 40% of participants demonstrated some sort of ecological perspective on their experiences at the field centre, and it is interesting to note that this response type was more commonly encountered than those pertaining to recreational aspects of the programme. Viewed in conjunction with the 'Environmental Concern' category, which is discussed below, results may mean that perhaps as many as 50% of participants regarded the ecological aspects of their field centre experience as particularly significant and meaningful. Examples of ecological valuations from groups 10C, 10D and 10E are given below. The homocentric emphasis in all but one of the responses is perhaps noteworthy.

"The only important thing I know is that everyting has its importance in the universe"

"We learn about animals and their relationship with man"

"Even the plants that are around the water we are drinking are important so as to protect soil erosion."

"Snakes are good for us, because they eat rat and mice who eat our food..."

"At Thomas Baines I experienced about the water that we can not live without."

"...it is very important to keep the soil in a good way."

"to survive I must look after plants and soil."

"water is very important, everything is attached on water."

6.2.7. Environmental Concern

288 children, 46% of the sample, explicitly expressed concern for the state of the environment, and 18% [112 individuals] directly linked their concerns to the actions of people. Although not as clearly a 'valuation' as responses in other categories, many participants seemed to have considered this aspect to be the most significant element in their field centre experience. In this sense they could be seen to have placed a higher value on opportunities to explore environmental issues than on other programme aspects.

Given the environmental education goals of the field centre described in Chapter 2, the researcher regarded the environmental concerns expressed by participants as very important. Responses in this category were usually easily identifiable in the completed worksheets and provided rich insights into the way children look at environmental issues. Clear patterns emerged and groups differed strikingly with regards to responses in this category. For all these reasons it was considered to be worthwhile to conduct an in-depth

analysis of environmental concern responses and Chapter 7 will be devoted to the presentation and discussion of results obtained.

6.2.8. Religious/Ethical responses

A distinction was made between religious/ethical and 'spiritual' responses. The latter was defined as involving aspects such as 'self-discovery' and 'coming to terms with who I am' and assigned to the personal growth category.

Thirteen percent of participants explicitly linked the field centre experience to their religious beliefs. This type of response was predominantly recorded from afrikaans-speaking participants and in the case of group 10A, **all** the children attached a religious connotation to their experiences. This tendency was so pronounced that, even in some mixed language groups, the afrikaans-speaking pupils could be identified by looking for responses with religious connotations!

In recent years environmentalists have become increasingly interested in the relationship between religious belief and behaviour towards the environment [SANF 1991]. There seems to be consensus that a link between religion and the **stewardship concept** would determine whether a Christian religious belief would positively influence responsible environmental behaviour [Hurry and Hurry 1989]. In the present study the researcher noted that, in the majority of cases, this link was absent and that participants tended to value the field centre experience as an opportunity to 'get closer to my Creator'. There were however also responses which clearly implied a notion of stewardship, for example "God created everything on earth, living or non-living so everything has the right to live freely." and "Biblically God created man and animals, he gave us commandments to look after the animals, not killing them." [Both quotes from group 10E].

Only 3% of respondents made statements which could be clearly related to environmental ethics. The majority of these responses referred to 'animals also have a right to live' and similar meanings.

The issue of religious valuations of the field centre experience will not be pursued further in this report. It is perhaps sufficient to conclude that field centre staff should be aware of the fact that people may interpret a learning experience in ways which could differ drastically from those hoped for by programme planners [Opie 1989]. This observation also leads one to suggest that religion/environment relationships should be addressed at the Thomas Baines field centre in sensitive, non-threatening ways.

6.2.9. Personal growth

Twenty-one percent of participants mentioned that they felt that they had benefitted greatly from the field centre experience in terms of 'discovering themselves', 'reflecting on life' or overcoming personal fears. Twenty-nine participants, predominantly from low-income urban areas, seemed to regard having overcome fears of being alone or of 'dangerous animals' as very significant. The following excerpts from groups 10C, 10D and 10E illustrate personal growth valuations:

"I can say I'm probable completely changed from what I was before this trip to Thomas Baines"

"... it makes me feel some confidence in myself and I'm also proud of myself for gaining that confidence"

"I have learned many things which I think are the most important to me and for the rest of my life I will always think about them."

"The scholar is very proud of wild animals [*being*] scared of us"

Fostering personal growth of individuals is not an explicit aim of the Thomas Baines field centre programmes and during the study period there were no direct attempts to facilitate this aspect. The data seems to indicate that programmes which emphasise environmental issues could contribute towards the objectives of 'outdoor education' as exemplified by Outward Bound Programmes [Ewert & Heywood 1991]. Responses in this category were not investigated in more detail and will not be further discussed in this report.

6.2.10. Social experiences

Responses such as 'making new friends', 'getting to know our teacher better' and 'learning to work together' were included in this category and only 31 [5%] of participants mentioned such aspects in their responses.

6.3. Discussion: Chapter 6 in perspective

The bulk of the data obtained in this study was presented in Chapter 6. Patterns and tendencies were apparent in the data, notably with regards to differences in valuations between groups. Given the sensitive and contentious nature of focussing on differences between 'groups' [Bak 1992], even in the absence of cultural connotations, the researcher felt that it would be appropriate to attempt to place the data in perspective before proceeding to further chapters.

There can be no doubt that there were striking response frequency differences between groups in some of the categories of analysis. Depending on one's theoretical stance, it is however possible to propose at least three hypotheses which could account for observed patterns. These are:

1. Individual groups in the study were relatively homogeneous in terms of environmental education background and previous experience of learning in a natural environment. Although each member of a group had an individual interpretation of the field centre experience, in some groups there was a high degree of commonality in responses which could be linked to their homogeneous educational backgrounds.
2. Background factors did not influence the valuations of participants and observed patterns could be accounted for by differences in programme content and teaching approach of which field centre staff may not have been conscious. Staff may have subconsciously adapted their approach as a result of preconceptions about groups, and programme processes during different courses might have been substantially different.
3. Valuations were influenced by the way in which the existing knowledge and experience of participants had **interacted** with the learning processes at the field centre. Observed patterns in valuations can be accounted for by surmising that **both** the backgrounds of relatively homogeneous groups **and** learning processes and contextual factors had influenced the way in which participants had interpreted their field centre experiences.

Intuitively the researcher strongly inclines towards hypothesis 3, and such an interactionist view in fact forms the basic premise of the present study. The interactions involved are however seen to be so complex that is **impossible to know in what ratio background factors and programme processes had respectively influenced the**

responses of participants, or even which influencing factors may have been involved.

At best the data therefore suggests that factors such as the previous environmental experience of groups **could** have influenced the way in which participants in those groups had interpreted the field centre experience. While direct links are thus not claimed, the researcher does believe that the evidence is strong enough to suggest that the possible influence of background factors should at least not be ignored.

The researcher wishes to **emphasise that he is not advocating 'different programmes for different groups'**. What is claimed is that field centre staff should be sensitive to possible differing learning needs and should allow for these needs in programme development. A pertinent example would be the observed tendency of afrikaans speakers towards religious interpretations. It is not claimed that 'special' religion oriented activities should form the focus of programmes for these groups, but equipping staff to deal with the issue when appropriate is advocated.

In the experience of the researcher, varying attitudes towards hunting found in groups from different backgrounds provide another pertinent example of the issues involved. In some rural areas many children 'shoot on sight' and this is the **norm in those communities**. In contrast many urban children hold emotional views and are opposed to hunting. In this and similar cases field centre staff need to decide how to deal with possible differences between groups from different backgrounds. This problem is discussed further in Section 9.6.2.

CHAPTER 7

ENVIRONMENTAL CONCERNS

One of the issues identified in Chapter 6 as warranting more detailed analysis and discussion was the environmental concerns expressed by participants. The reasons for devoting a full chapter to this topic were:

- [a] Helping people to become aware of, concerned about and willing to participate in the solving of environmental problems is one of the aims of the Thomas Baines field centre. The researcher therefore felt that investigating the environmental concerns of participants in more detail could provide useful information for programme development, the ultimate goal of this study.
- [b] In 6.2.7. it was shown that 46% of participants related the field centre experience to their environmental concerns and had therefore valued opportunities to explore issues. Environmental concern was thus one of the main 'valuation categories' in the study. This category also seemed to show significant patterns in responses which could perhaps be related to theoretical and contextual factors.

7.1. Data analysis

7.1.1. Objectives of the analysis

1. To explore patterns in environmental concern valuations.
2. To determine which environmental issues seemed to be uppermost in the minds of participants and were most often mentioned.

3. To determine what percentage of participants directly linked environmental problems to human attitudes and values. In this respect the researcher was interested to explore to some extent the children's views about the underlying causes of environmental problems, and in particular the influence of human values.

7.1.2. Analysis technique and categories established

This analysis was carried out through a content analysis of the worksheet as a whole, using a colour-coding system to facilitate consistent interpretation. Separate records were kept of the number of individuals in each group which expressed environmental concern [reported in 6.2.7.] and of individuals who expressed concern about the values, attitudes or motives of people.

Participants often expressed concern in broad terms such as 'killing the world' and 'destroying the earth'. A 'vague/general' category had to be created for responses of this nature. The categories established for this analysis are shown in Table 3.

Table 3: Environmental issues- categories of analysis

Pollution/Littering	References to pollution/littering
Species Extinction	References to poaching, endangered species
Overpopulation	Human population growth
Natural Resources	Water, clean air, soil, forests
'Luxury' killing	Sport hunting, fur trade
Ecological balance	Disturbance of ecological relationships/balance
Development	Need for more farms, residential areas, industry
Vague/General	All non-specific responses

7.2. Results and discussion

7.2.1. Environmental concerns: percentage of individual responses per group.

288 participants [46%] expressed clearly identifiable environmental concerns. Response frequencies showed variation between groups and in some groups no statements of environmental concern were recorded, while in other groups practically all the participants expressed concerns. In Table 4 the data obtained is arranged in frequency intervals to show emerging tendencies among groups. Groups are coded to ensure anonymity of specific schools and organisations.

Table 4: Frequency of environmental concern responses per group, arranged in frequency intervals.

Frequency Intervals	Groups
0-20%	3D, 3E, 5G, 7A, 10C
20-40%	4B, 5E, 10A, 10E
40-60%	3B, 3C, 4C, 4D, 5C, 5F, 8A, 9A, 9B, 10D
60-100%	4A, 5A, 5B, 7B, 8B, 8C, 10B

In the discussion which follows the data depicted in Table 4 is related to the characteristics of the groups represented in each frequency interval.

Interval 0-20%:

In this frequency interval groups 3E, 7A and 10C were from a township background, group 5G was from a rural farm school and group 3D from a low-income area in Port Elizabeth. In three cases [3E, 5G and 7A] no environmental concern responses were noted at all.

Groups 3E, 5G, 7A and 10C were xhosa-speaking and some participants clearly had difficulties in expressing themselves in english, particularly when they wished to express feelings or explain their views about abstract concepts. The researcher was however personally involved with the programmes offered to these groups and as such was able to engage in numerous personal discussions with the children. **The researcher has no reason to think that the data does not reflect their real valuations.**

Interval 20-40%:

Groups 4B and 5E comprised of afrikaans-speaking primary school children and their responses were in their first language. Neither group had been exposed to environmental education in their school contexts and both groups were on their first visit to a field centre. Group 10A was an afrikaans-speaking Land Service Group of which virtually all the members seemed to have had a strong religious orientation. Group 10E comprised of Std.10 pupils from a township secondary school, some of whom had had previous field trip experiences.

Interval 40-60%:

In this interval groups 3B to 5F were from english medium primary schools in affluent areas. A common characteristic of these schools were that they offered 'outdoor education' programmes, but did not seem to emphasise in-school environmental education. Groups 8A and 9A were from high schools which offered field excursion programmes, while 10D comprised of township matric students. Some of the students in the latter group were members of an active wildlife club at their school.

Interval 60-100%:

Groups 4A, 5A and 5B were from primary schools known for extensive field work programmes. The researcher is aware

that teachers at these schools also include environmental education in the formal curriculum. Group 7B was a select group of gifted children from an urban high school, 8C and 10B were high school wildlife clubs and 8B was a group of geography students from a school whose teachers demonstrated growing interest in environmental education.

Discussion

The data reported above should be seen in the same perspective as that in Chapter 6 [see 6.3.] and the same three hypotheses could explain the observed patterns. Taken at face value, the data seems to indicate that groups with limited or no previous experience of learning in natural settings may have tended to focus on and value experiential aspects rather than conceptual aspects, such as discussions of environmental issues [see Falk 1983]. Slade [1992:82] furthermore suggested that "there exists a close relationship between the prevailing ethos within a school and the environmental sensitivity displayed by the children". The results of this study seem to support such a notion, as does the personal experience of the researcher.

The possible influence of programme processes should however also be taken into account. It is for example possible that the environmental issues addressed in the programme could have been **irrelevant to the local environments of some participants and that this was the reason for them not regarding it as particularly meaningful**. It is equally possible that, in at least some cases, environmental issues could have been **taught in inappropriate ways**. The possibility that field centre staff had subconsciously reacted to what they perceived the needs and existing knowledge of groups to be cannot be discounted either. **Staff might have shifted programme emphases in response to where they thought 'the children were at'**. In the field centre context these possibilities need to be investigated in depth

and the results and conclusions of this study should be seen as tentative suggestions. As discussed in 6.3., the researcher inclines towards the view that background factors and programme processes had interacted to influence the valuations of participants.

From group discussions the researcher gained the impression that children from particular backgrounds were aware of and concerned about many environmental problems **before their visit to the field centre**, while participants in some other groups were generally uninformed about environmental issues. Although it was not explored in the present study, this observation could have implications for programme development [see recommendations in Chapters 9 and 10].

7.2.2. Environmental issues mentioned by participants

An analysis of responses about environmental issues is shown in Table 5 below.

Table 5: Environmental issues mentioned by participants.

Issue	Number	Percentage
Extinction of animals	129	20,3
Pollution	86	13,6
Killing for pleasure/greed	32	5,2
Depletion of natural resources	25	4,1
Disturbance of ecological balance	15	2,3
Development	13	2
Overpopulation	4	0,6
Vague/General	116	16,6

N = 288

The data depicted in Table 5 should be viewed in relation to emphases in the field centre programmes. During the study period **efforts were made to avoid any direct emphasis on wild animals and their conservation**. Other than game-viewing as a recreational/aesthetic activity, programmes did not contain any mammal-related activities and staff tried to avoid references to 'endangered species' [see explanation in Chapter 8]. In spite of these attempts, the issue of 'people killing wildlife' remained the most common environmental problem mentioned by participants of all ages and backgrounds. In a separate analysis, which is reported in Chapter 8, it was further found that nearly 50% of respondents explicitly mentioned that they regarded 'seeing wild animals' as one of the most significant aspects of their experience at the field centre.

It is possible that an emphasis on the conservation of large game in the media, notably television, might have a strong influence on people's perceptions [Eagles & Muffitt 1990] and that participants in the field centre context almost automatically associate 'environment' with wildlife. One of the field centre staff is investigating this issue as a follow-up to the present study. The location of the field centre within a nature reserve could also have influenced participants towards a wildlife orientation in their interpretation of the field centre experience.

It was nevertheless somewhat disturbing to note that some of the most pressing environmental issues, e.g. overpopulation and depletion of natural resources, seemed not to be uppermost in the minds of even high school participants. This observation is corroborated by notes taken by the researcher during group discussions over a number of years and which showed that 'pollution' and 'extinction' were sometimes the only issues with which pupils were familiar.

7.2.3. Concerns about human motives and attitudes

Eighteen percent of participants [112 individuals] explicitly related their concerns about environmental issues to human attitudes. Responses tended to be general in nature and the most common responses referred to the 'indifference' and 'uncaring nature' of humans. Words like 'destructive', 'cruel', 'greedy' and 'selfish' were also commonly encountered.

As could be expected, the highest response frequencies occurred amongst groups which also demonstrated high overall environmental concern. Amongst these groups more than 30% of participants made strong statements concerning the nature of human attitudes. The researcher's overall impression was that children were perhaps confused about the underlying causes of environmental problems and that many of the responses tended to border on despair! Storm [1990: 31] warned against an "evangelical approach to environmental education" and asked: "Where do we draw the line between alarming children and enlightening them?"

The researcher often had the impression after group discussions with children that many of them were in fact 'alarmed rather than enlightened' and that they had conceptual difficulties around the causes of environmental problems. Along with Storm [1990] the researcher is of the opinion that environmental educators should approach the teaching of complex issues with great care, especially when young children are involved. Rejeski [1982: 28] warned that "The emotionality and complexity of many environmental issues would be a perpetual riddle to the child who was incapable of some degree of affective displacement". Drawing on Piagetian theory, Opie [1989] also maintained that some environmental issues could be too complex for young children to conceptualise adequately. The researcher believes that this issue requires further research attention.

CHAPTER 8

VALUATION OF ANIMAL ENCOUNTERS

As described in Chapter 6 encounters with wild animals was one of the most common aspects mentioned by participants as a precious experience. In Chapter 6 animal related responses were categorised according to the context in which they were mentioned, for example under 'novelty' or 'aesthetic/emotional'. Given the frequency of 'animal' responses, it was considered worthwhile to investigate this aspect in more detail. It was also thought that information which might be useful to nature reserve planners could emerge from the data.

8.1. Data analysis

For the purposes of this analysis only the first page of the research worksheet was considered, i.e. the question about the 'most precious experience[s]' at the field centre. This was done because the researcher was interested to know how many participants specifically considered animal encounters to have been the **most** significant and meaningful aspect of their experience and what **reasons** were given for this choice. The categories established to analyse these reasons and results obtained are shown in Table 6.

The analysis technique used was identical to the procedure described in Chapters 4 and 5. Because only the 'most precious' question was considered, responses were generally specific and unambiguous and consistent analysis was not difficult to achieve. At the same time it should be emphasised that an analysis of both pages would have yielded a far higher animal response frequency than is reported here.

Table 6: Reasons given for regarding animals as important

Category	Number	Percentage
Novelty/New experience	121	37
Emotional/Aesthetic	70	21
Interesting to 'learn about'	59	18
Rare/Endangered Status	45	14
Animals are dangerous	20	6
Utility value	7	2
Ecological importance	8	2
Ethical/Religious reasons	7	2
		N= 327

8.2: Results and discussion

8.2.1. Patterns in valuations

Forty-two percent of participants [327 individuals] included animal encounters amongst their 'most precious' experiences. Response frequencies for animal valuations seemed to show significant differences between groups. A graphic comparison of all the groups in the sample is shown in Figure 4 below:

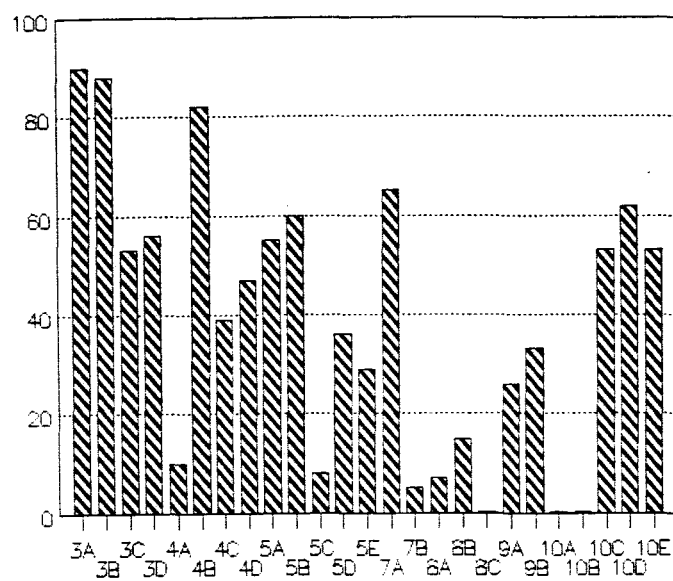


FIGURE 4: Animal valuations per group

The following tendencies seem to emerge from Figure 4:

1. With the exception of groups 4A and 5C, primary school respondents generally seemed to put a very high value on animal encounters. It is significant that the exceptional groups were all from schools which are known to have structured 'outdoor education' programmes. Most children in these groups had been on field excursions previously and it is likely that a high proportion had previous experience of national parks and nature reserves, perhaps with their parents. Groups 3A and 3B were from schools similar to the above, but on their first school excursion to a field centre in a nature reserve.
2. High school respondents were less likely to single out animal encounters as particularly significant experiences. The exceptions were groups 7A, 9A, 9B and 10C, all of which came from a disadvantaged background and were exposed to a novel experience. The data does not imply that high school participants did not value animal encounters, but merely indicates that, seen from their perspective, other aspects of the field centre experience may have been more significant.

It is clear that many participants put a high value on seeing and experiencing wild animals.

8.2.2. Reasons given for regarding animal encounters as of particular significance

Most responses focussed on the novelty of seeing wild animals for the first time, while 21% of participants viewed animals from aesthetic/emotional perspectives. Some implications of these results are:

1. The expectations of visitors to natural areas could be focussed primarily on experiences of an aesthetic nature and on the possibility of 'new' experiences [Gear 1988]. In the present study nearly 60% of responses about animals fitted into these two categories, while 20% seemed to specifically value learning more about animals and their ecology. The researcher's own experience tends to confirm this 'ratio of needs' [see also 6.2.2. and 6.2.3].
2. Approximately 40% of respondents expressed very strong emotional views about wild animals and their conservation. A possible consequence of such emotional views is that future wildlife management through controlled hunting and culling could become difficult as a result of public pressure [see also Eagles & Muffitt 1990].
3. During the analysis of responses about animals, notes were kept about which game species were most often mentioned. In the present study the Bontebok, a very colourful and graceful antelope, was mentioned in preference to a large impressive species such as the Red Hartebeest, which was seen almost as often. The single remaining Black Wildebeest in the nature reserve was also frequently mentioned, partly due to the curious and striking appearance of this species and partly because the children felt sorry for him! Mahape and Irwin [1988] found a similar preference for colourful species amongst children visiting the Pilanesberg National Park in Bophuthatswana.

4. A small proportion [6%] of participants gave the 'dangerous nature' of wild animals as a reason for regarding animal encounters as a 'precious experience'! These children were all from an urban background, seemed to have been genuinely afraid of the animals and often initially asked why one would want to protect animals which could be dangerous to people. The researcher thinks that many more respondents shared this view, in spite of not mentioning it.

Many of these participants however claimed that they had changed their views as a result of the field centre experience, as is demonstrated by the following excerpts from groups 10C, 10D and 10E. The researcher is of the opinion that to some participants the concept of a nature reserve was totally new and that such a basic issue was not adequately addressed in programmes.

"Now I know the difference between dangerous animals and animal[s] which are not dangerous at all".

"Animals are not dangerous like we think...we saw that they are also afraid of us."

"The scholar is very proud of wild animals [*being*] scared of us."

"...I experienced about the animals that they are not quite angry, even the snake is scared of us."

5. Very few participants placed wild animals and their conservation in a religious or ethical perspective and statements such as 'because they have a right to live' or 'because God created them' were rarely recorded.

Given the current environmental education emphasis on issues "...causing the day to day hardship and death of people..." [Irwin 1990:22], the issue of wildlife conservation, particularly in protected areas, places this researcher in a difficult position. As an environmental educator the researcher is concerned that 'big game conservation' could over-shadow issues which are more crucial to human survival, but as a committed nature conservation officer the high value placed on wildlife by participants in this study was very encouraging!

In a time in which the continued existence of protected areas in South Africa is perceived to be under threat [Lensing 1992], this project continually reminded the researcher of the importance of natural areas being made accessible to people. One wonders if people could really value wildlife without opportunities to experience animals in their natural habitats. In this respect the researcher found the following excerpts from group 10E particularly striking:

"From my point of view the visit was the most important and enjoyable one I'd ever had. As it was the second time I've been here, the reserve became more interesting to me because I almost understand and follow everything being done here."

"I used to think that there is no sense in Nature Conservation and even asked myself how one can keep conserving dangerous animals...I was proved wrong in my habitual way of taking no notice of Nature."

"I think all the people should take care of the land and all the living things in it so that we could see the living things and not hear the old people say there were animals, but they have vanished."

CHAPTER 9

RESEARCH METHODS AND USABILITY OF FINDINGS

In this chapter the validity, generalisability and usefulness of this study are assessed and some implications for applying the findings discussed. The use of a programme activity as a research tool is discussed and ways in which field centre staff have applied the methods and findings are described.

9.1. General comments

This project set out to describe broad patterns in the responses of participants. The researcher wished to gain an 'overview' of what was happening in field centre programmes rather than to illuminate specific issues in depth. The decision to undertake a broad study unfortunately made it impossible to report in detail the valuations of individuals or the variations within groups and this report has therefore tended to focus on variations between groups. Observed patterns were related to background and contextual factors which could have influenced valuations. The researcher was well aware of the pitfalls inherent in such an approach [6.3. and 9.6.2.], but nevertheless felt that this emphasis was justified from the point of view of programme development [see discussion in 9.6.2.].

The researcher recognises that many of the aspects dealt with in this study require further research and it is envisaged that follow-up studies will be undertaken at the Thomas Baines field centre.

9.2. Internal validity

The methods used in this study are consistent with a qualitative, interpretive research approach. The data analysis was based on the researcher's interpretation of the

meaning of participants' responses and the establishment of analytical categories was similarly based on subjective decisions. The methods were designed to maximise consistent interpretations and, in spite of the difficulties involved in categorising certain responses, the researcher is fairly certain that overall results at least reasonably reflect the valuations of participants at the time when these were recorded.

It is recognised that the valuations of participants could change over time [Hannold 1984] and that participants might have responded differently if the worksheets were completed in a different setting or if a different data gathering technique had been used [O'Donoghue & Taylor 1989]. If a smaller sample had been used and if adequate time had been available, it would have been possible to have compared the present data with valuations recorded for example three months after the visit.

It is difficult to ascertain whether participants were honest and sincere in their responses. **At the same time the researcher finds it difficult to imagine a method which would be more likely to elicit sincere responses** [see also O'Donoghue & Taylor 1989]. Participants did not know that their responses would be used for research purposes and the method used was probably less threatening than interviews or formal questionnaires would have been [see also Kruger 1992:44]. These factors lead the researcher to doubt the value of 'checking' the results by means of other techniques such as interviews. If there were to be inconsistencies, which set of data would be 'most valid'? The overall quality of responses caused the researcher to believe that the vast majority of participants really did record what was valuable and meaningful to them.

Xhosa speaking groups were requested to complete the worksheets in english, their second language. The researcher made one pilot attempt to have responses in xhosa translated into english , but could not be certain how the translator had interpreted the meaning of responses. This practice was therefore abandoned. Responding in a second language could have influenced responses in the sense that some participants might have found it difficult to express themselves in english, particularly when abstract concepts were involved. The fact that xhosa speakers, other than the Std 10 students in groups 10C,10D and 10E, tended to list experiences in concrete terms perhaps supports this interpretation. While it was possible to identify the valuations of younger xhosa speakers, the researcher's impression was that only the Std 10 students were able to more or less freely express their meanings in abstract terms.

While the language issue was recognised as important, illuminating it would have involved a major project in itself and it was not feasible to attempt it. The researcher does not know to what extent language problems could have affected the validity of results and feels that this issue requires a great deal of research attention in the South African context.

9.3. External validity: generalisability and usefulness of results

The concept of reader generalisability [Merriam 1988] is applicable in this study. In Chapter 2 the context within which the study was conducted was described in detail and potential users of results should assess generalisability into their own specific contexts.

Being interpretive and contextual in nature, this study aimed at improving practice in the specific context of the

Thomas Baines Gold Fields Environmental Education Centre. Viewed from this perspective, external validity and generalisability are of less importance than internal validity. To demonstrate the usefulness of results, some specific examples of how the methods and findings of the study have been applied at the Thomas Baines field centre are described in 9.6.

The results reported in Chapters 6, 7 and 8 were generally congruent with theoretical expectations and with the results of previous studies in other contexts and in which other methods were employed [see Chapter 3: 3.3.1 and 3.3.2]. This congruency may indicate that the methods used in this study could have a degree of validity. The researcher nevertheless sees the results of this study as contextual and does not claim that conclusions have any external validity.

9.4. The use of an open-ended programme activity as a data source for research

According to O'Donoghue & Taylor [1989] some of the advantages of using an open-ended, routine programme activity for research purposes are that:

- * the technique is non-interfering and unobtrusive
- * it is unlikely that participants would 'answer to please'
- * responses are not limited to issues preconceived by the researcher and formulated as specific questions
- * opportunities are created to discuss with participants issues emanating from the analysis

The researcher's experience in the present study tended to confirm these advantages [see also 9.2.].

A number of disadvantages however also became apparent during the study. These were:

- * due to the nature and purpose of the worksheet questions, it was not possible to elicit specific information, for example about the way in which participants understood ecological principles
- * the fact that a participant did not mention a specific aspect did not imply that he/she did not value that aspect at all, it merely indicated that other aspects may have been regarded as more significant.

For the reasons mentioned, this technique should not be used as the only source of information when programme changes are considered. At the Thomas Baines field centre the technique is used to identify tendencies in children's valuations which seem to require more detailed investigation through participant observation, group discussions and evaluative staff discussions.

9.5. Data analysis: the advantages and disadvantages of quantifying open-ended data

O'Donoghue & Taylor [1989] warned against the possible dangers attached to attempts to quantify data obtained from open-ended activities such as the data in this study. By focussing on groups rather than on individuals and by categorising responses, much of the original richness of meaning could be lost and, as a result, valuable insights might be oversimplified and even trivialised.

The researcher is however of the opinion that, depending on the aims of a study, much could be gained from quantifying open-ended responses. Some advantages are:

- * the possibility of assessing how common specific responses are. Without quantification there is a danger of overestimating the significance of responses which may have been recorded from only a few respondents. While recognising the possible significance of 'minority views', the researcher has experienced cases where field centre staff were influenced by isolated perceptions, without ascertaining what the 'spread' of responses were.
- * Quantification of a large number of responses, recorded over a relatively long time-span, allows the researcher to gain a broad overview of the phenomena which are investigated. The researcher believes that a small-scale case study would not have informed programme development to the extent that the present study was able to do.

In retrospect the researcher believes that rich qualitative insights were in fact lost through using a large sample, categorising responses, focussing only on selected questions and emphasising groups in the analysis. Considering the aim of the study, which was to describe patterns in the valuations of participants in order to inform programme development, it is nevertheless felt that the advantages of the selected methods outweighed the disadvantages mentioned.

9.6. Practical applications of the study

Due to the fact that data had been collected and experimentally analysed over a two year period, it was possible for field centre staff to reflect on insights gained on a continuous basis. It was also possible to implement some of the emerging recommendations even before completion of the study. Some examples are described below:

9.6.1. The open-ended worksheet used in formative evaluation

The worksheets which were analysed in this study, are completed by most groups visiting the field centre. Junior primary groups and pupils who may have difficulty in completing the full worksheet in english or afrikaans, usually make drawings only. Responses are analysed after each course and results critically discussed by the field centre staff. The advantages and disadvantages of using an open-ended data source in research were discussed in 9.4. and apply also to use in evaluation. Two specific examples of how the technique has been used are:

- * During 1992 the researcher introduced a new programme activity which focussed on human population growth as an environmental issue. It was then possible to compare the response frequencies obtained after the introduction of the activity with the pattern reported in this study. Initial indications were that many participants did seem to regard the activity as meaningful enough to mention in their worksheet responses.
- * Before the study period selected for this project, ecology teaching at the field centre focussed on issues such as biodiversity, food chains and food webs as applicable to ecosystems in natural areas. Analysis of worksheets showed that very few responses in the 'ecological perspectives' category were recorded. As an experiment the emphasis was changed to a more human-centred approach which focussed on human life support systems. The increase in 'ecological' responses was striking and it seemed that children found the adapted approach easier to relate to.

9.6.2. Sensitivity towards the varying learning needs of groups and individuals

A pattern which has emerged from results reported in Chapters 6,7 and 8 has been the striking differences between groups in terms of their valuations of programme aspects. If valid [see discussion in 6.3.], this observation raises the important question of the extent to which varying needs ought to be accommodated in programme development and planning, i.e. whether a field centre should offer 'different programmes for different groups'. Although this issue has not been debated in the southern African environmental education literature, the researcher sees it as a contentious issue. Personal discussions with a number of environmental education practitioners have indicated that many are concerned about the possibility of programmes being planned based on unwarranted preconceptions about groups and on perceptions which could be elitist or even racist. The issue therefore has moral/political dimensions.

The researcher shares the above concerns, but is nevertheless of the opinion that the background knowledge and experience of participants should be considered in programme development and planning [see 3.3.1. and 3.3.2. and the results reported in 6.2.1., 6.2.4., 6.2.5., 7.2.1. and 8.2.1.].

The researcher finds this issue a very difficult one to clarify. The main difficulty is to find a way of being **sensitive** to differing background knowledge, experience and learning needs **without being bound by preconceptions**. A possible solution could be to assess the background knowledge and learning needs of children **during the field centre course itself**. In the experience of the researcher this is no easy task and it requires sensitive and experienced field centre staff. Some approaches which have been tried at the Thomas Baines field centre include:

- * Pre-visit interviews with teachers and formal questionnaires in which teachers were asked to evaluate their pupils in terms of environmental education background.
- * Extensive group discussions at the beginning of programmes. Feedback from small groups is then used to assess 'where the children are' in terms of their understanding of environmental issues
- * A recent promising innovation has been the introduction of a technique based on a study reported by Cade [1989]. At the beginning of a course children are simply asked to write a short one-page essay about their understanding of the term 'environment' and what it means to them. Analysis of responses provides valuable insights which can inform programme adaptation. If it is for example found that many of the participants in a particular group seem to have a limited view of the concept environment, more time is spent on the clarification of concepts.
- * The researcher has also attempted to facilitate programmes which were participant-driven. Based on their own understanding of environmental issues and their perceived needs, participants themselves identified issues which they regarded as relevant and worthy of inclusion in the programme. If successful, such an approach could negate the need to have prior knowledge of the needs and expectations of participants. The experience of the researcher was however that only children who were already familiar with the field centre and nature reserve and who had substantial background knowledge could meaningfully contribute to planning their own programmes.

In spite of sharing the reservations about 'different programmes for different groups', the researcher is of the opinion that some programme decisions based on

preconceptions about groups are both unavoidable and desirable. One pertinent example is the fact that, in some groups using the field centre, most if not all of the participants can be expected to be unable to swim as well as to have had no experience of using a canoe. In contrast other groups have had experience in many outdoor pursuits. It would be irresponsible not to consider factors of this nature in programme planning.

A problem which could affect the implementation of findings is the potential pitfall of seeing groups as homogeneous units. While this study has suggested valuations which seemed to be common to groups from particular backgrounds, data analysis [results not reported here] clearly showed that there was often as wide a range of valuations **within** one group as **between** groups. In one group one could for example find that each of the major valuation categories was mentioned by different individuals as being most significant. This means that, in one group, some participants could have a strong recreational valuation, while others might have aesthetic, cognitive learning or social valuations and needs. In the experience of the researcher accommodating individual needs is a dilemma which faces teachers in all contexts, and the challenge facing the teacher is then to provide appropriate learning experiences for the **group**, without ignoring the **differing needs of individuals** within the group. This implies that the teacher needs to understand both the broad tendency within a group and the needs of individuals in the group. The need for balance in field centre programmes seems clear [see also 10.3.1.].

Although this report has focussed on between-group variations, the researcher believes that the worksheet used in the study provides a very useful tool for in-depth

investigations of the way in which individuals interpret learning experiences.

9.6.3. Examples of findings implemented

The observation that some children may have been aware of and concerned about environmental issues before their field centre visit [see 7.2.2] has informed programme changes at the Thomas Baines field centre. Group discussions are now used to assess knowledge and concerns and, where appropriate, programme emphasis is changed to focus on solutions to environmental problems rather than on 'problem awareness'.

Results reported in 7.2.1., 7.2.2. and 7.2.3. suggest that many children were confused about the underlying causes of environmental problems and that they often had simplistic perceptions about the role of 'human nature' in environmental problems. It was concluded that field centre programmes were perhaps not adequately helping children to make sense of complex and disturbing issues. In response to these findings field centre staff have introduced in-depth discussions of the underlying causes of environmental problems into programmes.

It is hoped that time will allow an evaluation of the effect of these changes in emphasis on the worksheet responses of children.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are presented in two sections. In Section A conclusions pertaining to the valuations of programme experiences are presented to sensitise and inform field centre staff about aspects which could be important in programme development. Section B consists of conclusions and recommendations with regards to the research methods used in the study, including their potential usefulness in field centre contexts.

SECTION A- CHILDREN'S VALUATIONS AND PROGRAMME DEVELOPMENT

10.1. The valuation categories used in the study

The primary goal of this study was to describe children's valuations of their experiences at the field centre, and ten categories were interpreted from their worksheet responses. For easier reference these categories are reviewed below:

- * **Recreation**, including food, games and facilities
- * **Novelty**: new experiences specifically valued
- * **Aesthetic/Emotional** valuations
- * **Cognitive learning**: explicit valuations of 'learning'
- * **Skills learning**: acquiring new physical skills
- * **Ecological**: global, natural resources and principles
- * **Environmental concern**, including human motives
- * **Personal growth**, including spiritual aspects
- * **Religious and Ethical** perspectives
- * The value of **social interactions**

These categories were established from the researcher's own perspective and others might have interpreted the data in a different way. The categories were nevertheless adequate for the purposes of this study.

10.2. Conclusions about specific valuation categories

General comment

Each child interpreted the field centre experience in a unique way and in each group a range of valuation categories were recorded. The ratios between response frequencies for some categories however varied strikingly between groups. In 6.3. it was suggested that background factors, which were group specific, could have influenced valuations to the extent that strong tendencies emerged within groups. It was surmised that the **prior knowledge** and **previous field work experience** of groups were two possible factors. At the same time it was emphasised that programme processes may not have been consistent and that unintentional differences in content and approach could have affected between-group variations. A premise of this study, based primarily on the Literature Review, was that valuations would be influenced by interactions between prior knowledge and experience and learning processes during a field centre programme.

It is not warranted to claim that the data showed a definite link between background factors common to groups and tendencies within those groups. The researcher nevertheless believes that background factors should not be ignored and that the interactionist view discussed in 6.3. may have some validity. **In line with this view, the researcher concludes that field centre staff should be sensitive to the possible influence of both background factors and variations in programme processes.** This premise applies to all the conclusions and recommendations which follow.

A general conclusion was that field centre staff should develop methods to assess the needs, knowledge and concerns of a group of participants at the start of a programme. Field centre staff should be sensitive to the varying needs

of groups and individuals and should have the teaching skills to address these needs as they become apparent.

10.2.1. Recreation as opposed to 'learning'

The data reported in 6.2.1., 6.2.4., 6.2.5. and 6.2.6. suggested that children did not only value the 'fun' aspects of the field centre experience. Viewed together, aspects such as cognitive learning, skills learning, ecological perspectives and environmental concern were mentioned by many more children than was a recreational experience such as canoeing. It seems to be warranted to conclude that, in general, children had valued the field centre experience in a balanced way, and appreciated both 'fun' and 'learning'. This conclusion implies that field centre programmes should be balanced and should offer a wide range of activities to satisfy varying learning needs.

In most groups there however were individuals who seemed to have had a 'recreational valuation' towards the field centre experience, and this valuation strongly predominated in some groups. The data suggests that groups on a first field excursion may have tended towards this valuation. A lack of pre-visit preparation by teachers and inadequate teacher involvement during programmes could however also have influenced children towards a recreational orientation.

10.2.2. Novelty of the experience

Many children explicitly gave novelty ['first-time experiences'] as a reason for valuing certain programme aspects and at the same time did not mention aspects such as ecological learning or environmental concern. A number of authors [e.g. Ford 1981 and Falk 1983] have claimed that children may find it difficult to focus on conceptual issues during learning experiences in unfamiliar environments. The present study provided some evidence to support this claim

and the potential value of repeat visits to the same site should not be discounted.

10.2.3. Aesthetic/Emotional experiences

It was suggested that as many as 50% of children, and high school students in particular, had valued the field centre experience from aesthetic/emotional perspectives. Field centre programmes should provide opportunities for quiet reflective activities and should allow free time for participants to enjoy the environment as they wish.

10.2.4. Cognitive learning

The fact that many children [perhaps 50% of participants] seemed to have valued aspects of cognitive learning was regarded as an encouraging observation, given the goals of field centre programmes. It was suggested that participants from disadvantaged areas were particularly likely to value this category, perhaps because they perceived that their normal schooling was inadequate and inferior.

10.2.5. Skills learning

Responses in this category [6.3.5.] were predominantly recorded from participants from township backgrounds. It was suggested that their life experiences did not provide opportunities for the development of physical skills such as swimming and canoeing and that this could have influenced their valuations. The data suggests that some of these students may have benefitted in terms of increased confidence and self-esteem. If urban environmental education centres were to be developed, it might be appropriate to provide opportunities for the development of physical skills.

10.3.6. Ecological perspectives

Given the open-ended nature of the research worksheet, it was perhaps surprising to find that as many as 40% of participants had spontaneously referred to ecological aspects in their responses [6.2.6]. It was however pointed out that these responses varied in quality, ranging from simplistic or incorrect to a sophisticated understanding of concepts. These variations were not investigated. The researcher also suggested that children may find some aspects of ecology to be less relevant to their every-day lives than others. It was specifically surmised that many children may relate better to an emphasis on human needs [i.e. human life support systems] than to an approach based only on studies of ecological processes in a natural environment. In the light of the above there is a need to evaluate the effectiveness of ecological activities in the Thomas Baines field centre programmes, perhaps by investigating the ways in which pupils understand key concepts after programmes.

10.2.7. Environmental concern

The results reported in Chapter 7 suggested a relationship between previous environmental education learning and the likelihood of participants linking their field centre experience with their environmental concerns. Groups from schools which focus on environmental education in the curriculum generally recorded very high response frequencies in this category [see also Slade 1992]. It was suggested that those groups which expressed high levels of concern did not necessarily acquire this concern as a result of the field centre experience, but that many children may have been aware of and concerned about environmental issues before the visit. Field centre staff should recognise that many children no longer need to be 'made aware' of problems in the environment. A change in programme emphasis towards solutions to environmental problems was recommended.

A somewhat disturbing tendency identified was that children could easily be 'alarmed rather than enlightened'. It was suggested that field centre programmes were perhaps not helping children adequately to make sense of complex and disturbing issues. Programme development to address this issue was recommended.

With regards to the specific environmental concerns of children, there was a tendency for **pollution** and **endangered species** to have been uppermost in the minds of participants. It was suggested that biases in media reporting and the location of the field centre within a game-rich nature reserve could have influenced these responses.

10.2.8. Valuations of aspects of a more personal nature

With reference to religious/ethical perspectives, the results reported in 6.2.8. tended to show that afrikaans-speaking participants who visited the centre were very likely to link their field centre experiences to their religious convictions. It was suggested that in many cases this link failed to include a 'stewardship element' [Hurry & Hurry 1990] which would perhaps be desirable from an environmental education point of view. It was suggested that field centre staff should develop ways to deal with the link between religious perspectives and environmental concern. Very few responses indicated an awareness of the ethical dimensions of environmental issues.

Results reported in 6.2.9 indicated that a substantial number of participants alluded to aspects of personal growth in their responses. It was suggested that field centre programmes which emphasise environmental issues might also unintentionally address some of the goals of outdoor education as defined 1.3.2. The majority of participants did not seem to regard social experiences [6.2.10] as a programme aspect worth mentioning in their worksheet responses

10.2.9. Valuations of encounters with animals

The results reported in Chapter 8 suggested that many children, especially those who may not have had opportunities to visit nature reserves previously, regarded seeing game species such as Bontebok and Square-lipped Rhinoceros as having been the most meaningful aspect of their experiences at the field centre.

In spite of experiencing animals in the same way [i.e. through a game drive at night], many participants in other groups did not mention seeing animals as having been of great significance to them. Although a direct link between background and valuations is not claimed, the data did suggest that participants with previous experience of nature reserves tended to mention aspects other than seeing animals.

Many environmentalists and conservationists are concerned that the conservation of large game animals could overshadow environmental issues which are considered to be of greater significance, such as socio-political issues or the maintenance of life support systems. Many people however strongly value wildlife from aesthetic and emotional perspectives [see 8.2.2.] and it may be inevitable that many will continue to associate environmentalism with a concern for endangered species. There is a need for environmental education to continually address the relationship between wildlife conservation and broader environmental concerns. The conflict between emotional valuations of wildlife and the necessity to manage populations through practices such as controlled hunting and culling requires particular attention.

SECTION B- CONCLUSIONS AND RECOMMENDATIONS PERTAINING TO THE RESEARCH METHODS AND THE USABILITY OF THE RESEARCH FINDINGS

10.3. Validity

The use of a routine programme activity, which participants did not associate with research, may have elicited honest responses, thereby strengthening the internal validity of results [9.2]. It was suggested that xhosa-speaking participants, particularly those on Std 7 level and lower, may have found it difficult to express abstract meanings adequately in english. This research was not designed to assess the possible effect of language on the validity of results and the researcher suggested that this issue required extensive research attention in the South African context.

In this interpretive and contextual study external validity and generalisability were considered to be less important than internal validity. Despite some congruence with the results of other studies, it is not claimed that the results of this study could have external validity, and it was stressed that results obtained were contextual in nature and that conclusions should be seen as tentative suggestions. The concept of reader generalisability applies in that potential users of results should assess the relevance of findings for their own contexts.

10.4. The use of an open-ended programme activity as a data source

Given the aims of the study [see 9.1.], it was concluded [9.4.] that, despite certain disadvantages pointed out, the data collection technique was an appropriate one to have used. It was nevertheless suggested that an open-ended programme activity should not be used as the sole source of information for programme development. The technique should be used to describe patterns which could be further investigated, using other methods such as workshopping, observation and interviews.

10.5. Data analysis: quantifying data obtained from open-ended responses

In Section 9.5. the advantages and disadvantages of quantifying interpretive data to describe categories were discussed. The researcher concluded that, while valuable qualitative insights could not be explored with this approach, the content analysis technique used was appropriate, given the aim to get a broad overview of the valuations of visitors to the centre. It was furthermore suggested that in-depth interpretive studies are required to illuminate the patterns described in this study.

10.6. Practical applications of the study

In 9.6.1. it was suggested that the worksheet used in the study could be a useful tool in **evaluating programmes**, provided that information is supplemented by other data sources such as observation and group discussions.

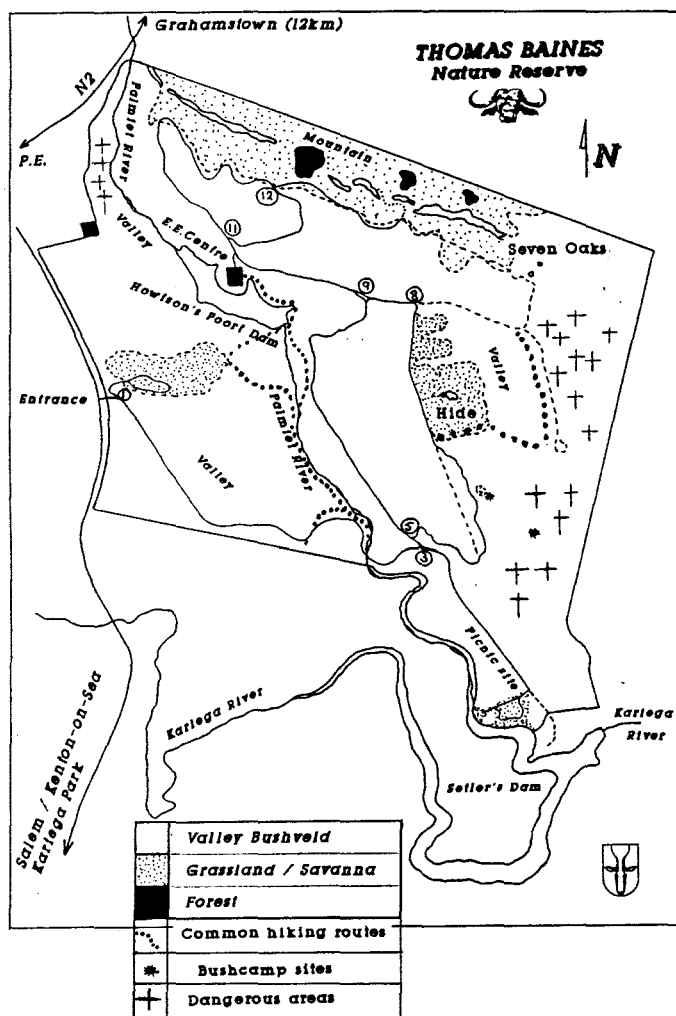
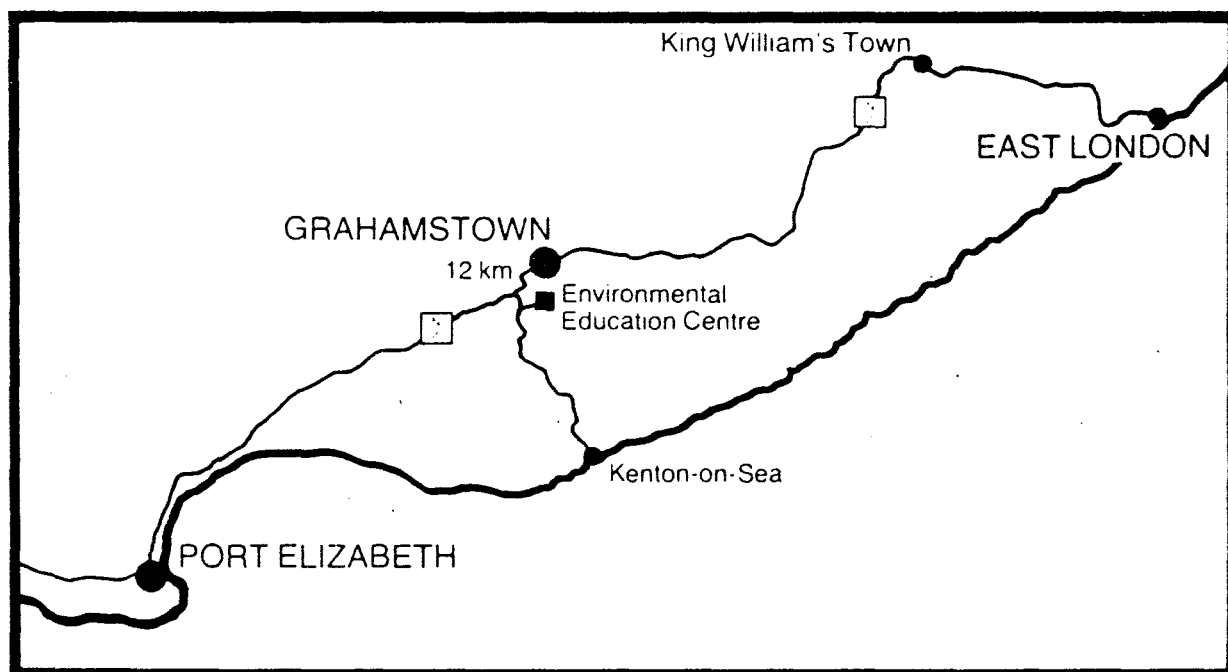
The difficulties involved in accommodating perceived differences between groups in terms of background knowledge, experience and needs in programme development were discussed in 9.6.2. It was suggested that techniques should be developed and employed while a programme is in progress to assess 'where the children are', thus attempting to avoid the danger of planning programmes based on inappropriate preconceptions about groups. The potential pitfall of viewing groups as homogeneous units was emphasised and the researcher concluded that a particular challenge faced teachers and field centre staff in this respect. Staff should be sensitive to both the varying needs of groups from varying backgrounds and the differing needs of individuals within these groups.

In conclusion a few examples were described to show how some of the findings of this study have informed programme development at the Thomas Baines field centre.

10.7. Final remark

The researcher could have conducted this study through a descriptive study of the responses of a small number of participants, thereby avoiding some of the pitfalls and complex theoretical issues encountered in this study. It was however felt that it would be a useful learning experience to attempt to confront these issues and that raising a broad range of issues would be of greater value to field centre practitioners. It is hoped that debate in the South African environmental education literature will result.

APPENDIX 1

LOCATION OF THE THOMAS BAINES GOLDFIELDS ENVIRONMENTAL
EDUCATION CENTRE

APPENDIX 2

A TYPICAL FIELD CENTRE PROGRAMME DURING THE STUDY PERIOD

COLLEGIATE JUNIOR SCHOOL PROGRAMME

Wednesday - 24 April:

09h30	Arrive & Unpack
10h00	Welcome & Introduction
10h15	Orienteering
11h00	Short Break
11h20	Reserve Tour: Overview of Area
12h30	Lunch
14h00	Canoeing
16h30	Free time & Supper
19h30	'Night Encounters'

Thursday - 25 April:

08h15	Introduction to Freshwater Ecosystems
09h00	Practical water study
11h00	Morning Break
11h30	Snorkeling 'Predator / prey' game
12h30	Lunch
14h00	'Seas of Grass' (Video)
14h30	Long hike
16h30	Free time & Supper
19h30	'Night Encounters'

Friday - 26 April:

08h15	Practical soil study
09h15	Ecological Summary
10h00	Short Break
10h15	'Discover your Feelings'
10h45	What can we do?
11h15	Pack, Clean up & Depart

APPENDIX 3

THE ACTIVITY WORKSHEET USED AS A DATA SOURCE

Discover

your
FEELINGS...



Here at Thomas Baines I experienced
something that is precious to me...

[Draw, or write about your "something precious"
in the space provided below]

It is precious to me, because...

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