SHARE-NET:
A CASE STUDY OF ENVIRONMENTAL EDUCATION RESOURCE MATERIAL DEVELOPMENT IN A RISK SOCIETY

THESIS
Submitted in fulfilment of the
requirements for the Degree of
DOCTOR OF PHILOSOPHY
at Rhodes University

by

Robert James Taylor

February 1997

ABSTRACT

SHARE-NET: A CASE STUDY OF ENVIRONMENTAL EDUCATION RESOURCE MATERIAL DEVELOPMENT IN A RISK SOCIETY

This narrative study reviews the development of Share-Net, an informal resource materials network, located within the developing environmental education activities of the Wildlife and Environment Society of South Africa. Historical shaping factors within the Society are discussed and changing views on conservation, environmental education and research are described. Rather than the research process being a utilitarian and outside endeavour for clarifying and monitoring, the research orientation of this study is one of grounded activity *within* and integrally *part of* processes of change.

Within a developing story of resource materials and workshops, themes are traced and emergent tensions are critically reviewed. Teacher workshops from 1981 until 1995 are analysed and developing orientations are described. Within this review changes are evident from an orientation of 'us' informing 'them' to joint, collaborative endeavours within the development and use of resource materials.

The study reviews and illuminates the Share-Net project around questions of project orientation and management and this is done through the narration of case studies. Principles and patterns emerging within these are examined to guide future resource development projects. Popularist notions of networking and structural functionalist notions of social change are also examined. Grand, modernist strategies designed to cause change in others are questioned and the role of small-scale nodes of resource material activity cooperating within an open network are clarified as useful alternatives. Local resourcing centres such as these have proved useful in supporting teachers in the development, use and adaptation of resource materials.

The study also examines income and expenditure of the Share-Net project since 1988 to review economic sustainability. A case is made for sustaining the project conceptually and financially through the sales of products and services rather than through external donor sources. Finally the study raises questions and challenges within the project and proposes guiding frameworks for future review, in action, as the story continues.

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

FIGURES

TABLES

APPENDICES

A. Record of workshops: January 1990 - December 1995

B. Share-Net sales 1991-1995

C. ***Curriculum development and environmental education: An overview and some experiences from South Africa***
- paper presented by Jim Taylor in Kampala, Uganda, April 1996

D. Courses
- i. Environmental educators course (flyer)
- ii. Natal Parks Board/Share-Net course outline
- iii. B.Ed. Module Outline

E. Resource Development
- i. Louis' eulogy
- ii. A year planner
- iii. Examples of 'colour' printing
- iv. Map of sales of water kits
- v. Share-Net order form

F. NETWORKING
- (i) SADC Workshops:
  Workshop on Environmental Education for Youth - Windhoek - Hertzman, *SPLASH*, Vol. 10, 1994
  Second SADC Workshop on Environmental Education - Gretener, *SPLASH*, Vol. 12, 1996
- (ii) *IRDC Workshop on Research Issues in EE in Eastern & Southern Africa* - Taylor & Schreuder, EEASA Bulletin No. 10, May 1995
- (iii) Mozambique resource materials development proposal, Taylor & Beswick, 1994
- (iv) Response to European EE Survey, letter to Zena Murphy from Jim Taylor, January 1995

PREFACE AND ACKNOWLEDGEMENTS

Many people have made this study possible. The study reviews the story of a journey through environmental education over the past fifteen years. Of course there were journeys within journeys and these often took the form of early morning drives in a Mazda to workshops in remote places accompanied by rich, challenging dialogue as we struggled with our ideas and developing processes of environmental education. These stories are built on the hope for better education and an environment that can nourish and sustain us all.

Vivid images of an early childhood journey come to mind. Our ageing family car could not quite make the summit of Coleford hill in the Underberg foothills of the Drakensberg where I grew up. As a large family we had a lot of luggage and we followed behind the steaming, grinding car in a haze of blue smoke, suitcases in hand. We learnt that healthy collaboration where each 'carried his or her weight' enables one to go forward. We didn't always know where we were going but we went well and learnt a lot.

Underberg journeys turned into Wildlife Society journeys with Malcolm Powell and Tim Wright, both of whom contributed a great deal to the shaping of Share-Net and this study. Enthusiastic discussions were part of the long drives as we planned and schemed and planned again. Late night discussions and journeys to Ulundi with Nolly Zaloumis and other enthusiasts such as Simeon Gcumisa, led to the hikes in Umgeni Valley with pupils giving way to developing teacher workshops with people who had been denied a chance to enjoy and learn about their own country's heritage.

At Umgeni Valley, Mat Carlisle, Roland Jones and Mike Exelby provided much initial support as did Rod DeVilliers, Jill Cadle and Mzo Maphanga as we struggled to come to grips with conservation education and fieldwork. Mzo helped to make booklets and was later joined by Michelle Friedel, Trish Henchoz, Khulani Mkize and many other helpful volunteers. Barry Marshall too, provided a challenging influence and with Mduduzi Mchunu

we explored the potential of trails and the trials and tribulations of audio-visual resources.

Joining Rob O'Donoghue of the Natal Parks Board on his journeys led to new challenges and shifts in understanding. As his journeys became our journeys our ideas came under painful scrutiny and our 'non-theoretical practical' outlooks were shown to be very theoretical indeed! At times this theory was found to be inappropriate and inhibiting. With our wives, Liz and Carmen, we travelled a great deal and discussions about environmental education meant that there was never a dull moment. The discussions in the cars proved to be significant shaping processes although how they affected the work we were engaged in is unclear.

Rob's understanding of research, his ability to conceptualise issues and his enthusiasm made one feel privileged to work with him. Frustrating difficulties of expression fell away because Rob never became impatient with our ongoing questioning and was always ready to discuss any issue further. Along with Tom Popkewitz he reminded us that the reduction of complexity to a simple written description can mean the creation of an animal that simply does not exist.

A study period in England contributed to growing confidence. Liz, always supportive and encouraging, taught at an inner-city school in London to pay the rent and the academic fees and David Uzzell supervised my master's study - his visits and his support, from a distance, are most appreciated. Steadily the ideas and action broadened and the conventional wisdom of our times lost its compelling superiority. We started making resources, explored the power of computers and began sharing in wider struggles with other fellow-travellers. Carmel McNaught brightened our journeys for a time until she set off on bigger journeys of her own.

We began to re-search our actions and Dinnie Nel, Pat Irwin, Frances Gamble, Mike Graham-Jolly and Lynn Hurry joined us on theoretical journeys. Utilitarian ideas about knowledge and research proved the hardest ideas for me to dislodge even though psychometric and questionnaire surveys *on* people left an uneasy feeling in my stomach.

Eureta Janse van Rensburg became part of a widening team of co-workers and research discussions became increasingly richer and more challenging. Vivid memories of a journey to Zimbabwe with Eureta and Mba Manqele accompanied by the music of the 'aimless blade of science' come to mind. At Harare the compelling power of science at an evaluation workshop demonstrated the distance or 'power gradient' between researchers and researched.

Eureta was the official supervisor of this study and Pat Irwin, the co-supervisor. Pat, a rigorous editor and helpful 'sounding board', has always been a firm supporter of environmental education in the Society and with Eureta's dedication and enthusiasm a partnership developed as we shared ideas and grappled with concepts and writing style. Precision editing, warm hospitality and unstinting support and encouragement marked her invaluable contribution to this study and to a widening environmental education community. Kim le Roux played an increasingly valuable role in the developing study: theoretical advice, careful editing and presentation detail proved invaluable as well as her willing co-worker capacity at Umgeni.

We also met John Fien, Danny Wildermeersch, Steven Sterling, Peter Esterhuysen, Ivan Hattingh and Peter Martin for challenging discussions as the journeys unfolded. Joe Venter became a highly regarded companion on many adventures. Joe was always calm in a crisis whether we'd blown a diesel motor in the Ngorongora Crater or while discussing environmental education at Mweka College with Mba and Jeremy Anderson on the slopes of Mount Kilamanjaro.

Technology was another site of struggle and here Muna Lakhani, Leif Hanson, Fred Dowling and Angus Anderson rescued us on many a frustrated occasion. Louis Aukema stands out in the developing computer journeys; he seemed to know more about computers than anyone we ever met.

We visited almost every part of South Africa and then other parts of Africa. There we came

to meet Juliana Chileshe in Zambia, Mary Shuma in Tanzania, Pippa Heylings in Zanzibar, Debbie Snelson in Kenya and Gabriel Obbo-Katandi in Uganda, all of whom contributed in different, but meaningful ways. Warm hospitality, stimulating company and an eagerness to share marked much of the way - we had materials and were sharing ideas and these were enthusiastically debated. Gradually the journeys became more meaningful. Thomas Popkewitz joined us, first as a book and then later in person at a hutted Natal Parks Board camp at Spioenkop. He and Dinnie explained the weaknesses of 'critical theory' just when we thought we were onto something good. We learnt that in education convenient solutions usually run the risk of other, more insidious, consequences.

Many people provided continuity - they were always there to offer support even when they weren't sure how to. Keith Cooper, Dave and Liz Hatton, Nolly and Molly-Ann Zaloumis, Stan and Dorothy Craven, Tony Ferrar, Naas Steenkamp, Eugene Moll, Jean Senogles, Ingrid and Phlip van den Berg, the ladies at Brand Road and countless other dedicated Wildlife and Environment Society volunteers who gave, and continue to give, so much support to the developing environmental education projects.

Family journeys to work destinations became another pattern. I was often away from home and work and play had ceased to be separate - as we drove, the Wildlife Society provided a patchwork of contacts and interlinking 'resourcing' centres. Alison Kelly, David Christians, Nicky Schoeman, Avril Wilkenson, Suzanne and Hennie Erasmus, Mathilda Roos and Leon Barkhuizen all contributed in various ways. Lynne McEwan, Angie Jan, Vusi Mabena always welcomed us in Johannesburg as did Ally Ashwell, Barry Low, Alex Craib, Peter Slingsby and Tony Cunningham in Cape Town.

Grahamstown was a special destination. The spectacular drive along the Drakensberg mountains reminded me of the "snow-capped mountains" that Bette Midler had sung about. In Grahamstown, Nicola Jenkin, Eureta, Jim Chapman, George Euvrard and Pat and Anne Irwin always made us feel welcome as did Ursula van Harmelen and Gill Boltt. Grateful thanks are also due to Hennie van der Mescht for his detailed editing in the final stages of this study.

The long drive home through the crisp Transkei air was spurred on by another homecoming. Political changes in South Africa continuously challenged us and, while others chose new paradigms, Dinnie reminded us that our paradigms were only visible, with hindsight, in the rearview mirrors.

Stellenbosch was also a special place to visit. Danie Schreuder, Heila Lotz and earlier Rob Soutter provided a focusing and inspiring challenge as funding-related advantages and issues became manifest at WWF-SA. Here John Hanks, Ian MacDonald, Bun Booyens, Lisa Padfield, Lesley Richardson, Robbie Hendrickse, Beth Cilliers and Ian Gelderblom continued to support us. Other support from Carla Eckersdorff, Lora Rossler, Linda Ntombela and Simone LeHaan enabled us to grapple with the fallacy of 'cheque-book-charity' and instead, to become part of developing partnerships. These included Derek Potgieter and Doug Greenshields, two of the more dedicated and enthusiastic fellow resource travellers we met. Willie Jacobz, too, had faith in the modest, developing project and his substantial support and encouragement was meaningful as we sought to clarify 'clear action'.

Water quality is always an issue in a flooding, drought stricken South Africa. At Umgeni Linda Paxton was always encouraging and raised the level of debate and the quality of our resources considerably. Steve Camp, Bongi Thabede and Penny Gumede at Umgeni Water were also enthusiastic partners while Chris Dickens, Ian Bailey and Mark Graham gave tireless scientific support.

Other co-workers and fellow travellers included Alistair and Glynnis Clacherty, Prem Naidoo, Bev Ridgard, Alan Pillay and Margaret Keogh. At the coast we worked with Judy Mann, Betsy Kee, Flick Auld and George Friedel and trips to Pennington to meet Dinnie and Jean were always a highlight of any week. In Howick Clare Holland, Wayne Peddie, Nathi Makhaye, Ina Waller, Lynette Masuku, Estelle van Wijk, Kerry Jenner, Allyson Higgs, Irene Higgs and Heather Ducasse were always ready to help. Henry Ngcobo, Willeen Olivier, Tembeka Dambuza, Bekhi Nene and many other enthusiastic teachers also gave much

support and actively participated in workshops. Contributions from Paula Morrison and many other Parks Board people also proved invaluable. At the Impendle Nature Reserve Alex and Sheila Wood provided a quiet place to study and write while the family enjoyed the surroundings. When office and resource development space became a problem Malcolm helped us design our way into new premises which Chan Datadin helped us to build. Others who have been at Umgeni from the beginning include Baba Maphanga and Gaye Grenfell, both always friendly, encouraging and helpful.

The writing of this research narrative has not been easy within the daily reality of my work. A grounded orientation to the study meant that the research was very much part of the action. This has meant that it was not possible to drop commitments to project partners or to avoid a crisis simply because one wanted to research the work. As a non-government organisation with limited ongoing access to funding we still had to find salaries for staff at the end of each month and do our best to carry on supplying the growing need for resource materials. The support from all at Umgeni during the final write-up period is gratefully acknowledged.

Behind much of the work was the School of Practical Philosophy where struggles with 'me' and 'myself' came under sharper focus and one learned of the vagaries of ego and the meaning of study and service. Meaningful friendships, the 'ability to respond' and the divisiveness of 'us' and 'them' dispositions contributed to greater understanding.

It is, perhaps, inappropriate to thank the Wildlife and Environment Society for its support because that would imply it has been outside this work instead of the integral part that it has been. The opportunity to study and grow that the Society provided is nonetheless most appreciated, as is an early funding grant from the Foundation for Research and Development (FRD). This grant provided considerable support and stimulus for this study.

The music was always with us and when Bette Middler sang *From a distance* we realised how distant we were from the environment that nourishes and sustains us and, in South Africa, how distant we were from each other. Hopefully these journeys have brought us closer together.

CHAPTER 1 INTRODUCING THE STUDY

Environmental concerns can unite South Africa, going beyond racial, political, and economic barriers (Nelson Mandela, 1993).

1.1 Background

This study, which commenced in 1993, examines environmental education resource material development processes within the Wildlife and Environment Society of South Africa[1] (the Society) from 1981 to 1996. The study follows and reviews the development of the Share-Net project, an informal network of individuals and organisations involved in the development of environmental education resource materials.

The purpose of this study is to *review and illuminate* the educational resource development processes within Share-Net with the purpose of *enhancing* the effectiveness of the project and possibly to inform other similar initiatives. This text is written to account for the research process as well as to record the outcomes and outline possible future developments. It has also been written to share ideas about the Share-Net project by revealing what has been learnt during its development. Although various significant principles, products and recommendations have emerged from the period of study, the reader should be cautious of generalising and abstracting concepts to differing social contexts. Indeed, an overriding realisation in this study is the uncertainty and caution with which educational outcomes should be viewed.

This research is located within the flow of events of the Society's developing environmental education programmes. A grounded approach has meant that the study was both embedded within daily action as well as, sometimes, reflective of that daily action. The review spans the years from 1981 to 1996, these being the years I have worked for the Society, attempting to clarify and develop better approaches to environmental education. This has meant that actions

---

[1] The Wildlife and Environment Society of South Africa (the Society) has undergone a number of name changes since the turn of the century. For a discussion of these please see Chapter 2.2. The most recent name change occurred in 1996 when the term 'environment' was added.

were continuously under scrutiny and reflections on action were written up as part of a regular reporting process in monthly and annual reports and, where possible, reported at workshops and conferences, as well as in appropriate journals and bulletins.

1.2 An orientation to the study

The reader should be guided by the following points when reading this study. It is a study in, and out of, action where theory was periodically reached for in an attempt to explain the phenomena, ambiguities and uncertainties that were encountered in the daily developing reality of the project. A reaching for theory has been a conceptual feature of the study to seek solutions to key questions emerging within the project. The quest for theory has not provided all the desired answers, nor solved all the problems. It has, however, opened up many opportunities in and improved understanding of the continuous interplay between experiences and developing theories and findings, that would not otherwise have been possible. It also taught me to question, and search beneath conventional beliefs and dispositions. The study is intended to reflect this opening up of ideas and issues rather than provide a case for greater certainty.

The periodic 'reaching for theory' within this study was more often than not a dialogue with significant others including colleagues, friends and supportive academics. It was not primarily a process of seeking knowledge through literature reviews, libraries and reading books, although these activities were often an outcome of the dialogue. In compiling this study, therefore, I have tried to be true to this process and have attempted to reflect the theory as it was encountered in the study.

Aspects of the study have an *action research* orientation (Carr and Kemmis, 1986) as I became involved in continuing daily challenges at work and attempted to enhance action through research and research through and in action. This orientation to the research resonates with the concept of *grounded theory* (Glaser, 1978) where as actor, researcher and compiler of this narrative (research story) I was essentially *within* the process. Here a rigid

distinction between research and action is untenable, the research process providing a disciplined 'vantage point' from which to 'critically consider' key questions *within* the developing project (Lather, 1991:83). This partial detachment provided a perspective from which to reflect on the trajectory of the Share-Net project and allowed a measure of *reflexive*[2] distance within the 'busy-ness' of daily work. This orientation to the research contributed significantly to an enhanced understanding of daily activities and longer-term actions within the wider social context of environmental education in South Africa.

In pursuing the course of study that has led to the writing of this study I have developed insights, clarified my thinking and undergone major shifts in understanding. I have attempted to reflect these changes in thinking and research orientation in the developing study. Initial unquestioning, structural functionalist[3] orientations evident in early planning documents, ecology worksheets and teach-and-test orientations[4] were, for example, displaced by a strong belief in, and desire to find, certainty in environmental psychology and 'values approaches' (Canter, 1977 and Taylor, 1987a). As my understanding developed, a disturbing distinction between 'us' (we who know what is good for people to learn) and 'them' (they who need to know) became apparent.

The clarifying struggle to understand notions of 'us' and 'them' became better understood as the research proceeded and is one of the major themes of this study[5]. In the literature (e.g. Gcumisa, 1981) this perspective is illustrated by terms such as 'getting the message across'

---

2 The concept *reflexive* is used in a similar context to its use by Beck (1992). O'Donoghue (1993a:37) describes *reflexivity* as "cultural reconstruction through critical social processes of experiential review". For a discussion on *reflexive modernisation* see Giddens (1990 and 1991) and Lash (1992).

3 Refer to Chapter 2.9.1. for an explanation of this term.

4 Examples of work with such an orientation include: Wildlife Society, 1976; Downing, 1977; Clayton, 1980; Taylor, 1985a and Degenaar, 1988.

5 Issues of 'us' and 'them' are undoubtably a necessary, ongoing, part of the tensions evident within educational processes. This study does, however, challenge the arrogant disposition of 'us' as superior.

and '*preaching* to the converted'. The charismatic zeal to give messages to people often takes on an almost religious fervour. Although a disillusionment with such well intentioned social engineering orientations is becoming apparent (e.g. Janse van Rensburg, 1995), these orientations are still dominant in environmental education[6]. The 'us' (as experts) and 'them' (as uninformed) orientation to social change often appears to be underpinned by a wishful faith in the solutions coming from ".... rationally organised change through administrative solutions" (Popkewitz, 1988:91).

Gough's recent review of theoretical papers on environmental education in North America concludes that these are dominated by a "behavioural change discourse" (Gough, 1996:1). He could have been speaking for much of environmental education in South Africa. A linear relationship is often assumed between knowledge, attitudes and behaviour and the transmission of messages from those who know to those who do not. A critique of these unquestioned assumptions developed as this study of Share-Net proceeded.

Structural functionalist orientations that I initially held were challenged by Berger and Luckmann (1966) and by the proponents of *symbolic interactionism* (Charon, 1979). At a broader scientific level, the challenge signalled a transition from the "simple, stable and eternal modernism of Newton" (Doll, 1989:243) to more complex, constantly shifting perspectives. I developed greater understanding from the work of authors such as Stenhouse (1975), Reason and Rowan (1981), Papagiannis *et al.* (1982) and Cherryholmes (1988). Discussions with, and the work of, Popkewitz (1984 and 1991), Wildermeersch (1985), Nel

---

[6] The 1989 White Paper on Environmental Education (Department of Environment Affairs, 1989) as well as a foreword to a book by Opie (1989) have structural functionalist orientations. When referring to fieldwork Botha notes that "....it can also be a vehicle for developing sound environmental attitudes and values" (In Opie 1989:iii). A recent document of the Department of Environmental Affairs and Tourism (previously Department of Environment Affairs) states "Nonetheless, the assessment of values and attitudes is a good indicator of holistic development in environmental education" (Joubert and Steenkamp, 1995:109). International examples with similar orientations include: "Encouragingly there has been interest in designing programs and campaigns to change behaviour" (Monroe, 1993:1) and ".... appreciate the role played by the media in spreading the environmental gospel" (East Africa Environmental Network News, 1995:2).

(1987), Uzzell (1989), Irwin (1989), O'Donoghue (1990) and Fien (1994) have helped to take me beyond the conventional wisdom of systematic and rational views of social change. Beck (1992), Docherty (1993), Janse van Rensburg (1995) and Mouton (1996:16-38) are more recent works that have led to considerable understanding of the social context in which I am and have been working. It was, however, the *dialogue* which surrounded the reading, that usually led to greater understanding.

Despite the 'us' and 'them' divisions alluded to above, environmental concerns can unite people (Mandela, 1993). This was particularly apparent in my growing understanding of an orientation to environmental education that is not directly manipulative. Such an orientation can help reduce the distances that are so apparent between people, and between people and the biophysical environment that nourishes and sustains them. This study has also enabled me to discard the idea that theory and practice are, by necessity, distant and separate from each other. With Janse van Rensburg (1995) I support the view that research, evaluation and environmental education are not separate and distinct fields, but exist in tension with developing processes of change and a struggle for greater clarity.

A major objective of the Society has, for many years, been ".....to promote environmental conservation and *environmental education* in southern Africa..." (Wildlife Society, 1986:1, my italics). The need for educational resource materials to support the processes of environmental education has also been apparent for some time (Hurry, 1977; Gcumisa, 1981 and Pringle, 1982:253). When I joined the Society in 1981 the development and use of resources was therefore part of my daily work. I gradually sought clearer understanding of the processes of resource development and it was from this enquiry that both Share-Net, a dynamic, responsive resource project and this study, developed. There is, therefore, a developing focus to this study and a gradual and ongoing refinement of questions and processes.

1.3 The research questions

The study sought to reveal what could be learnt from the Share-Net experience of the development, dissemination and use of resource material in and for environmental education. This included research within: processes of social change, approaches to teacher workshops and courses, resource material development projects, networking and, finally, issues relating to the financial sustainability of the project. The research process involved the development of key questions, with the assistance of colleagues (refer footnote 9, page 8), which addressed these areas of concern and helped guide the research:

1.3.1 How should workshops for teachers be conducted to optimise participation and the ongoing use of educational resource materials? (Chapter 3)

1.3.2 How should future Share-Net resource materials be developed? (Chapter 4)

1.3.3 How can networking offer better support for the emerging processes of environmental education? (Chapter 5)

1.3.4 What economic principles should be followed to ensure financial sustainability in an environmental education project with limited capacity for raising ongoing funding? (Chapter 6).

These four focus questions became increasingly clear within a research process that sought to assemble data for a clarifying discourse within the project. This data provided a platform for the research which is reported in a narrative that goes beyond narrow, modernist conceptions of science and knowledge and accommodates:

- the time involved in the study,
- the 'grounded in practice' orientation to the research and,
- the changing perspectives within a post-positivist enquiry (Popkewitz, 1991; Docherty, 1993 and O'Dea, 1994).

It should be noted, however, that the process of developing the research questions, as well as the clarifying of the data sources that follow, was not as coherent and neat a process as it may now appear. A focusing and refocusing of ideas and processes were necessary throughout the research period.

1.4 Data sources

The research questions have been addressed through an initial research plan involving a triangulation[7] methodology (Cohen and Manion, 1989) of key data sources within the project. These key data sources were:

1.4.1 An analysis of historical material relating to the emergence of environmental education within the Society,

1.4.2 Own, and other relevant, published papers,

1.4.3 Workshop and conference records (including published proceedings or minutes of meetings),

1.4.4 Diary records of experiences related to resource materials,

1.4.5 Regular and occasional reports,

1.4.6 The development of case histories for the various resource material development projects within Share-Net,

1.4.7 Records of verbal and written feedback on resource materials from teachers, pupils, community workers and other environmental education practitioners,

1.4.8 Records of the distribution and sales of materials, and

1.4.9 Records of income and expenditure.

The research process itself involved an interrogation of the accumulated data from the perspective of the experience and problems encountered within the project. Qualitative data, e.g. a historical review[8] and feedback on resource materials, as well as quantitative data, e.g. sales of materials and income and expenditure, were recorded and monitored throughout the research period so as to provide a platform from which the research narrative (Docherty, 1993) could be written. This narrative developed with periodic evaluation reviews by colleagues working within the project as well as consultants, and ranged from their active

---

7 Triangulation, in this case, refers to the use of two or more intersecting methods of data collection to illuminate the same question or issue.

8 "....the historical study of an educational idea or institution can do much to help us understand how our present educational system has come about; and this understanding can, in turn, help establish a sound basis for future progress" (Cohen and Manion, 1989:49).

participation in workshops, to discussions and comments on reports[9].

1.5 The research structure

The table that follows (Table 1.1) introduces the reader to the structure of the study. The chapter and title are tabled on the left-hand side. The middle column lists the research issue or question and the final column the data sources. It should be noted that as the research proceeded, the research questions and strategy were successively refocused as a result of interactions with others and within reflections on the developing narrative (as in Janse van Rensburg, 1995). This was due to the responsive design of the research, the changing circumstances within Share-Net and the developing insight and clarity for me within the social context of the project.

Table 1.1 The research structure

Chap.	Title	Research Issue/Question	Data Sources
2	The Society and Resources	Background to the Society and this study with a focus on educational resource materials.	Reports, papers, diary and workshop records.
3	Resource material workshops: Trends from before 1981 to 1995	How should workshops for teachers and community workers be conducted so as to optimise participation and the ongoing use of educational resource materials?	Diary records, reports, workshops, and conferences.
4	Case studies of resource material development	How should future Share-Net resource materials be developed?	Existing resource materials, reports and feedback.
5	The case for a Network	How can networking offer better support for the emerging processes of environmental education?	Reports, papers, workshops and conferences.
6	Economic principles	What economic principles should be followed to ensure financial sustainability in an environmental education project with limited capacity for raising ongoing funding?	Records of Income and Expenditure, sales of resources, reports.

[9] Participants that have assisted in the research review include: Prof. B. Nel and Dr. E. Janse van Rensburg. External review: Dr. D. Uzzell (UK), and Prof. P.R. Irwin, as time and distance constraints allowed. Colleagues R.B. O'Donoghue, M.J. Powell, T.R. Wright and K.Le Roux (KwaZulu/Natal) have also assisted in the review process.

1.6 A summary of the chapters of the study

The chapter which follows, Chapter 2, provides an historical overview of the origins of the Society before focusing on environmental education resource materials as developed within the Society. Issues relating to modernism (Docherty, 1993) associated as they are with expectations of social change through rational and causal processes (Popkewitz, 1988), are central to this review. Structural functionalism, scientism and technicism, all dominant trajectories within modernity[10], are defined as these orientations have influenced, and are likely to continue to influence, the environmental education projects of the Society. The study resonates with Beck's concept of a *'risk society'* (1992) an orientation which signals a transition from modernity to *reflexive modernisation* (Giddens, 1990).

Chapter 2 also describes the research process that initially investigated the development and use of educational resource materials (O'Donoghue and Taylor, 1988a). This research questioned simplistic Research, Develop, Disseminate and Adopt (RDDA) (Popkewitz, 1988:91) models of materials development which had a dominating modernist orientation and continued to describe enhanced perspectives. These include participatory approaches and the emergence of an informal resource materials development network known as Share-Net, which is the focus of this study.

In Chapter 3 environmental education resource material workshops for community workers and teachers are examined. Past workshops are reviewed as opportunities for sharing resource material as well as for providing an opportunity to invite further involvement in resource material use and development. The focus of the chapter is on the changing orientations to these workshops from before 1981 to 1996, as reflected in the way the workshops were conducted and the manner in which the educational materials were used. Drawing on workshop reports and my personal diary records, this chapter outlines shifts in approaches from the more 'modernistic' orientations (getting messages and resources across to people)

---

[10] Modernity is a term of western origin that is associated with a transition from pre-modern times through the rise of science and the industrial revolution (Janse van Rensburg, 1995). It may be linked to the 'enlightenment' ideal of emancipation from myths, superstition and the forces of nature through critical reason (refer Docherty, 1993:5).

that were favoured in the early years to more responsive, networking orientations in the later years.

Chapter 4 presents various Share-Net resource material development projects. These case studies are examined to clarify more appropriate perspectives and better approaches to resource material development. The chapter concludes with a challenge to contemporary conventions including the top-down *or* bottom-up dialectic, and makes a number of recommendations on resource material development. Collaborative approaches to materials development provide the setting for wider networking.

Chapter 5 examines the emergent process or idea of networking. Networking may be described as sustained interactions, whether formal or informal, that enable people to work together with each other and with information. This chapter reviews examples of networking and challenges technicist orientations to the concept. The development of the Share-Net network, an informal network involving people, places and publications, is then described as an open cooperative process. The importance of a focus for networking, in this case on resource materials, is highlighted, and the need to generate funding from services and products is explored.

The issue of finances to sustain projects is a recurring theme in the first five chapters. Chapter 6 considers economic issues especially from the point of view of a non-government organisation which has no reliable source of ongoing funding. Sources of data include a number of case vignettes of related projects, before focusing on fundraising and income and expenditure of Share-Net. Chapter 6 also reflects on some of the implications of large scale funding for environmental education. In this chapter it becomes clear that well intentioned financial support can perpetuate unhelpful modernist orientations. The importance of linking the sales of products and services to direct income generation is stressed. Once again, open questions are posed for the developing project and some recent tensions are reviewed.

The final discussion, Chapter 7, draws out the major themes and trends of the preceding chapters. This is done by identifying major themes and illustrating these with reference to

appropriate previous chapters. Throughout the study an 'opening-up' or broadening of perspectives is evident. Although broadening perspectives do not lead to greater certainty or the elimination of 'risks' when planning and running projects, they have enabled greater insight into processes of resource material development and use, especially when these are not inhibited by narrow, behaviour modification orientations. Table 7.1 summarises these themes and broadening perspectives and is located towards the end of the chapter.

Finally, I attach a comprehensive series of Appendices to the study. These documents illustrate the actions that are located within and have come out of the research processes. Appendix A provides an abbreviated summary of workshops from 1990 to 1995. A report with statistics on the sales of Share-Net materials (Appendix B) is followed by a paper presented at a policy conference in Kampala, Uganda in April, 1996 (Appendix C). This paper considers environmental education in a broad sense and focuses on policy issues in South Africa as well as on environmental education resource materials. The final three Appendices include selected courses currently offered by the Society (Appendix D). A summary of resource development issues is enclosed, as are selected examples of materials and the Share-Net *Order Form* which includes a comprehensive list of materials currently available through Share-Net (Appendix E). I also attach a selection of workshop reports and other materials relating to environmental education networking in southern Africa (Appendix F).

CHAPTER 2 THE WILDLIFE AND ENVIRONMENT SOCIETY AND EDUCATIONAL RESOURCE MATERIALS

In our hope that rational action can produce progress, we lose sight of the fact that the very notion of progress embodies a particular set of assumptions about intellect and power (Popkewitz, 1991)

2.1 Background

This chapter provides an overview of the origins of the Wildlife and Environment Society of South Africa (the Society) before focusing on environmental education resource materials produced by the Society. The narrative was developed from data which included diary records, policy and workshop documentation, regular and occasional reports, as well as published papers (refer Table 2.1 at the end of the chapter). The narrative in this chapter provides a platform from which the chapters that follow are developed.

Educational resource materials have been developed and used by the Society in various ways. The research investigates these processes; it questions the initial simplistic 'Research, Develop, Disseminate and Adopt' (RDDA) model of materials development and continues to describe alternative approaches and more recent perspectives. These include a participatory orientation and the development of an informal resource materials development network known as Share-Net, which is the focus of this study.

2.2 The origins of the Wildlife and Environment Society of South Africa

The Transvaal Game Protection Association was formed in 1902 to address widespread depletion of wildlife in the north eastern regions of South Africa[11] (Pringle, 1982). As the name suggests the emphasis was on 'protection of wildlife' and this led to the association being instrumental in the proclamation of the Kruger National Park[12]. In 1926 the association was disbanded to form the Wildlife Protection Society of South Africa which was later renamed the Wildlife Society of Southern Africa. Seventy years later, in 1996, following

---

[11] This area now forms part of the new provincial regions of Gauteng, North West, Northern Province and Mpumalanga.

[12] The Kruger National Park is the largest game reserve in South Africa.

consultation with members, the name was changed to the Wildlife and Environment Society of South Africa.

The development of the Society reflects an important trend in conservation in South Africa. This developing trend is evident in the changes in name of the Society and its policy as the Society evolved from the 'protection of nature' to the 'wise *use* of natural resources'. The recent inclusion of the word 'environment' in its name reflects a wider concern about issues that go beyond wildlife and natural resources to include social, economic and political issues (O'Donoghue, 1993b). Early Society practices aimed to 'preserve' natural areas (so-called 'green islands'), and although this disposition is still evident in some sectors of the membership in the 1990's, the official policy of the Society now encourages the optimum, sustainable, *use* of natural areas (Cooper, 1996).

In 1986 the main objective of the Society was, according to its mission statement: ".....to promote environmental conservation and environmental education in southern Africa" (Wildlife Society, 1986:1). This mission statement had a similar 'ecoscience' orientation to that of the *World Conservation Strategy* (IUCN/UNEP/WWF, 1980) which was developed in the early 1980's. In 1991 *The World Conservation Strategy* was updated and *Caring for the Earth* (IUCN/UNEP/WWF, 1991), a document that has a stronger 'people centred' orientation which focuses on sustainable living, was published. In accordance with this global trend the Society revised its mission statement: "To promote public participation in caring for the Earth" (Wildlife Society, 1994:4).

Throughout the history of the Society a dichotomy is evident between members, who consider themselves informed about environmental issues (us), and those who are considered ignorant and therefore need to be made aware (them). This dichotomy is also clearly evident in the title of the book *The Conservationists and the Killers* (Pringle, 1982), which documents the history of the Society. The 'us' and 'them' issue has had profound effects on the education projects of the Society. The assumption that others should be 'made aware' has often been

translated into awareness campaigns (Hurry, 1978). These campaigns can be alienating to participants who are, not surprisingly, referred to as 'target groups'. Early orientations to resource material development, for example, sought to communicate messages to the public through posters and booklets in the hope that these messages would bring about appropriate behaviour change (Zaloumis, pers. com, 1981).

The 'us' and 'them' issue is not peculiar to the Society; it pervades much environmental education in South Africa. It is an issue, however, that is particularly pertinent to this study which focuses on the development and use of environmental education resource materials and seeks to clarify the assumptions we were making when setting up educational projects.

2.3 The present structure of the Society

At present (January 1997) the Society has 14 863[13] paid-up members most of whom are located in South Africa. Members are affiliated to 54 regional branches (e.g. Pietermaritzburg Branch). Each branch has a representative at a regional level and the regional committees roughly reflect the new provincial regions of South Africa (e.g. KwaZulu-Natal Region). Regional committees elect representatives to a national council of about 30 members which in turn elects a board. The board of the Society is responsible for the executive running of the Society.

As a non-government organisation with limited sources of ongoing funding, the Society is primarily dependent on its membership subscriptions to cover running costs. These costs include membership records, financial administration, the publication of magazines[14] and the employment of staff who work in environmental education or as conservation ecologists. Other regular sources of funding include the sale of publications, the marketing of Christmas

---

13 This figure fluctuates as membership lapses and is renewed.

14 These include *African Wildlife*, the Society's bi-monthly magazine which has been published continuously for 50 years. The *Toktokkie* magazine is published for junior members. Local newsletters are also produced in most regions.

goods by mail-order catalogue and a national fund raising competition, 'Win for Wildlife'.

In recent years membership of the Wildlife Society has declined considerably from 24 860 in 1991 to 14 863 in 1997. Declining membership, as well as the composition of membership, is cause for concern. The membership is predominantly "white, English speaking, middle to upper income" and does not reflect the population demographics of South Africa (Hatton, 1996, pers. com.). A further concern amongst staff and council members is that many members do not necessarily share a broadening insight of the scope of environmental issues that goes beyond the preservation of wildlife. Furthermore, many members are not active in Society initiatives and projects but appear content to simply pay their subscriptions and receive their magazines. An informal survey I conducted of local Society newsletters over the past six years does, however, indicate increasing interest in more people-centred activities, including environmental education.

2.4 Early environmental education courses

The narrative will now focus on the KwaZulu-Natal region of South Africa where much of the early environmental education development in the Society took place. The first published account of an organised education course run by the Society dates back to 1952. This course was conducted by Ian Garland and the emphasis was on "fun-with-learning" (Pringle, 1982:246). The participants were schoolboys and the course took the form of an outdoor camping experience interspersed with nature studies.

2.4.1 Weekend teacher workshops

In 1969, trainee teachers were taken on field excursions during weekends. These courses exposed teachers from the Eshowe teachers' college to natural areas and they were taught about nature conservation. Discussions with Society members who were involved in the running of these early courses initially indicated that the objective of the courses was a matter

of 'getting the conservation message across'[15]. Further discussions (e.g. Cooper, 1985, pers. com.) revealed that the courses were not, however, solely concerned with getting messages across from those who know to those who don't; they involved interactive discussions and dialogue between participants and course leaders as they jointly explored the local environment. Materials used to support these early courses consisted of worksheets on a clipboard with spaces in which the participants completed their answers. The courses also involved practical studies with a 'hands-on' orientation (Hurry, 1986, pers. com.).

2.4.2 The appointment of full-time staff

Out of these early pioneering days the decision was taken to appoint a full time 'field officer' who was asked to investigate the most appropriate way of involving more teachers and community leaders in environmental education and, at the same time, to continue to conduct the field excursions described above[16] (Figure 2.1). Garth Owen-Smith was appointed in 1974 and over a three-year period laid the foundation for what came to be known as the African Conservation Education (ACE) project (Pringle, 1982). In 1976 Simeon Gcumisa took over the running of the project from Owen-Smith. As the ACE Coordinator Gcumisa became well-known for his work with pupils, teachers and tribal authorities in the KwaZulu region, which now forms part of the northern part of the provincial region of KwaZulu-Natal. Gcumisa also produced a regular radio programme called *Ubuhle Bemvelo* (The Beauty of Nature).

The establishment of the ACE project came at a significant time in South Africa's conservation history. Due to *apartheid* legislation, black people were excluded entry to many of the better known government-run game reserves. The Society, a non-racial, private body saw the importance of offering *black* people the opportunity to become aware of conservation through the ACE courses.

---

15 In an environmental education context where a direct message is needed to address a particular problem, e.g. *There is cholera in the river,* a message centred approach may be appropriate.

16 In 1974 a planning meeting was held at the Umgeni Valley Nature Reserve to plan future 'conservation education' projects (Figure 2.1). From this initial meeting a steering committee was formed which included Nolly Zaloumis (Chair), Sibusiso Bhengu, Douglas Zimu, Otty Nxumalo, Ian Garland and Simeon Gcumisa. Simeon Gcumisa later withdrew from this committee when he was appointed ACE Coordinator (Gcumisa, 1996, pers. com.).

Figure 2.1 UMGENI VALLEY PLANNING MEETING

The Umgeni Valley Nature Reserve provides the backdrop for this photograph which was taken by Keith Cooper (now Director of Conservation for the Society) at a planning meeting at Umgeni Valley in 1974. Characters in this photograph were later to play significant roles in the shaping of South African society.

Photo: Keith Cooper

BACK ROW: Sibusiso Nyembezi, Bongani Bophela, Nolly Zaloumis, David Hatton, Liz Hatton, Mrs M. Nyembezi, Garth Owen-Smith, Douglas Y. Zimu, Otty Nxumalo.
FRONT ROW: Sibusiso Bhengu, Irene Hatton, Simeon Gcumisa and Don Richards.

Ongoing role played by members

Back: Prof. Nyembezi *(became Professor: African Languages at Fort Hare University)*, Nolly Zaloumis *(became a president of the Society)*, David Hatton *(now President of the Society; 1997)*, Garth Owen-Smith (*First ACE coordinator, now running community conservation projects in Namibia)*, Douglas Zimu *(became the Secretary: KwaZulu Education Department)*, Otty Nxumalo *(now Director General: KwaZulu-Natal)*.
Front: Sibusiso Bhengu *(now National Minister of Education)*, Irene Hatton *(now working in the Natal Parks Board planning division)*, Simeon Gcumisa (*previous ACE coordinator and now Senior Publisher African Languages: Shuter & Shooter*) and Don Richards (*became senior field officer at the Umgeni Valley Project and well known environmental education figure, now working in Kenya*).

Comment
The photograph symbolises the early personal commitment that contributed to the Society's environmental education projects. This was significant at a time when environmental education was not fashionable. The photo reveals a different perspective on the developing Society's work and is an example of an 'intangible human shaping process' (refer 7.6.3) which makes projects like this special.

2.4.3 The Umgeni Valley Project

Parallel to the ACE project in northern KwaZulu-Natal, field trips for pupils were being conducted, when possible, in the KwaZulu-Natal midlands. These field trips were usually conducted near Howick in the Karkloof area or at the Umgeni Valley Ranch, a game farm used for commercial hunting. The Umgeni Valley Ranch, some 650 hectares in extent, is located on the Umgeni River and stretches from the base of the Howick Falls for 10 kilometres down the river. The terrain includes a picturesque river gorge, pronounced north and south facing slopes, as well as an altitude range of over 250 metres. These physical features support a wide diversity of *fauna* and *flora* and, with many kilometres of scenic trails, offer ideal opportunities for field excursions.

The close proximity of the area to Pietermaritzburg and Durban, the major cities of KwaZulu-Natal, also contributed to making the Umgeni Valley Ranch an ideal destination for field excursions. Initially the education initiative was known as *Joint Venture*, a joint project between the Wilderness Leadership School, the Natal Hunters Association and the Wildlife Society (Pringle, 1982). *Joint Venture* eventually dissolved and the Society became the sole organisation responsible for the education project. The Umgeni Valley Ranch proved such a popular venue that it was eventually purchased by the Society following a lengthy, and well-supported, public campaign to raise the required revenue. Once purchased, it was renamed the Umgeni Valley Nature Reserve and the education project based in the nature reserve became known as the Umgeni Valley Project.

2.4.4 Handing ACE over to the KBNR

By 1979 the ACE project in northern KwaZulu-Natal was running well, with many teachers attending courses (Gcumisa, 1981). When Gcumisa left the project, his successor, unfortunately, was unable to maintain the project for personal reasons and the courses floundered (Zaloumis, 1981, pers. com.). The formation of the KwaZulu government's

Bureau of Natural Resources[17] (KBNR) at this time provided the Society with the opportunity to hand over a successful programme to a government structure that was able to sustain the programme financially. Under the KBNR numerous teacher courses were run. These excursions included studies of ecology, trips to successful (and not so successful) agricultural initiatives, as well as a critical investigation of some of the sources of industrial pollution in and around Richards Bay, an east coast harbour town.

The decision to offer the ACE Programme to a government body had significant economic implications. The costs of environmental education courses had always been a problem for the Society, especially when course participants did not have the financial means to pay. A private organisation such as the Society simply does not have the economic capacity to run such courses indefinitely[18] (Cooper, 1984, pers. com.).

2.5 The ACE Project at the Umgeni Valley Project

By 1981 the Natal Branch Committee[19] of the Society decided that ACE should again become a project of the Society. This decision was prompted by the feeling that the Society had lost an asset in handing the programme over to the KwaZulu government. It was also prompted by the growing number of requests to the Society from all over South Africa for support in environmental education. The objective of the 'new' ACE Project was thus to support the development of environmental education in other parts of South Africa in addition to the KwaZulu region (Zaloumis, 1981, pers. com.).

In 1981, therefore, I was appointed to investigate the feasibility of again offering the ACE

---

17 The KwaZulu Bureau of Natural Resources is now known as the Department of Nature Conservation. Under the new South African constitution it is currently (1997) in the process of 'rationalising' its resources with the Natal Parks Board.

18 The economic issue raised here is a recurring issue throughout this study. It will be addressed in more detail in Chapter 6 which considers issues relating to economic sustainability.

19 Now renamed the KwaZulu-Natal Region Committee.

programme within the Society parallel with, and complementary to, the KwaZulu Bureau of Natural Resources programme. The Umgeni Valley Project was, by this time, developing momentum as a viable destination for school pupils and teachers and over 10 000 pupils and about 1 000 teachers were attending conducted courses each year. It was therefore decided that the 'renewed' ACE project should be based at the Umgeni Valley Project.

The Umgeni Valley Nature Reserve served as a base for administration and courses for the ACE Project. Reciprocal arrangements between the staff of the Umgeni Valley and the ACE project contributed to the financial viability and general effectiveness of both projects; quiet periods for one project enabled staff to assist on courses for the other. Overnight ecology courses for teachers and field workers from other parts of South Africa were conducted and these included exposure to teaching techniques in the field. The theory behind the courses was not articulated, although, as with the early field excursions described above, the courses usually involved interaction with participants while walking in the nature reserve and during nature studies. Courses were usually conducted by myself, occasionally assisted by other Umgeni Valley Project field officers.

The overnight duration of the courses was important in that participants and tutors would share a campsite and this usually enabled a meaningful rapport to develop. This was evident in that, as the courses proceeded, discussions with participants generally became more meaningful and participants appeared to become more thoughtful and constructive in their engagement with issues[20]. Initially participants tended to ask factual questions about the names of trees and animals; as the courses progressed questions usually became more complex as participants asked about interactions in nature as well as relationships between people and the environment. Personal views and opinions were also shared more readily, as the course went on, possibly due to a growing trust that developed between participants,

---

20 The evaluation of these courses was done through informal discussions with participants and other field-officers/observers (if present) during and after the courses. A course report with questions relating to participants' and field-officers' perceptions about the course was also filled in and assessed after each course.

myself and other field-officers.

Initially the Umgeni Valley Project ACE courses were popular although the educational rationale of the courses was poorly defined. We often cited the desire to 'spread the conservation message' as the reason for our actions, but there was usually little clarity on how this was to be done.

Examples of strongly-held beliefs (theories) are, nonetheless, evident in the language of the time: "People have to be convinced....." (Taylor, 1983:3) and "..... designed to promote awareness ....." (Taylor, 1984:1). The following quotes from an article by Don Richards, a field officer at Umgeni in the late 1970's also illustrate strongly held (theoretical) convictions: "... the therapeutic effect of wilderness on young people and how it has 'switched' young people toward a higher commitment to its preservation.", "..... inculcate a desire ....." and "They have not only received a true education ....." (1984:20).

The language used by myself and Richards at the time demonstrates the 'social rhetoric' of the time. It indicates how strongly held our beliefs (theories) about social change were, but we did not consider ourselves to be 'theoretical'. In fact, we often rejected challenges to our assumptions about environmental education, by claiming that the challenge was *too theoretical*. In this way an 'uncritical sub-culture' of 'like-thinking' remained intact to some extent.

The background to the ACE project at the Umgeni Valley Nature Reserve has been provided in some detail here. This is because the project was initiated primarily in order to cause direct change in others, a problematic concept that will be discussed further in this study. The focus on teachers intended, for example, to optimise a 'multiplier effect' in the hope that the teachers would, in turn, communicate the message to their pupils. A widening dialogue through attending other courses, workshops and conferences, as well as evaluation research, would later help me to gain a better understanding of a rationale behind the work in which I

was involved.

2.6 The first international conference on environmental education in South Africa

In 1982 the first international conference on environmental education to be held in South Africa took place at Treverton, Mooi River, also in the KwaZulu-Natal Midlands. This conference was well attended by 'experts' from other parts of the world as well as local 'practitioners' in environmental education (Pratsch, 1982). The conference presentations were largely 'show and tell' sessions with little evidence of a critique of methodology or educational rationale. Conference presenters described techniques through which the conservation messages could be transferred and these included mobile education units (vehicles equipped with audio-visual apparatus) and methods to involve rural communities in environmental education. Environmental interpretation[21] techniques were also described and these included presentations on the best methods to display information and communicate environmental information to the public.

A significant event at this conference was the formation of the Environmental Education Association of Southern Africa (EEASA), an association that was later to provide an associative 'home' for a number of environmental education projects, including Share-Net[22].

2.7 Ideological issues

2.7.1 Getting the message across

Early papers (such as Gcumisa, 1981), stressed the need to 'get the conservation message across' to teachers and community leaders. The problem and solution appeared to be simple. Members and employees of the Society, who had been socialised into a 'conservation ethic' were 'aware' that the environment was being degraded. This degradation was seen to be

---

21 In this context the term 'interpretation' is used to describe a field of activity that has the objective of revealing (interpreting) information about the environment to the public and school pupils (Sharpe, 1996).

22 Share-Net may be described as an informal resource material development network. The development of Share-Net is the main focus of this study.

caused by people who were unaware of the need for conservation. The solution was therefore perceived to be a 'communication' issue, one where communication from those who know, to those who do not know, would solve the problems. Courses were then used as mechanisms or techniques whereby this communication could take place. It was assumed that the courses would lead to greater awareness and therefore more informed citizens through what Lash and Wynne (1992:2) refer to as "communicative rationality".

Although considerable weight was placed behind the notion of getting conservation messages (environmental issues/problems) across to the public and schools at this time it was surprising how little clarity or discussion there was as to exactly what these messages were. This phenomenon was also evident during the courses I was helping to teach at Umgeni Valley Project. It seemed that in uniting against those who were perceived to be in need of awareness, and compelled by a zeal to convey the information, we were inhibited from engaging with, and clarifying exactly what, the messages were. The complexity of the environmental issues to be communicated may also have proved daunting and this may have contributed to us avoiding the detail and simply conveying a broad message of concern.

We would, for example, present a compelling talk on the depletion of the ozone layer and how serious this was becoming. Our understanding of the issue was quite limited, however, and it was only later when we were trying to write fact sheets about issues such as the ozone hole that it became clearer how uninformed we were and how complex issues such as the ozone hole really are (refer Chapter 4.5.4). The lack of knowledge of the issues about which we were teaching did not seem to dampen our desire to convey a strong message.

2.7.2 The need to challenge underlying assumptions

The assumption that meaningful social change will result from well-communicated messages during occasional courses in environmental education is problematic, but this was not apparent to staff (including myself) at the Umgeni Valley Project at the time. Environmental issues involve a complexity of social, economic, bio-physical and political forces (Beck,

1992) and to assume that meaningful social change will result from well-communicated messages alone is simplistic. The underlying assumptions we were making in conducting the courses needed to be challenged, but this only became possible once we embarked on a research process that involved reading more widely and included critical dialogue with colleagues and academics. The story of this research process is described below; it included evaluation studies at the Umgeni Valley Project as well as a masters programme in Environmental Psychology in England, experiences which provided the impetus for me to develop a greater understanding of research and environmental education.

2.7.3 Evaluation studies at the Umgeni Valley Project

2.7.3.1 Outside expert evaluation

In 1977 an evaluation process began at the Umgeni Valley Project with a course evaluation in February (Hurry, 1977). This was followed by the development of an objectives-driven draft framework, teach-and-test by objectives (Downing, 1977), and an evaluation report compiled after a two day visit to the project in December 1977 by two specialist environmentalists/ educators (Wildlife Society of Southern Africa, 1977). This report revealed major management flaws in the project as well as staff dissatisfaction. It also pointed out educational weaknesses, "a hodge-podge of mismatched concepts" (p3) which the report recommended would be overcome with support from "qualified educationalists" (p5). The evaluation recommended a more "practical experimental format" and the "systematic objective assessment of courses" (p5).

It is difficult to report on this period of the project's history because of a lack of primary data sources in the form of written material or reports. The descriptions which follow, therefore, are based on the reading of the few available reports, personal communications with key staff and committee members as well as my personal experience upon joining the project four years later, in 1981.

A tension between objective-centred education and experiential spirits (O'Donoghue, 1997)

was clearly evident at the Umgeni Valley Project at this time. The former has a structural functionalist orientation (2.9.1) and the latter relies on communing with nature (Wright, 1989), an orientation involving a spiritual commitment to conservation gained from experiences in nature. Both orientations became evident to me from observing courses conducted for pupils at the Umgeni Valley Project as well as from discussions with colleagues (Jones, 1982, pers. com.). It is only with hindsight, however, that I began to grasp the meaning of such orientations and realised how unaware I and other staff members were of them at the time.

Of course such orientations have implications for the development of resource materials; an 'experiential spirits' orientation is evident in, for example, *Creative Encounters: A collection of hands-on activities* (Wright, undated). *A Water Study* by Greig (1977) is, on the other hand, an early example of material that encourages a systematic exploration of stream and pond life and demonstrates an objective-centred perspective.

The expert evaluation (Wildlife Society of Southern Africa, 1977) had a demoralising effect on staff and committee members (Zaloumis, 1996, pers. com.). As is often the case with an 'outside expert' evaluation, the staff and members of the management committee were unable to engage with the issues reported. Unfortunately, they were also victims of the academic stature of the researchers and the research process. The report was considered by many to be too academic and it was felt that it did not take cognisance of local sensitivities within the Society at the time (Irwin, 1996, pers. com.). This form of outside expert evaluation has been widely criticised elsewhere for its destructive potential and inability to provide genuine support for those who have been evaluated (e.g. Reason and Rowan, 1981; Carr and Kemmis, 1984 and Popkewitz, 1984).

2.7.3.2 A participatory research process

In 1986 a further evaluation process was initiated at the Umgeni Valley Project with, in this instance, a participatory orientation (Feuerstein, 1986). An evaluation committee, comprising

Rob O'Donoghue (of the Natal Parks Board), Francis Gamble (a consulting academic and President of EEASA) and Pat Irwin[23], agreed to help supervise the process.

Problems with 'outside expert' approaches to evaluation that purport to provide objective measures of success had, by this time, become apparent and a participatory approach to the evaluation was therefore adopted (O'Donoghue, 1986 and Wright, 1988). Through the evaluation the ideological underpinnings of the educational programmes of the Society came under closer scrutiny and the 'modernistic' implications (Docherty, 1993) of programmes that set out to 'get the message across' started to become evident. One outcome of the participatory evaluation process was the production of a hand-book of evaluation techniques (O'Donoghue and Taylor, 1988b). This hand-book was produced to share evaluation techniques amongst staff of both the Society and Natal Parks Board and included a critique of 'objective-centred' and 'outside-expert' approaches to evaluation.

The participatory evaluation experience, coupled with a masters programme in Environmental Psychology in England, marked a transition for me towards a greater clarity of understanding in environmental education. It is important to recognise, however, that the change was not sudden or systematic but a slow, difficult and often rather painful process!

2.8 The masters programme in Environmental Psychology

A two year period of study in Environmental Psychology in England became a significant shaping period for me. This study was ostensibly undertaken to come to grips with modern approaches to psychology as well as psychometrics and evaluation (Taylor, 1987a). The year-long course in England did not provide the psychological techniques and answers I had believed possible, however. It did, nonetheless, help me develop greater understanding and

---

[23] Pat Irwin's position on this evaluation team, as well as his participation on the early Umgeni Valley Project management committee, provided a stabilising influence at this time. This influence and critical support reassured my Society employers when they became anxious about research reports that seemed to be raising tensions and challenging 'conventional wisdom' (refer for example 2.14 below and O'Donoghue and Taylor, 1988a).

confidence in research. Most importantly, I began to take cognisance of many of the naive, technicist (2.9.2) assumptions I had carried about education. In particular, I developed a healthy respect for the uncertainties related to educational outcomes and came to doubt the simplistic, linear and causal, relationships that are so often assumed between attitudes and behaviour (Wicker, 1969[24]).

While studying in England I began to realise how complex the relationships are between attitudes, values and behaviour. This complexity is illustrated in a recent paper by Gough:

> Many current conventional approaches to environmental education tend to reflect and naturalise models of social interaction in which 'rational' behaviour is assumed to follow from human actors pursuing their more or less enlightened self-interests in maximising utilities and amenities or satisfying preferences. These approaches tend to privilege particular forms of knowledge - such as the 'scientific' understanding of ecosystems - that are assumed to be instrumental in enabling humans to pursue such 'rational' choices. Yet the extent to which knowledges are authorised, and the manner in which they are (or are not) mobilised in the form of dispositions to act (or not) may be very sensitive to different cultural traditions, values and identities (Gough, 1996:5).

A further benefit to me of the course in England was a widening of the research dialogue with other significant researchers in the social sciences, a number of whom have since visited the Umgeni Valley Project in South Africa and all of whom have contributed to the environmental education projects of the Society in immeasurable ways.

2.9 Modernistic orientations

Both the participatory evaluation at the Umgeni Valley Project and the study period in England helped shape my conception of environmental education. These experiences helped inform my understanding of the many underlying modernist assumptions that permeated my earlier, and even more recent work. Modernist orientations, and the effects they have had, seem to become clearer when one looks back at earlier work.

---

[24] In a comprehensive review of thirty research studies in psychology Wicker failed to find any direct, causal and reliable relationships between attitudes and behaviour. A more recent commentary by Uzzell (1995) supports this perspective. Even former proponents of the notion that attitude change will lead to a direct change in behaviour have questioned this view (Hungerford and Volk, 1990).

Modernism[25] can be described as an orientation that champions progress, rationality, wealth and, more recently, equality. Modernism encapsulates all that is to do with things that are modern and therefore assumed to be better.

> Modernism presents itself as the expression of the progressive age of the 20th century; a functionalist paradigm, it champions Western models of intellectual, social and political 'advance' and heralds technological and 'rational' scientific breakthroughs as the tools of development for both the developed and the developing worlds (Stout, 1992:4).

Related to modernism are structural functionalism, technicism (Buckland, 1982 and Nel, 1987), scientism (Beck, 1992), and *apartheid*, which has been described as a "delinquent cousin" of modernism (O'Donoghue, 1993a:29). These have been, and still are, influential social forces that may be associated with notions of 'betterment' and 'progress'. These forces have strongly contributed to the shaping of environmental education in South Africa. Underlying these terms are ideological orientations that have considerable implications for this study. A greater understanding of these social forces was required before I was able to comprehend their effects on the environmental education programmes of the Society. In this next section, therefore, I outline these terms, as I have come to understand and apply them in this study.

2.9.1 Structural functionalism

Structural functionalism, a global, dominating mode of thought, is a mechanistic orientation that is characterised by linear and causal perspectives on education and social change. Structural functionalism has its roots in a North American 'frontier' outlook, a social disposition that resonates with similar development in South Africa (Sparks, 1990) and is consequently a dominating force here (Nel, 1996, pers. com.). 'Structures' with particular 'functions' are assumed to have direct causal effects on learning and social change. In environmental education a structural functionalist disposition reinforces the desire to cause change through structures (courses or resource materials) with particular functions (to make

---

[25] The term modernism can be used to refer to the ideological underpinnings of modernity, a worldview which is associated with a transition from pre-modern times through the rise of science and the industrial revolution (refer Docherty, 1993:5).

participants 'aware').

However, social change is seldom a linear process (Popkewitz, 1984), and strong structural functionalist orientations to education invariably lead to shortcomings and often disillusionment.

2.9.2 Technicism

Technicism is a further feature of modernist thinking. Technicism comes from a preoccupation with *technique* and *technology,* and also has a dominating linear and causal belief structure. Technicism is more than an obsession with technology and 'techno-fix'. It supports a belief structure that sees the world, and how people relate to it, as involving rational processes that can be addressed in a mechanistic manner (Nel, 1987 and Lyotard, 1993). Manifesting within modernism and techno-science, technicism has been supported by its research complement *scientometrics,* a positivistic research style that has dominated the social sciences until quite recently (Reason and Rowan, 1981). Interventionist ideologies often have a technicist orientation that may be linked to positivistic research perspectives where social change becomes a matter of technical and administrative reform (Popkewitz, 1981).

Early Society policy documentation (Wildlife Society, undated) demonstrates a technicist orientation to environmental education. Planning documents (e.g. Taylor, 1985a), had an unquestioning emphasis on physical features in support of environmental education such as buildings and media with little clarification of the educational assumptions or implications. This preoccupation with structures and objects that are designed to support a rational, structural functionalist orientation to change is, perhaps, predictable in an environmental context that is dominated by principles reinforced by the rationalist logic of a 'natural science' paradigm:

> the principal factor explaining the relative lack of influence of the hermeneutic tradition in the Anglo-Saxon world has been the dominance of views of social science drawing their inspiration from positivistic or naturalistic philosophies of natural

science (Giddens, 1982:1).

2.9.3 Scientism

The term scientism can be used to refer to an unquestioning belief that science can solve most of society's problems (Beck, 1992). Social theorists such as Beck value science but are critical of scientism. According to Beck, dialogue between different bodies of knowledge is required if society is to be successful in addressing the socio-ecological problems of today. Beck demonstrates the importance of scientific instruments in providing data about environmental issues; these instruments extend the human senses. However, he challenges the idea that objective interpretations are above social, economic, political and bio-physical circumstances. This perspective is particularly significant to this study which focuses on environmental education resource materials as tools with which environmental issues can be explored and, where appropriate, addressed reflexively from a more informed position (refer Chapter 4).

The above orientations to social change (structural functionalism, technicism and scientism) have had, and will continue to have, considerable implications for environmental education. These terms have become less obscure to me through the written and verbal research dialogues associated with this study. This growing understanding of the meaning of the terms does not mean that the work we are now involved in has moved beyond modernistic orientations, however. The increased clarity has, nonetheless, enabled me to be more sensitive to their limitations and more critical of the unfounded modernistic assumptions that are often made in environmental education.

Through this developing understanding we have, as participants within Share-Net, hopefully become less victim to conventional assumptions in environmental education, and to realise how these orientations to social change are evident in the developing Share-Net story. The concept of being able to "re-read" (Barthes, quoted in Lather, 1996:545) that which appears self-evident or simply assumed to be obvious and the way to do things is a recent revelation that runs as a thread through this study. I have endeavored to re-read and re-search the

developing Share-Net story from different perspectives and the developing understanding of modernistic terms and orientations informed this 're-reading' process.

2.10 The development of an Extension Service

At the Umgeni Valley Project the ACE project continued to provide a service to environmental education projects, organisations and individuals outside the existing residential projects of the Society[26]. A nagging doubt, however, gradually developed over the political correctness of the term 'African' in African Conservation Education (Hurry, 1986, pers. com.). Political changes in South Africa were making projects that targeted particular race groups feel uncomfortable[27]. A recent counter swing in public opinion is evident today. A current Society project, funded by USAID, is only permitted to 'target' historically disadvantaged (this essentially means black) people (Hawkins, 1996 and Chapter 6.5.2). The origins of the early ACE project were, however, founded on the objective of getting the conservation message across to black people who had been disadvantaged by *apartheid* and were not allowed access to many conservation areas. In this sense it had been a project that was ahead of its time.

In 1987 the ACE project was renamed the Extension Division (Taylor, 1987b). This term overcame the perceived problems related to the term 'African' and, with hindsight, encapsulated the technicist idea of causing change in others by 'extending' messages to them. The notion of a 'division' also had connotations of an efficient bureaucratic structure, separate (divided) from other functional 'divisions' of the Society. Rob O'Donoghue (1987, pers. com.), a project executant for the 1986 Umgeni Valley Project evaluation, asked the question: "Do you want to develop a separate and divided structure or, do you wish to extend a *service* to those who need support in environmental education?". The divisive potential of the term

---

26 The residential projects of the Society at this time included the Umgeni Valley Project (KwaZulu-Natal), Ben Lavin (Northern Province) and Abe Bailey (Gauteng).

27 The term 'African' had come to mean 'black'.

division was realised and the name was changed to Extension *Service.* The new, broader objective was to reach out, train teachers and promote environmental education through courses and the Wildlife Clubs Programme (Wildlife Clubs, undated). Implied in this is still, of course, the technicist notion of 'us' conveying a message to 'them'. In order to provide an adequate extension service for environmental education, educational resource materials were clearly required.

2.11 Environmental education resource materials

2.11.1 The need for environmental education resource materials

The need for educational resource materials in support of environmental education had, earlier, been well documented within Society projects (Hurry, 1978; Gcumisa, 1981 and Pringle, 1982:253). Consistent with the earlier, technicist, position described above, materials development had entailed the publication of material designed to make people environmentally aware or the production of posters with clear conservation messages (Taylor, 1989a).

2.11.2 The Spioenkop workshop

By 1986 a range of environmental education materials had been developed in South Africa or were in the planning stages. A workshop with the purpose of critically examining current resources so as to develop more appropriate materials, was therefore convened at Spioenkop in Natal. This workshop acknowledged the weaknesses of earlier resource material development projects and identified them as follows (Griffin, 1986):

- materials had not been developed around an adequately researched rationale,
- few teachers and other users had been involved in the development processes,
- the purchase, or acceptance, of free materials was assumed to indicate the successful use of the material,
- evaluation at the development (formative) and implementation (summative) phases had been neglected, and
- the redevelopment of materials for local situations had not been considered.

2.12 The developing concept of cooperative resource development

In a follow-up to the Spioenkop meeting a 'Strategy and Research Priorities' workshop was convened in Johannesburg in January 1988. This workshop also developed out of the need to redefine *Action Ecology*, a Natal Parks Board initiative, that had set out to provide teachers with appropriate materials for the teaching of ecology. Developing from this workshop was the concept of a cooperative resource development initiative with other agencies. This vision emerged from the dialogue around a collection of papers on implementation strategy, environmental communications and cultural change edited by O'Donoghue (1988) for the Johannesburg workshop. The objective of the workshop was to develop a cooperative research and development programme between the Society (Jim Taylor), the Natal Parks Board (Rob O'Donoghue) and the Environmental Education Association of Southern Africa (EEASA, represented by Francis Gamble). By engaging with the weaknesses of previous approaches to resource material development this workshop helped lay a theoretical foundation for a future network of cooperating individuals and organisations in resource materials development.

2.13 The 'Participatory Paper'

Discussions at the Johannesburg workshop, followed by a review of current approaches to resource materials development, led to the publication of a further paper on resource materials (O'Donoghue and Taylor, 1988a) which stressed the importance of participation in development processes. This paper drew on the experience of the development and dissemination of the *Action Ecology* materials and exposed further weaknesses in interventionist approaches designed to cause change. It was stressed that materials developed outside the life-world of the teacher, and informed by educational assumptions outside the teacher's experience, are unlikely to be used successfully by the teacher. The paper also stressed the importance of complementing the expert-centred development of materials with participatory approaches. It was argued that the compilers of the materials learnt a great deal in the development of materials while the users (teachers) were excluded from this valuable

learning opportunity.

2.14 A national workshop on resource materials

The publication of the paper on participatory approaches led to considerable tensions in the environmental education community. Some resource material developers even believed that the 'cause of conservation' had been betrayed (e.g. Soutter, 1988). Although tensions between differing ideological orientations to materials development had been evident previously, this was probably the first time the conflict was starting to appear in a published form. Tensions around the 'participatory paper' (O'Donoghue and Taylor, 1988a) led to a further national workshop (Taylor, O'Donoghue and Soutter, 1988). The 'participatory paper' and a paper by Moodie (1987) both of which were critical of conventional 'develop and disseminate' approaches to environmental education resource materials were circulated as background reading for workshop participants. The workshop was held at Midmar (Howick) in September 1988 and 75 delegates from different parts of South Africa attended, many of whom had come to "find out about these (so-called) new ideas" (Taylor, O'Donoghue and Soutter, 1988).

The workshop began with delegates displaying their materials and briefly commenting on them, and concluded with nine pages of commitments to cooperative resource material development projects (Taylor, O'Donoghue and Soutter, 1988:19-28). Many of these commitments were subsequently realised including the development of a network, the compilation of marine field guides (4.5.1.1) and the development of the Eco-Link teachers' workshop facility in Mpumalanga. Other outcomes included the Soweto Conference (2.15 and Ziegler, 1989) and the development of the *We Care* series (Lotz, 1995) for junior primary education.

This workshop was effective in raising the level of debate with regard to environmental education resource materials. Not only were there a number of practical outcomes but tensions between individuals and groups dissolved to a large extent in the practical

cooperative activity. The workshop also provided people, who had often only corresponded by telephone or letter, with the opportunity to meet and share differences of opinion, at the same time as working together to develop opportunities.

2.15 The Soweto conference

One of the outcomes of the national workshop described above was a follow-up conference at the Soweto Science Centre (Ziegler, 1989). At this conference one session was dedicated to the development of educational resource materials (Taylor, 1989b). This session began with a historical perspective on resource materials development over the past twenty years. Failed RDDA approaches (Papagiannis, *et al.*, 1982 and 2.1) were described, as well as large-scale blanket marketing of materials and targeting strategies. The importance of teacher development and the adaptive redevelopment of resource materials was also noted as were participatory and network approaches (O'Donoghue and Taylor, 1988a).

The session on resource materials was concluded by listing 'People, Places and Publications'[28] (with contact addresses) that are available to support environmental education. The workshop concluded by emphasizing the need for English to be used as the main medium in materials development and called for workshops for education officials and teachers. The importance of environmental education being regarded as a process, and integrated into various disciplines, rather than a separate subject was also emphasised.

2.16 An emerging technology to support locally developed materials

The need for a wider range of environmental education resource materials and the importance of materials being developed through participatory processes led to a number of local resource development projects. Fortunately, at this time, personal computers and elementary desk-top-publishing software were becoming affordable. Shell SA sponsored IBM compatible 'XT' personal computers with WordPerfect 5.1 software and ink-jet printers. This technology enabled the production of inexpensive, high quality educational materials and provided a basis

---

[28] 'People, Places and Publications' later became orientating categories for Share-Net.

for a wide range of locally developed materials (e.g. Taylor, 1989c).

In 1989 a workshop of Wildlife Clubs leaders was held at Ulundi in KwaZulu, during which a handbook for the Wildlife Clubs was produced (Taylor, 1989c). This workshop was a landmark event for the Society in that the participants at the workshop actively helped to construct the handbook. The workshop commenced with a session which established the various possible headings for the handbook. Smaller groups were then formed, each of which took on the task of compiling the required information. Sections covered in the handbook listed *people* available to support environmental education, the *places* to which field trips could be conducted as well as available educational resource materials or *publications*. Simple tips on the conducting of excursions were also listed as were ideas for projects and fund-raising. A local photographer produced black and white prints which were used to illustrate the handbook.

Once duplicated the handbook proved popular with participants and encouraging feedback on the usefulness of the resource was received for some years after its production. After the Ulundi workshop various other similar workshops were conducted and again localised handbooks were produced. Examples of these included a handbook for the Empangeni Richards Bay region (Alusaf, 1989) and one for New Germany (Taylor and O'Donoghue, 1989).

The production of these early materials is evidence of a project that was beginning to rely less on structural functionalist assumptions. Instead of the presenter (myself) presenting messages to the audience (the target group), the material, and even the environmental messages, were 'co-constructed' through engaged processes with participants (refer to Chapter 3 for a detailed discussion on workshops and Chapter 4 for a discussion on resource material development). This led to vigorous debate and active learning sessions where previously participants had simply been enthusiastic listeners.

2.17 Towards a cooperative network: the Share-Net workshop

The importance of collaborative structures through which participants could develop resource material steadily took on greater significance. Early in 1990 a paper recommending the establishment of an informal network was published (Taylor and O'Donoghue, 1990). Following further meetings in Johannesburg, and workshops in other parts of South Africa, a workshop with the objective of forming such a network was organised (refer to Chapter 5 for a more detailed discussion on networks). At this workshop the concept of Share-Net was developed:

> An informal, collaborative network through which individuals, projects and agencies can both contribute to, and benefit from, the development and use of environmental education resources.

As such Share-Net was neither a computer retrieval system nor a clearing house for resource materials, but an informal collaborative structure that set out to:

- encourage grass-roots resource development by teacher groups and local communities, and
- foster joint resource development activities amongst conservation and environmental education agencies and projects in southern Africa.

Significant presentations at the workshop, which was attended by over a hundred people involved in resource development, included a talk on curriculum development and current views on literacy. Examples of literacy materials such as *The River of our Dreams* (Esterhuysen and Napper, 1991) comic booklets by the *Storyteller Group,* as well as demonstrations of various forms of appropriate technology from 'do-it-yourself' poster production to 'cut-and-paste' methods with Tippex© and scissors. A 'bring and share market place' was also held; here, resources in all phases of development were displayed, described and further collaboration was invited. The importance of joint action, rather than manipulative attempts at changing others, was a key outcome of this workshop. This was, in a way, a turning point, starting a levelling of a 'power gradient' (4.4) that used to be dominated by messages from 'those who know and are aware' to 'those who should be made aware'!

2.17.1 The workshop proceedings

The production of proceedings for the Share-Net workshop proved difficult. How was one expected to record such a wide range of activity and to what purpose? Would such a document ever be read or used? How could 'proceedings' be developed that would enable productive Share-Net cooperation to 'proceed'? A key factor through all the discussions at the workshop was the importance of communicating by telephone. A simple telephone booklet for resource developers was therefore produced, which listed all participants at the workshop (Share-Net, 1991). The logo of Share-Net, which portrays 'people, places and publications' interlinking in support of environmental education, was adopted for the resource 'network' and printed on the cover of the 'phone booklet (Figure 2.2). Feedback indicates that this booklet is widely used and it has subsequently been updated (e.g. Share-Net, 1991, 1993a, and 1995a) in order to maintain accurate records.

Figure 2.2
The Share-Net logo

2.17.2 Shifting power relationships

The issue of power relationships is developed in later chapters of this study. Through the early development work on Share-Net the concept of ownership through participation rather than through coordination, facilitation, funding relationships, newsletters or even mailing lists, took on increasing significance. In the interests of cooperation it was agreed, for example, that wherever possible materials developed through the collaborative structures of Share-Net would remain copyright-free. This has remained a primary condition and the adaptation of materials is encouraged. Many resources are therefore available as master copies and on computer diskettes to support localising and redevelopment.

2.18 The Society and resource materials: a summary

Broadening perspectives and changes in the Society's name that reflect a shift from the preservation of wildlife in 'green islands' to the sustainable use of resources, have

characterised the development of the Wildlife and Environment Society of South Africa. Environmental education processes relying on simplistic, intervention-centred techniques for 'us' to change 'them' have also been challenged in the emerging policies and practices of the Society.

Materials development, too, has shifted from resources that were developed by conservation experts as part of campaigns to make people environmentally aware (Taylor, 1989a) to a more participatory orientation. This change was a result of a number of factors: evaluation studies, working with the Natal Parks Board to produce ecology and fieldwork resource materials, and a period of post-graduate study in England. These experiences led to my questioning many of my assumptions about education and challenging top-down or centre-to-periphery approaches. A *participatory* orientation (O'Donoghue and Taylor, 1988a) was explored and clarified through further research and collaborative action (Taylor, O'Donoghue and Soutter, 1988 and O'Donoghue and McNaught, 1990).

Finally the concept of a resource materials development network was developed through a series of local and national workshops. The development of a network for resource material development was a significant shift for the Society in environmental education. It marked a levelling in the power gradient from a position where presentations *to* people and the image of the institution were dominating to one where collaboration *with* other organisations and workshop participants was also considered to be significant. This did not mean that members of staff of the Society did not continue to make presentations to the public and schools or that materials did not continue to be developed *for* people. It did, however, enable a wider engagement *with* people around environmental issues of common concern.

From 1981 until 1995 workshops and short courses involving the use of resource materials have been conducted by the Society. In the following chapter, Chapter 3, these workshops are examined to establish significant trends and orientations with the objective of optimising participation and ongoing use of educational resource materials.

Table 2.1 A chronological record of documentation.

Date	Document	Comment
Undated	Early Society Policy on EE (Wildlife Society, undated)	An adoption of the Tbilisi Principles (1977) as an appropriate vision for the Society.
1981	*EE as a working reality: The Case Study of ACE* (Gcumisa, 1981)	"Its basic aim is to get the conservation message across to as many African (black) people as possible" (p1).
1985	Mkambati EE Centre (Taylor, 1985)	A feasibility study for the development of an EE Centre. Main focus is on buildings (structures).
1986	Spioenkop Workshop (Griffin, 1986)	A critical look at existing materials to plan for the future.
1987	*Extension Division: Preliminary Strategy proposals* (Taylor, 1987b)	To extend the Society's EE beyond its residential projects. "Responding to requests from other conservation agencies ...resource materials will be produced and disseminated" (p2). "Ongoing Specialised Courses" also offered.
1988	*Towards participant-centred resource development* (O'Donoghue and Taylor, 1988a)	SAJEE article criticizing RDDA approaches and stressing the importance of participatory approaches. This "participatory paper" led to a workshop later in the year.
1988	Workshop for co-operation in resource materials development (Taylor, O'Donoghue and Soutter, 1988)	Proceedings of the Umgeni Valley Project workshop clarified many co-operative resource materials development processes throughout South Africa.
1988	*Action Ecology: Background papers for a strategy and research priorities workshop* (O'Donoghue, 1988)	Materials assembled in preparation for a meeting between O'Donoghue, Gamble and Taylor to define wider cooperation.
1989	*KwaZulu Wildlife Clubs Handbook* (Taylor, 1989)	Handbook developed with club participants at Ulundi Workshop. This was an early example of the co-operative production of materials.
1989	*Zululand Wildlife Clubs Handbook* (Alusaf, 1989)	Empangeni-Richards Bay region (Alusaf edition)
1989	*New Germany Teachers EE Workshop* (Taylor and O'Donoghue, 1989b)	A comprehensive report on two teachers' workshops.

Date	Document	Comment
1989	Soweto Conference (Ziegler, 1989:25-26)	Proceedings of the conference with a focus on resource materials
1989	Handbook of evaluation techniques (O'Donoghue and Taylor, 1989)	A collection of evaluation techniques for environmental education. Includes a critique of positivistic and technicist orientations to evaluation.
1990	*Towards a co-operative network: Share-Net* (Taylor and O'Donoghue, 1989).	An EEASA Bulletin paper outlining a network strategy and criticising interventionist approaches to resource materials development.
1990	Share-Net Workshop (reported by Banach, 1991)	A workshop to clarify networking in EE resource materials development. Share-Net directory produced.
1990	*Action Ecology* masters thesis (O'Donoghue, 1990)	Thesis addressed environmental education, evaluation and curriculum change and focussed on the *Action Ecology* Project.
1991	Share-Net telephone directory (Share-Net, 1991).	A directory of participants from the Share-Net workshop, all of whom were interested in environmental education resource materials development (to be continuously updated).

CHAPTER 3 RESOURCE MATERIAL WORKSHOPS: SOME TRENDS FROM 1981-1995

To coordinate is to subordinate!
Frustrated teacher during the education crisis in Durban townships, Lamontville, 1990.

3.1 The study so far

Chapter 1 addressed issues relating to research design and the objectives of this study. The origins of the Wildlife and Environment Society (the Society) and the developing significance of environmental education resource materials were then described in Chapter 2. This third chapter examines environmental education resource material workshops for teachers[29]. The focus of the chapter is on the changing orientations to these workshops as reflected in the way the workshops were conducted and the manner in which the educational materials were used in the workshops. The potential opportunities that exist for the ongoing use and further adaptation of the educational materials are also considered.

A central question examined in this chapter is:

How should workshops for teachers be conducted to optimise participation and the ongoing use of educational resource materials?

3.2 Introduction

Workshops, for teachers and community workers[30] have for many years been considered an appropriate means of achieving the environmental education goals of the Society (Wildlife Society, undated and Pringle, 1982) as well as the broader goals of environmental education in South Africa (Department of Environment Affairs, 1989 and Ballantyne and Tooth-Aston, 1989). Many workshops have, therefore, been conducted by the Society for a variety of purposes and with different groups of people. Workshop participants have included leaders

---

29 In this study the term 'teacher' is used in a broad sense that goes beyond formal education. It also includes community workers, community leaders, conservation officials and others who play an environmental education role of one form or other.

30 For the purposes of this study the term 'workshop' is used to describe various kinds of meetings pertinent to environmental education resource materials, including short courses.

in society such as teachers, community workers and chiefs who were initially targeted to come on workshops either by Society staff or by government officials (Gcumisa, 1981 and Taylor and Mkize, 1985).

By the late 1980's an increasing number of workshops were held at the request of both participants and environmental organisations. Each workshop was essentially unique, in that the context, orientation and mood of the participants and presenter varied from one workshop to another. Trends or patterns in the way in which the workshops were conceptualised and conducted can, however, be traced. This chapter describes some of these trends which have emerged from an analysis of a wide range of data.

3.3 Data sources from which this chapter is developed

Data sources from which this chapter has been developed include voluminous early records of the ACE project (refer 2.4.2), published material, worksheets, correspondence, minutes of meetings, monthly and annual reports of the Society and the personal experience of having been involved in most of the workshops and courses since 1981. Diary records of all workshops at which I was present were also kept and these provided further data from which the workshopping processes could be described.

To assist the research process, the diary records from the years 1990-1995 have been transcribed into a simplified table format which is attached as an appendix to this study (Appendix A). This table notes the date a meeting or workshop occurred, the place and numbers of people involved as well as a very brief, summarising comment on the event. The material in Appendix A, although necessarily reductionist, proved a useful reference point throughout the study. Not only does it list significant workshops (denoted with grey shading) in chronological order but also other events and meetings that have influenced the development of Share-Net. The resource materials used during the workshops also offer insight into the orientation of the workshops and these too, have been noted where appropriate.

3.4 Shifting orientations to workshops

Four workshop 'trends' or 'phases' can be extrapolated from the data for the period from before 1981 to the end of 1995 (Table 3.1). These phases are:

i. The early ACE years before 1981,
ii. ACE at the Umgeni Valley Project 1981-1985,
iii. Participatory research and the *Action Ecology*[31] era 1985-1990,
iv. Share-Net and in-service courses 1990-1995 (continuing).

Table 3.1 Shifting orientations to workshops from before 1981 to 1995

DATE	METHODOLOGIES	RESOURCE MATERIAL USED
Early ACE before 1981	Field Officer shows participants environmental problems. Fieldwork in nature.	Studies of *fauna* and *flora*. Reference material on dunes, soils and an ecological succession study. Worksheets with questions for participants to answer (Wildlife Society, 1976).
1981-1985 ACE at Umgeni Valley	Experiential learning with participants in the Umgeni Valley Nature Reserve. Greater responsiveness by ourselves to requests for support from teachers and conservation agencies.	Few resources used. Resources were not seen to be very important except in terms of conducting an entertaining and compelling session. Examples of resources included *'Don't Kill the World'* (song by Boney M), and the Eco-tins pyramid (refer 3.6.3). A selection of animal bones were used to teach adaptations and a water study guide and reference sheet was used in the field (ACE, 1984).
1985-1990 The *Action Ecology* Era	Research and evaluation becomes important in workshops. Participatory resource development encouraged.	Resources used included the *Action Ecology* materials, *The Chair Game, We Care*, Field-work pads, the *Hands-On* (4.5.1) series of materials and various water quality monitoring resources (4.5.6; O'Donoghue and Taylor, 1988a; Taylor and O'Donoghue, 1989; O'Donoghue, 1990).
1990-1995 Share-Net	Similar to above but needs of participants emphasised. Display of a wide range of materials for teachers to look at, try out and adapt.	Resources included the *Action Ecology* resources, *We Care*, Field-work pads, the *Hands-On* series of materials, water quality monitoring materials and the *Enviro-Picture Building* resources (4.5.10; EEASA, 1990; 1992; 1993; 1994; 1995; Share-Net, 1994 and O'Donoghue, 1993a)

It must be stressed that these trends (or phases) were not mutually exclusive and considerable overlapping of ideas, dispositions and activities took place between them. There were no clear

---

31 The *Action Ecology* project was a Natal Parks Board initiative with the objective of providing environmental education resource materials to teachers (refer also 2.13).

cut-off points between the different phases and the dates listed are somewhat arbitrary. In fact, as will be seen in the discussion of the different phases it is often a swing in emphasis that becomes apparent, as opposed to steady, linear development. This, for example, includes a swing away from scientific enquiry during fieldwork (so evident prior to 1981), to a dominance of 'feelings centred' or 'experiential' approaches (during the period 1981 to 1985). A swing back to scientific enquiry during fieldwork is again evident in the period 1985 to 1990. This evidence of a 'swing' or 'ebb and flow' in orientation is an example of the 'non-rational' nature of social change so clearly articulated by Popkewitz (1984 and 1991).

3.5. The early ACE workshops prior to 1981

In the late 1970's workshops for community leaders and teachers tended to be presentation-centred and were complemented by the use of worksheets and simple reference guides to the local *fauna* and *flora* (Wildlife Society, 1976). Most overnight workshops were conducted in the vicinity of *Twinstreams,* a farm located on the north coast of KwaZulu-Natal which had been set aside by the owner for environmental education purposes. Participants were met at the local train or bus station and transported to *'Mick's Camp'* a rustic accommodation unit at *Twinstreams*. On the first evening the programme usually included a *braai* (barbeque) and a lecture by Ian Garland, the owner of the *Twinstreams* farm. A discourse on astronomy, population pressures and the role people play on planet Earth were topics usually included in the lecture. As the workshop proceeded the group participated in fieldwork activities with resources that included simple reference materials and worksheets that provided a space for answers to be filled in (Wildlife Society, 1976). Participants were exposed to land-use practices which were considered by the workshop presenters to be examples of 'poorly managed' as well as 'well managed' land. The workshops also included a visit to a game reserve where a local community was benefiting from the use of natural resources such as animal hides and reeds[32]. The courses were usually concluded with a brief

---

[32] The benefits neighbouring people receive from game reserves (protected areas) is now a topical conservation issue and was the subject of a national 'People and Parks' conference. This conference was held in KwaZulu-Natal in May 1995 (Curruthers and Zaloumis, 1995).

solitaire activity in which participants sat alone in nature for a short while so as to absorb the harmony and wonder of nature (Gcumisa, 1981; Pringle, 1982 and 2.7.3.1).

3.5.1 The disposition of the workshop leader

The manner in which the workshops were presented was, of course, an important shaping factor with regard to their success. The charisma and disposition of the leader was, therefore, particularly significant. This disposition was important because the workshops frequently involved group discussions. These often included contentious issues such as 'over-population', 'land tenure' and 'forced removals' of people to maintain conservation areas. The ways in which the educational resource materials were perceived and shared by the workshop leader were also most significant. If the materials were offered with genuine interest and enthusiasm this disposition was likely to spread amongst the group and full use could be made of the materials. If, however, the materials were handed out with indifference, or simply filled in as one would complete a bank application form, it was unlikely that the materials would take on any great significance for participants.

The disposition of the workshop leader (or teacher) is a significant issue that runs throughout this study. Wherever materials are shared with enthusiasm by a leader with an encouraging disposition they tend to be used enthusiastically by participants during the workshop. It may seem trivial to state the obvious but it is remarkable how seldom such issues are taken into consideration when evaluation studies of resource materials are conducted (refer for example, Dilley, 1993 and the Education Foundation, 1996).

3.5.2 Education *for* the environment

Fien (1993) differentiates between environmental education *in, about* and *for* the environment. The early ACE period of workshops can be described as education '*about* the environment'. Essentially the workshops were concerned with bio-physical issues although discussions around social, economic and political issues were not discouraged. At the completion of the workshop a certificate of competence was issued to participants who had

successfully passed a written test. This illustrates the content-based orientation of courses offered during this phase of workshops.

3.5.3 Getting the message across at workshops

As stated in Chapter 2.7.1 environmental education at this time was often perceived as simply a matter of getting the message across. When writing about the early ACE workshops Gcumisa notes: "Its basic aim is to get the conservation message across to as many African [Black] people as possible" (1981:1), and, later in the same paper "..... authority here is based mainly on the educator's superior knowledge....." (p3). These quotations illustrate the 'us' and 'them' orientation to environmental education introduced in Chapter 1. The arrogance of the 'informed' conservationists communicating their views to the 'uninformed' masses is clearly evident in many of the papers, correspondence and reports written during this phase of workshops. From my own observations of attending workshops during this period, however, the style of presentation proved to be far more sophisticated than these simplistic, and potentially alienating, statements appear. Despite the 'us' and 'them' outlook participants *were* encouraged to be actively involved in the learning processes and *their* views were often solicited, respected and discussed (Gcumisa, 1996, pers. com.).

3.6 ACE at Umgeni Valley: 1981-1985

My own involvement in the actual running of teacher workshops began in 1981 when I started working for the Society at the Umgeni Valley Project. My initial role involved conducting field courses for pupils in the Umgeni Valley Nature Reserve. I was also asked to resuscitate the Society's ACE project (refer Chapter 2.5). This project had been taken over from the Society by the new KwaZulu Bureau of Natural Resources (KBNR) when financial and staffing problems proved insurmountable to the Society (2.4.4). At this time the KBNR were still running in-service teacher workshops over four days in KwaZulu (in the *Twinstreams* area).

3.6.1 Reasons for re-establishing ACE

Discussions with influential Society members (Zaloumis, 1981 and 1996 and Cooper, 1985) indicate that the decision to resuscitate the ACE project within the Society was prompted by four key reasons:

- the exclusion of black people from most government-owned game reserves under *apartheid* legislation meant that there was little opportunity for black people to study and do fieldwork in 'natural' environments other than on the KBNR ACE courses,
- members of the Society felt that it was extremely important that greater numbers of black people were encouraged to support the principles of conservation. This disposition was motivated by a moral, and laudable, desire to involve people who had been disadvantaged by *apartheid*. It was however, also nourished by the 'us' and 'them' orientation to environmental education. This disposition may be paraphrased in the following way: 'unless *they* [in this case, the blacks] care about conservation, there is no future for conservation; *they* must be educated by *us*',
- promises of funding for people disadvantaged under *apartheid* legislation were increasingly being made. If the Society could capitalise on its earlier experiences with the ACE workshops it could not only conduct further workshops, but also be funded to run them. This illustrates how funding possibilities can influence environmental education (refer Chapter 6), and
- finally, the ACE workshops were considered highly successful and the Society did not wish to lose the initiative and hoped to capitalise on this success in its new, developing, environmental education programmes.

3.6.2 Responding to requests for training

In some ways the needs of emerging conservation bodies in so-called 'black homeland' areas influenced the role I was to play as the ACE Coordinator. Government conservation authorities in 'homelands' such as Venda, KwaZulu, Qwa Qwa, Gazankulu, Bophutatswana and Kangwane requested training workshops for their staff and these were conducted at the Umgeni Valley Project. Within formal education the desire to promote greater

environmental awareness was also evident and requests for workshops from institutions such as the Department of Education and Training, the Soweto Science Centre, Indumiso and Edgewood Teachers' Training Colleges as well as a number of other education departments, helped clarify the role I was to play (Extension Service, 1989). The strategic direction of the work was shifting, therefore, from overtly targeting the clientele (as was the case in 3.5.3) to responding to requests for training and attempting to realise these opportunities.

The direction of the project, at this time, was therefore developing more from its responsiveness to needs and requests for support than from rational strategic planning processes although strategic planning was being done at a committee level as well as at workshops (Taylor, 1987b). The capacity to respond to training and resource needs was later developed into policy documents (e.g. Wildlife Society, 1994).

3.6.3 Entertaining and compelling sessions

A second feature of workshops conducted between 1981-1985 was that they aimed to provide an entertaining and compelling experience. Few educational resource materials were used except those that contributed to the entertainment value, to the clarity of the 'message' or to the 'experiential' quality of the session. Examples of such resources included tape recordings of popular environmental songs as well as the commonly used 'eco-tins' resource. This resource involves the use of six labelled tins symbolising soil, water, air, plants, animals and people. With audience participation the tins are stacked in an ecological pyramid. The pyramid is then used to illustrate how, if the lower, non-living, elements of soil, water and air are disturbed or destroyed then the other elements, including people, will be threatened. Successful education was thus seen to be the presentation of clear messages in as entertaining a manner as possible.

Drawing on diary records this point can be further illustrated from a workshop conducted by myself and Zola Vakalisa (of the University of Zululand) in a township community hall in Claremont (ACE, 1984).

> The planning of the workshop on conservation and environmental education was done by local town planners as well as community workers. The meeting opened with a prayer led by a local teacher and then the *eco-tins* activity was played. This activity was followed by a taped version of the popular 'Boney-M' song *Don't kill the world*. Further discussion ensued and the pressing need for conservation was emphasised.

3.6.4 Power relationships

The workshop described above reveals a typical form of interaction between the Society and teachers in the early 1980's. The objective of providing a clear message in as entertaining a manner as possible reveals interesting power relationships. The workshop was enjoyed by all and the style of presentation tended to elevate the presenter in the audience's eyes. The quality of the interaction was similar to that of the 'performing seal syndrome' later described by O'Donoghue (1990). The power relations in the workshop elevate the agency (in this case the Society) and the presenter's status due to the entertaining displays and compelling messages, but are weak in terms of presenter/participant engagement with issues. Little opportunity is available for questioning issues or 'co-constructing' ideas with the audience or even amongst teachers in the audience. Although members of the audience may, at a later date, use the concept of the tins in their classrooms, or even use the song with pupils, these activities retain a superficial entertainment value.

These power relationships reflect a common institutional position from the early 1980's. Outcomes included 'getting messages across' and the institution was elevated, possibly at the expense of a more successful learning engagement with, or amongst, participants. This does not mean that all such presentations were inappropriate. In circumstances where large groups attend workshops a presentation-centred approach can be very helpful. Such a presentation can help clarify issues and provide a context from which further enquiry can develop. The disposition of the presenter is an important shaping factor, however. If the presenter feels superior, or believes he or she has superior knowledge, the audience may simply sit back and listen passively. If the audience feels they are being treated as inferior or ignorant by the presenter they may even become antagonised.

3.6.5 Structural and institutional support

This period was also characterised by an increase in 'structural' support for environmental education. This support included a concern for financial and institutional issues as well as the development of further structures (buildings, vehicles and audio-visual equipment) to support environmental education. Few planning documents, or indeed strategic planning meetings of staff, were devoted to issues such as how people learn, or how environmental education is supposedly able to contribute to social change. The emphasis was rather on financial, institutional or structural support for the environmental education programmes (Taylor, 1985a; 1985b and 1987b). This orientation to environmental education is reinforced by a dominating structural functionalist ideology that was particularly evident at the time (refer Chapter 2.9.1).

3.6.6 A shift from fieldwork to experiential learning

A further trend during this period was a shift from science and fieldwork in nature, which had been so evident in workshops prior to 1981, to an experiential and aesthetic orientation:

> Forget gestation periods and environmental indicators. Lay aside metre sticks, carefully close the books. Learn to value feelings: listen, smell, look. (Powell, 1988:8).

Emotive approaches that value feelings can provoke a sense of passion for the environment in participants (refer 2.7.3.1 and 3.5). Perhaps this appeared to be more worthwhile than scientific fieldwork. The elevation of experience above scientific enquiry may also have been reinforced by the appointment of a number of staff, myself included, who did not have a natural science training (Wright, 1996, pers. com.).

3.7 Workshops from 1985-1990: The *Action Ecology* Era

By the late 1980's an increasing challenge to underlying assumptions prompted a further shift in orientation (2.7.2). As stated in Chapter 2 this changing orientation became possible through greater interaction at workshops and a widening research enquiry that included the reading and writing of papers related to resource materials (O'Donoghue and Taylor, 1988a) and the conducting of national workshops on resource material development (e.g. Taylor,

O'Donoghue and Soutter, 1988). Critical dialogue with colleagues, with other researchers, as well as informal interactions with participants after workshops also contributed to changing orientations to the way workshops were run. Although workshop participants could recall aspects of the presentation such as "I enjoyed the workshop" or "I am grateful to the Wildlife Society for sharing these ideas with us," there was little evidence of longer-term effects. Interaction with teachers who had participated in workshops revealed teachers seldom applied the activities or concepts from the workshops (O'Donoghue and Taylor, 1988a). A similar finding was also reported by Lotz (1995) in her later work involving the running of resource material workshops for teachers in the Western Cape.

3.7.1 An enhanced level of enquiry

Chapter Two describes the enhanced level of enquiry into the processes of environmental education that characterised environmental education in the Society during the late 1980's (e.g. Wright, 1988; O'Donoghue and Taylor, 1988a and Taylor, 1989a). This research contributed significantly to a re-shaping of approaches to teacher workshops. In particular, research by O'Donoghue engaged with differing approaches to fieldwork and educational resource materials (O'Donoghue, 1990).

A further personal shaping characteristic of this period was my absence from the project for a period of two years to study Environmental Psychology in England. This period of study (refer 2.8) helped reveal the weaknesses of causal approaches to education as well as the uncertainties with which educational outcomes should be viewed. This became apparent when working with colleagues in the Psychology Department at Surrey University. Claims were often made about the probability of particular outcomes resulting from particular interventions but these outcomes were seldom realised in the way they were conceptualised (Taylor, 1987a).

3.7.2 A stronger focus on participants' needs

It is significant that with the development of an enhanced critique of educational processes a different orientation to workshops developed. This differing orientation was characterised by a stronger focus on participants' needs followed by an attempt by the workshop presenters to address these needs. Furthermore, it became apparent that if interactions with teachers during workshops were to become more successful it was important for teachers to describe the problems they had *in the context* in which they were teaching so that the workshop could respond to these. This would enable, to some extent, the classroom reality of the teachers to become actively dealt with as part of the workshop. This approach revealed many of the realities of South African education which had not previously been addressed in workshops. Overcrowded classrooms, poorly qualified teachers and a lack of good quality, locally relevant, educational materials tended to dominate descriptions of classrooms. The emerging understanding of the social realities faced by teachers gradually began to influence the way workshops were conducted as well as the way resource materials were developed. Consequently, materials were developed that were inexpensive and able to be used by large classes with no audio-visual apparatus.

3.7.3 Problems facing teachers when conducting fieldwork

The environmental concerns of the presenters of the workshops, being representatives of the Society or Natal Parks Board, as well as a syllabus that recommended fieldwork, usually led to discussions about the problems teachers face when attempting fieldwork. A workshop conducted for teachers at Edgewood College in 1988 provides a typical example of these. Problems listed by teachers included: little time in the curriculum, lack of suitable venues, no coherent structure for the fieldwork activity as well as inadequate resource materials (Figure 3.1). These findings were similar to those reported by Christian (1988) in two detailed surveys of teachers fieldwork needs.

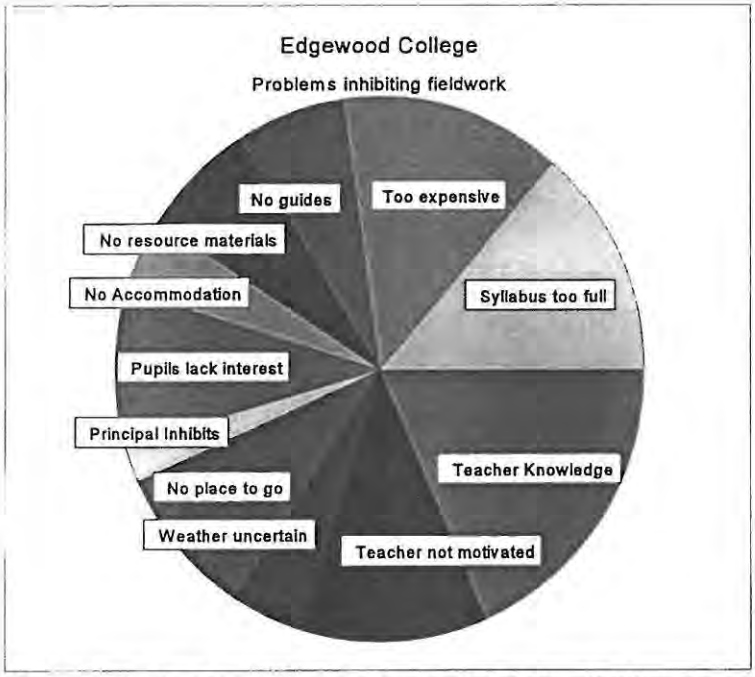


Figure 3.1. Problems perceived to be inhibiting fieldwork

Once the needs had been expressed by the teachers an attempt was made by the workshop presenters to deal with those needs that could be addressed from an environmental education perspective. In particular the issues of inadequate teacher knowledge, inadequate materials, the lack of guides and places to visit were dealt with through demonstrating and sharing suitable field-guides with workshop participants. An example of these was the *Hands-On: Soil and Compost Life* resource which was published after extensive trialling, (Londt, 1991). This resource, which is described in more detail in Chapter 4.5.1, was particularly useful because it could be used by inexperienced pupils to do field-work and enabled them to find out the names and functions of organisms rather than relying on the spoken word of the teacher or field officer. It was also possible to conduct this style of fieldwork in the classroom or in the school-grounds, negating the need for costly travel to a suitable venue.

The *Action Ecology* 'field-work pads' for data collection were also developed as a possible solution to some of these difficulties. The organisms to be studied could be identified using the *Hands-On* field guide booklets and then recorded on the fieldwork pads. The activity was concluded with participants assembling the gathered data in an ecologically meaningful pattern. This activity could be conducted in a relatively short space of time, in or around the classroom and it provided a coherent enquiry framework for fieldwork.

3.7.4 Giving away the tools of science

The resources and activities described above illustrate a shift in thinking from the earlier more charismatic workshops of the 1981-1985 period. As presenters we were now trying to equip the workshop participants with the resources and ideas with which they could address their needs. This orientation to resource materials workshops endeavours to place the tools of the learning in the hands of the participants rather than simply telling participants what the presenters felt they needed to know (Taylor, 1992b). This shift in thinking marked a transition in the power relations of the workshop: the presenter was no longer forced to play the role of a 'performing seal' impressing the audience with entertaining and informative examples. Instead the workshop had a more collaborative orientation in which specific needs could be addressed.

3.8 Workshops from 1990-1995: from needs to opportunities

The need for more appropriate resource materials led to a phase in which many new and adapted resource materials were produced. Resource materials that had been successfully field-tested in the previous phases of workshops were also published through the Share-Net printing infrastructure at Umgeni Valley (refer to Chapter 4 for a description of the processes of resource material development). Workshops could now be supported by a widening range of resource material alternatives, and usually began with a discussion around teaching or classroom issues and progressed to demonstrating or describing different resources. Teachers were then given an opportunity to try out materials and, through an active cooperative process, select or adapt those that they could use to address their own particular needs (refer Chapter 4.5.1.3).

3.8.1 Change that is not a smooth process

The style of conducting the workshops had developed and changed with time but it must be stressed that the process of change was not a smooth one. Neither was the change necessarily occurring at a conscious level. I noticed an example of this when looking back on a workshop I presented in the Mpumalanga region of South Africa (previously

Kangwane) in March 1991 (Appendix A). The song, *From a Distance,* by Bette Midler was used to illustrate the distance between people and the bio-physical world around them as well as the distances, or separations, that have developed between people during the *apartheid* years. The initial presentation was so compelling that it ran over the time set aside for the practical demonstration which was then cancelled. It was only with hindsight that the importance of a practical session was realised. Without it, and an application of some of the resource materials, the workshop was similar to those of the early 1980's where convincing messages were articulated, the audience was impressed by the speaker, but further grounded or engaged commitment was unlikely.

3.8.2 Exposing teachers to materials at workshops

A further diary extract illustrates the opportunities that could be realised by teachers attending workshops. These opportunities included exposing teachers to a wide range of educational materials that had been developed with teachers and community workers and which had emerged following considerable field-testing.

> Thirteen teachers from various farm schools in the Underberg district of KwaZulu-Natal met in the Farmers Association Hall at 11 am on the 16th September, 1993, for a workshop on environmental education. The workshop began with a discussion on Share-Net resources. The materials were introduced by myself as having been developed by other teachers who shared similar problems as the teachers in Underberg, and yet were attempting to overcome these through the use of the materials. Teachers then commented on their experiences and perspectives of typical farm school circumstances - these included large classes, inadequate facilities, inadequate pre-service training and inadequate educational resource materials. Various materials were then demonstrated focusing on *Madlusuthe's Farm* (4.5.10) as an orientating activity. Materials displayed during discussion included charts and jigsaw puzzles from *Eco-Link*[33] and Shell, as well as the *Hands-on* booklets (4.5.1). Teachers experimented with the simple *Hands-On: Grassland Life* booklet and identified the name and ecological role of various local grasses collected in the grounds around the hall. The simple *Catchment Action* water kits (4.5.6) were also demonstrated.

During the Underberg workshop teachers soon developed a comfortable relationship with the materials. The interaction was centred on an engaged discussion around issues which

---

[33] *Eco-Link* is a resource material development project at White River in the Mpumalanga region of South Africa.

arise in teaching situaitons. Where appropriate, materials were then considered as being relevant for solving some of the problems the teachers faced. Playing the *Enviro-Picture Building* game, *Madlusuthe's farm*, early on in the workshop, helped develop a rapport with the teachers who could relate to the material and soon became enthusiastically involved in the workshopping activities.

3.8.3 Enabling teachers to purchase resource materials

Resource material demonstrations at workshops led to an increasing number of resources being purchased by participants both during and after the workshop. Share-Net materials are sold on a cost recovery basis and each resource costs in the region of R6.00. It was not unusual for a group of 35 teachers to spend over R300 of their own money on materials, following a workshop demonstration[34]. The availability of these low-cost materials meant that teachers could leave a workshop equipped with resources with which they were now familiar. For many teachers it was, however, more convenient to order materials through the Share-Net mail order service[35].

3.8.4 Responding to the immediate social context

The capacity to recognise the needs of participants as well the particular social context of a meeting or workshop increasingly began to influence presentations. A talk to Rotarians at a lunch time meeting, for example, illustrates an inappropriate presentation. The following description was developed from my diary notes about this meeting:

> The talk was presented at a time when the new coliform water quality monitoring kit (4.5.6) was becoming popular. At the Rotary talk I tried to consider seriously the relevance and advantages of encouraging people to sample their own water supply. In a context of the expectation of an entertaining 'after lunch' speech this talk and practical demonstration was inappropriate and poorly received.

---

34 Of course the purchase of materials does not necessarily indicate that the resources would be effectively used by the teachers. Although informal feedback does give some indication of how materials are used a more detailed study of materials use in schools is beyond the scope of this study. This could well be addressed in future research.

35 The Share-Net mail order service was established to provide a responsive service to teachers in remote areas who needed resource materials. It also enabled the project to generate income (refer Chapter 6).

This experience emphasized the importance of being sensitive to the immediate social context and the needs of the audience or workshop participants. A more entertaining approach, perhaps with the use of a song such as *From a Distance* by Bette Midler, may have been more appropriate in this particular situation where entertainment was the expectation, rather than an engagement with environmental issues and resource materials.

3.8.5 The need for an 'organising framework'

By the beginning of 1994 workshops took the form of sharing existing Share-Net materials with teachers who could then, in turn, select and purchase materials of their choice from the Share-Net mail order service. In running the workshops, however, it became apparent that the number of materials on offer lacked a coherent organising framework. This was because a wide range of materials was available and it was difficult, especially in a short workshop, for teachers to conceptualise the different groupings of resources. The materials were, therefore, organised in clusters or themes, and the *Share-Net Resources Guide* (Share-Net, 1994) was developed. This guide has centre pages that reflect the major clusters of materials accompanied by a logo and page reference (Figure 3.2). By following the page reference the reader is able to find out about a particular resource and decide on its appropriateness for his or her context.

To assist teachers who needed information specifically on water and water quality monitoring a single page z-fold flyer listing all available water related materials was also produced. This flyer proved useful in assisting teachers who wished to purchase and adapt materials for the annual Water Week. The production of the flyer is an example of resource material development that was responsive to immediate needs and where an existing resource, the *Share-Net Resources Guide*, was adapted for particular circumstances. It also illustrated how materials can be used in a variety of ways.

Flexibility in the use and sharing of resources is echoed in an Environmental Education Policy Initiative (EEPI) publication edited by Clacherty:

> The role of the materials would be different and would present the teacher with a 'smorgasbord' or wide range of materials from which the teacher could choose as opposed to the current limited nature of the textbook as teaching material (1995:17).

By 1994 large numbers of workshops were being conducted for teachers and community workers. Resource material sales, too, were increasing. To help clarify the workshopping activities of this period further, a more detailed analysis of workshop orientations during 1994 was undertaken; this study is reported below.

3.8.6 Orientations to workshops during 1994

Seventy-nine resource material workshops were conducted during 1994 involving over 1600 teachers and community workers. Most workshops were conducted in response to requests from the teachers or community workers. Three differing orientations to the workshops conducted during 1994 are apparent (Table 3.2, below). The table lists the dates (months during which workshops were conducted), the orientation of the workshop, the numbers of participants that attended workshops during that period; as well as the way the materials were used in the workshop.

TOOLS FOR ACTIVE LEARNING IN THE ENVIRONMENT

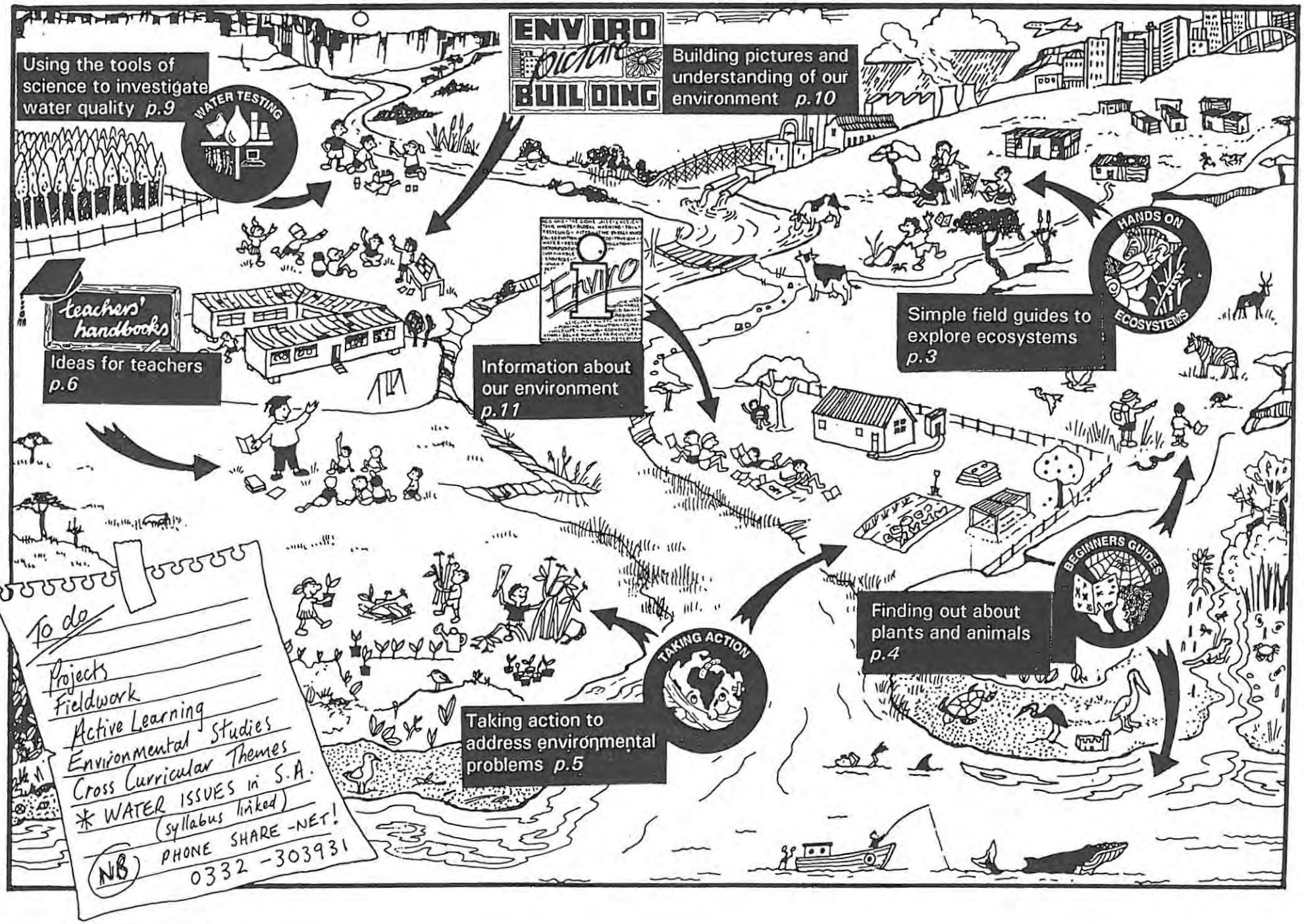


Figure 3.2

Table 3.2 A summary of workshop approaches during 1994

Date	Orientation	No.	Way in which materials were used
Jan-Mar	Planning the year's activities	410	Display of material, including the *Year Planner*[36], and commentary on the different resource 'clusters' of material.
Apr-Jun	Sharing materials	253	Display of material and provision of the *Resources Guide* (Share-Net, 1994). Materials layed out in clusters according to the explanation in the resources guide.
Jul-Aug	Sharing materials from an increasingly responsive perspective	657	Display of material with Resources Guide and enhanced verbal interaction amongst participants around the material. Question posed to participants: *Can these materials be of use in my own teaching situation?*
Sep-Dec		357	Display, Resources Guide and question: *How can these materials be adapted or used in my own teaching situation?* Participants encouraged to *write* brief response.

3.8.7 A focus question to guide participants

Following the production of the Share-Net resources guide in April 1994 the workshops could be presented with greater coherence. This was done by setting out examples of the materials on tables in the workshop venue in the same format as the centre-fold in the guide (Figure 3.2). Thus water testing resources would be placed in the front left hand corner of the room, the *Enviro-picture Building* materials to the centre and the *Hands-On* field guides to their right etc. During the workshop the different clusters of materials were then briefly described to the participants. This description included a commentary on the way each cluster of materials were developed, including a historical overview and a description of the many different ways the materials were being used and adapted by other teachers. The participants were then invited to spend some time critically considering the materials with the following question uppermost in mind:

How, if at all, can these materials be of benefit to me or my pupils?

This form of workshop, including the orientating question for participants, led to a greater

---

[36] The *Year Planner* is a one page, A3 planning sheet that lists all environmental days (e.g. World Environment Day, Arbor Day, Marine Day) and provides teachers with the opportunity to plan the year ahead and establish what resources to use in conjunction with the various days. An example is enclosed (Appendix Eii).

engagement with the materials. To enhance the opportunity for the workshop participants to engage with the materials still further, it was suggested that each workshop participant write a brief description which outlined how, if at all, the different materials could be adapted or used to overcome their own needs. This written activity provided participants with an incentive to engage with materials that was not evident previously. During earlier workshops many participants would simply gaze over materials without a concerted effort to look for value and without exploring the potential of the materials for adaptation to their own teaching situation.

3.8.8 A summary of workshop approaches during 1994

In summary, therefore, the workshop approach during 1994 evolved from a simple display of materials with a commentary, to include the use of a 'take home' resources guide as an orientating framework (Figure 3.2). This approach was complemented still further by a focusing question and by inviting the participants to develop a written example of the way the materials could be adapted and applied in their own teaching circumstances. It should be noted that these outcomes are a generalisation of what occurred. Every workshop was, as already stated, unique and while a plan for each workshop was developed, prior to the workshop, it was important to respond to the needs and situation (context) of the workshop, and the workshop participants, rather than to blindly follow the preconceived plan.

Teacher workshops during 1994 were usually presented by myself but the development of better planning frameworks for the materials made it easier for other Society employees, who were not necessarily familiar with all the materials, to offer a workshop with confidence. The idea of *sharing* materials with teachers, rather than trying to impress or *change* the teachers, enhanced our confidence and appeared to contribute to more meaningful interactions.

3.9 Clarifying participants' needs and opportunities

The development of a coherent plan for each workshop provided the presenter with the confidence to be flexible and responsive to the immediate needs of participants. Again the ability to respond within the social context was, however, found to be more important than

following a clear instrumental and predetermined plan. This enabled an orientation that was sensitive to the participants' needs and disposition in that the workshop could be changed according to the needs of the group and the feedback received. This also enabled the workshop to become more practical and relevant.

When responding to a request to conduct a workshop it was important to clarify the context, needs and opportunities within which the workshop was to be presented. Following an invitation to present a workshop, therefore, time was spent discussing the particular local needs and requirements with participants *before* the workshop.

3.10 The importance of responsive workshops

Workshops conducted in *response to* specific requests for materials support from community workers and teachers appeared to be of greater value than those proactively designed and *advertised for* teachers and community workers. In managing the Share-Net project, therefore, efforts have been made to be able to respond, often at short notice, to requests for workshops. In this regard the sponsorship of a vehicle from the Mazda Wildlife Fund and travel support from Shell have been invaluable. Both these sponsorships were particularly helpful in that they offered myself, as project executant, the freedom to attend workshops, when required, without having to pre-budget time and travel expenses for each specific workshop a year in advance (refer Chapter 6).

3.11 The need for longer courses

While workshops did provide large numbers of teachers and community workers with exposure to Share-Net resource materials there was often too little time to 'get to grips' with the use of more complex materials, such as water quality monitoring resources. Neither was there time for participants to thoroughly try out the materials so as to plan ways of using or adapting the materials. For these reasons many participants requested longer courses and, following interaction with prospective participants, as well as with conservation agencies, who had also expressed interest in longer courses, two further courses were developed.

3.11.1 The Environmental Educators Course

The first of the longer courses was held at Umgeni Valley in 1993. This three day course was later extended to four days and is now known as the *Environmental Educators Course* (Appendix Di). The course currently runs four times a year at the Umgeni Valley Project (2 days) and at the Treasure Beach Environmental Education Centre (for the remaining two days). This course has evolved considerably since it was first offered and now provides an extensive opportunity for participants to familiarise themselves with resource materials. The course offers participants opportunities to experience different approaches to environmental education, to the conducting of field-work (urban and natural) as well as to the use, development and adaptation of environmental education resource materials.

3.11.2 The Natal Parks Board / Share-Net fieldwork course

The second longer course developed out of the earlier experience of conducting and researching workshops for teachers and was developed in cooperation with the Natal Parks Board. This two-day course was developed to equip course participants, who are usually Parks Board officials with no experience or training in environmental education, to conduct field trips in nature reserves. Modules for teaching each school grade are therefore offered. Each module deals with a particular field activity.

The course begins with an orientation session in which the *"Reserves and Neighbours" Enviro-Picture Building* resource (4.5.10) is used to introduce the nature reserve to the teachers and pupils. Other activities are then presented which include: animal morphology (illustrated with animal skulls and bones) for grades 1-3 (usually 6 to 8 year olds), a water study for grades 4 and 5 (9 and 10 year olds) and a soil study for grade 6 and 7 (11 and 12 year olds). Resource materials are provided for each of these different modules and are made available in a *portfolio box* to course participants. This large flat box can be opened to form an inexpensive, yet informative, display to support the field trip (refer Appendix Dii for the course outline).

3.12 Other related courses

Teachers or community workers who attended resource materials workshops often expressed

a wish to study environmental education further and in more detail. This need contributed to the development of two further longer courses in environmental education. These were the B.Ed. Module in Environmental Education at the University of Natal (Pietermaritzburg) and the Rhodes/Gold Fields Participatory course. The development of these further courses implies a rational, planned progression as a result of an expressed need. But this development was as much a result of wider opportunities that were becoming evident at Natal University as well as within the EEASA community at this time.

3.12.1 The B.Ed. module

In 1993 I was approached by the *School of Education* at Natal University to assist in the presentation of an environmental education module at a B.Ed. level. This module was being offered because of growing interest in environmental education amongst B.Ed. students. This programme provided a further opportunity to respond to teachers' requests at workshops for longer more detailed courses. The module covers four basic themes: the environment crisis, environmental education as a response, trends and patterns in environmental education and environmental education resource materials. The course consists of ten two-hour sessions, one of which is a short field trip (refer Appendix Diii). In 1995 23 teachers successfully completed this course. The course was offered again in 1996 and seems likely to become an ongoing module in the B.Ed. programme in Pietermaritzburg.

Share-Net resource materials, and my experience of teachers workshops, proved helpful when presenting the course. At the outset of the course the *Enviro-Picture building* resource was used to orientate the students to the issues concerned and this was then linked to a wider range of Share-Net materials. As the course proceeded the students, all of whom were practising teachers, tried out various materials of their choice and gave feedback on these. This provided me with a valuable opportunity to interact with teachers in an ongoing way.

3.12.2 Rhodes-Gold Fields participatory course

The year long Rhodes-Gold Fields participatory course in South Africa is a further course that was developed out of a disillusionment with short superficial workshops (Janse van Rensburg, 1993). The central idea behind the course was to grapple with more substantial issues in a year

long 'distance' course that participants could undertake while still doing a full-time (often over-full) job. This course has been offered as a national course for the past five years in South Africa and with ongoing modifications has proved helpful in developing the capacity of both students and tutors. Each year about 60 participants attend national and regional workshops (Taylor and Paxton, 1994). At the outset of the course participants receive a comprehensive course file. This file contains core materials which are supplemented by additional readings. Appropriate Share-Net materials (e.g. Enviro-Facts, 4.5.4) are included in the file. This course has also been adapted and run successfully in Zanzibar (Heylings, 1995, pers. com. and Taylor, 1995c).

As part of an assignment for this course students are expected to develop a teaching resource or environmental education programme. When resources have been developed by participants that appear to have a wider usefulness, these are produced through Share-Net and add to a widening pool of resource materials. In 1996 two resources were published in this way: *A year of special days* (Davies, K., 1996) and *Forest plant community* (Davies, A., 1996).

3.13 Concluding summary

This chapter commenced with the question: *How should workshops be conducted to optimise participation and the ongoing use of educational resource materials?* The kind of participation in workshops changed as the study progressed. There was, for example, considerable audience participation in the early workshops prior to 1985 where entertainment was an important aim. Later workshops involved more meaningful discussions as presenters and participants jointly considered resource material issues around needs and opportunities.

The following trends are evident in the period of 'workshopping' from before 1981 to 1995. Prior to 1981 workshops were content based and focussed on education *about* the environment, involving lectures and simple scientific enquiries. This period was followed by greater charismatic teaching involving affective and experiential learning (1981-1985). From 1985 to 1990 a period of research, prompted by evaluation projects and a course in the

United Kingdom, led me to greater understanding of the processes of environmental education.

Participatory resource material developments, initiated between 1985 and 1990, led to a wide range of resource materials being produced. These materials were available to assist participants to *find out* about, and to *do* something about, local environmental problems (e.g. low-cost water quality monitoring and catchment action strategies). Materials were also appropriate for selective adaptation and redevelopment according to specific local needs. In supporting better fieldwork techniques this latter phase has similarities to the workshops that were conducted prior to 1981. Both phases were orientated to scientific enquiries in nature, supported with resource materials, although the style and format of materials used were different.

An orientation to workshops developed, therefore, that was more *reflexive* (Beck, 1992) and less reliant on an 'us' to 'them' disposition. This meant that to some extent a levelling of the power gradient was taking place as participants' needs and aspirations were given greater attention. In later workshops less emphasis was placed on the impact the presentations were having on the teachers and greater attention was given to an engagement with ideas and needs that participants were expressing. Rich dialogue around learning situations in practical fieldwork (often outdoors) settings with resource materials helped enabled the workshops to be more meaningful and relevant.

The development of longer courses such as the environmental educators course, as well as those for Natal University and the Natal Parks Board offered the opportunity of responding to teachers' needs for more time to engage with and even adapt resource materials for their own use. It also enabled me to work with students over a longer period of time and, where appropriate, develop and publish further resources through Share-Net.

In circumstances where longer courses were not possible workshops provided useful opportunities for sharing resource materials and inviting wider participation in resource material development. Workshops that focused on educational materials that can be

selected, adapted and if appropriate purchased for further use, seemed to be particularly useful. The Share-Net *Resources Guide* (1994) has also proved invaluable for orientating teachers to the different groups of materials. This guide, which provided a loose structure or pattern into which materials were grouped, was also helpful in giving confidence to other members of staff who were sometimes expected to conduct workshops, but did not have a clear idea of how all the materials could be organised.

In the next chapter, Chapter 4, the manner in which the educational resource materials were developed is examined through a number of selected case studies.

CHAPTER 4 CASE STUDIES OF RESOURCE MATERIAL DEVELOPMENT

The problem, then, is more than making language accessible.
Popkewitz, 1991:234

4.1 The study so far

Chapter 1 outlined the research orientation of this study as well as the research questions that guided much of this enquiry. Chapter 2 considered the origins of the Wildlife and Environment Society (the Society) and described the developing need for environmental education resource materials as well as the development of Share-Net, a resource materials development network. In Chapter 3 resource material workshops conducted over the past 15 years were examined and emerging trends and orientations discussed.

This chapter considers the way educational resource materials were developed through Share-Net, by examining a number of case histories of resource material development (Table 4.1). The objective was to try and understand the complexity of the materials development processes so as to establish useful principles or patterns that could guide future initiatives. A focus question that guided this phase of the research was:

How should future Share-Net resource materials be developed?

4.2 Background

Chapter 3 summarised changing orientations to resource material workshops for teachers and other individuals working in environmental education. Workshops have developed from charismatic presentations which sought to 'get the message across' in the early eighties to workshops designed to share educational resources with participants in the 1990's. The objective of the more recent workshops was to equip teachers with the materials to sustain ongoing environmental education processes rather than assuming that change would result from the transmission of messages. Giving away the tools of science, or sharing the educational resources thus became a key focus of more recent workshops (Taylor, 1992b).

4.3 A focus on resource material case studies

In response to the need to provide teachers with appropriate educational resource materials, a wide range of resources have been developed. This resource material has been developed through a range of different approaches which depended on a number of variables such as the nature of the resource, the influence of the particular authors or compilers involved and the funding available. In this chapter a number of selected case studies of different resource development approaches are examined. This was done with the objective of establishing principles or patterns of resource development that could inform future resource material development projects within Share-Net and if appropriate in other resource material development initiatives.

4.4 A local printing infrastructure

The research process that initially investigated the use and development of educational resource materials has been mentioned in Chapter 2. This research questioned simplistic Research, Develop, Disseminate and Adopt (RDDA) models of materials development and led to different perspectives, including participatory approaches and the emergence of an informal resource materials development network known as Share-Net. To support collaborative resource materials development within the Share-Net network, a low-cost printing infrastructure was developed at the Umgeni Valley Project. This printing infrastructure provided the basis for inexpensive, local production.

The Share-Net printing infrastructure was developed over a number of years with support from Shell (South Africa). This infrastructure includes personal computers for the compilation of text as well as light tables, cutting boards and non-permanent glue for 'cut-and-paste' lay-up of masters. Materials are printed from high quality laser or ink-jet printers and duplicated on a photocopier (print runs of 100 or less) or on an off-set lithograph (for print runs of 100 or more). Other technology includes a bulk paper guillotine, a folding machine, a collating machine and 'book-maker' which folds and staples A5 booklets.

A recent addition (1996) to the printing infrastructure has been the purchase of a *Duplo* printing machine. Although this machine is as easy to work as a photocopier, it is much cheaper to run and has the added advantage of being able to do additional print runs using different colour ink (for an example refer to Appendix Eiii). This capacity has considerable advantages for resource material production as is evident in the descriptions that follow.

Outside funding has been used to establish the printing infrastructure. Resource materials are then sold on a cost-recovery basis so that the project is not entirely dependent on outside funding for running expenses (the issue of financial sustainability is considered in Chapter 6).

Acquiring the capacity to develop and produce resource material at the Umgeni Valley Project had important implications for the resource development processes. Local production gave project developers greater autonomy in terms of what resources could be produced and how this could be done. Material could be produced cheaply and easily and, when appropriate, draft resources could be produced for trialling and pilot testing. Local production at the Umgeni Valley Project therefore enabled a 'shift' in the production 'power gradient'. Resource developers who were working within the Share-Net project did not have to rely on the distant development processes of commercial publishers and instead had greater autonomy. These processes also enabled enhanced learning opportunities for teachers and resource developers through the struggle of compiling, field-testing and producing the materials.

4.5 Case studies of resource production

Through co-operative resource material development a wide variety of low-cost educational materials were produced through a range of different resource material development processes. A number of case studies of resource development from 1988 until the present follow.

These case studies have been tabulated for easy reference (Table 4.1). This table records the name of the resource, the year it was published and features of the development process. To assist the reader in conceptualising the nature of the different case studies a photographic record of selected resource materials associated with the different case studies follows the table (Figure 4.1).

Table 4.1 Features of resource development

Case	Resource	Date	Features of the development process
A	*Hands-On* Guides	1988	Teacher Committee, supporting coordinator; adapted existing materials, contract artist, field tested, produced for sale. Materials produced in A5 format.
B	*Beginners guides*	1988	Written by a specialist - assistance provided with trialling, lay-out and word-processing.
C	*Our Tree World*	1989	A story by Sue Hart told on to tape and transcribed into booklet format. Illustrated by professional artist. This booklet complements the "Our Tree World" poster, also produced by Eco-Link.
D	*Enviro Facts*	1991	Coordinator plus many specialists. Coordinator maintains cont4act with users through workshops. Steering committee guides process.
E	*Teachers' Handbooks*	1991	Coordinator plus teachers - each handbook has a different development focus. The coordinator's word processing skills were very important for the final production of the material.
F	Water testing kits/resources	1992	Coordinator plus expert support. Ongoing trialling and testing. Large kit - Coli-form tin - GREEN Manual - Starter kit - Coli-form kit - Flyer.
G	*Reefs* Booklet	1992	Coordinator plus multiple specialists - workshopping. Specialist editor.
H	*Action Series*	1993	Coordinator, re-worked honours thesis, workshopping process with other experts. Support from artist important.
I	Teacher Workshops	1994	Coordinator - booklet part of a Gold Fields assignment (refer 3.12.2). DTP expert needed for final production.
J	*Enviro-Picture Building*	1994	Adult literacy training officer plus educationists. Workshopping, trialling and redevelopment.
K	*Action Kit*	1994	Compiler working with a team.

TOOLS FOR ACTIVE LEARNING IN THE ENVIRONMENT

Figure 4.1

4.5.1 Case A: The *Hands-On* Series

The *Hands-On* field guides were some of the first resources to be produced through the Share-Net printing infrastructure at Umgeni Valley. The first of these, *Hands-On: Stream and Pond Life* (later edited by Choveaux, 1992), was developed from an earlier, published field guide (Greig, 1977). The cost of the published guide, as well as the lack of a reference page, led to the production of the *Reference Booklet for Water Study* (Umgeni Valley Project, undated) a simpler, inexpensive, photocopied booklet and it was from this booklet that the first *Hands-On* guide was developed.

In 1989, a project involving Rob O'Donoghue of the Natal Parks Board and local teachers

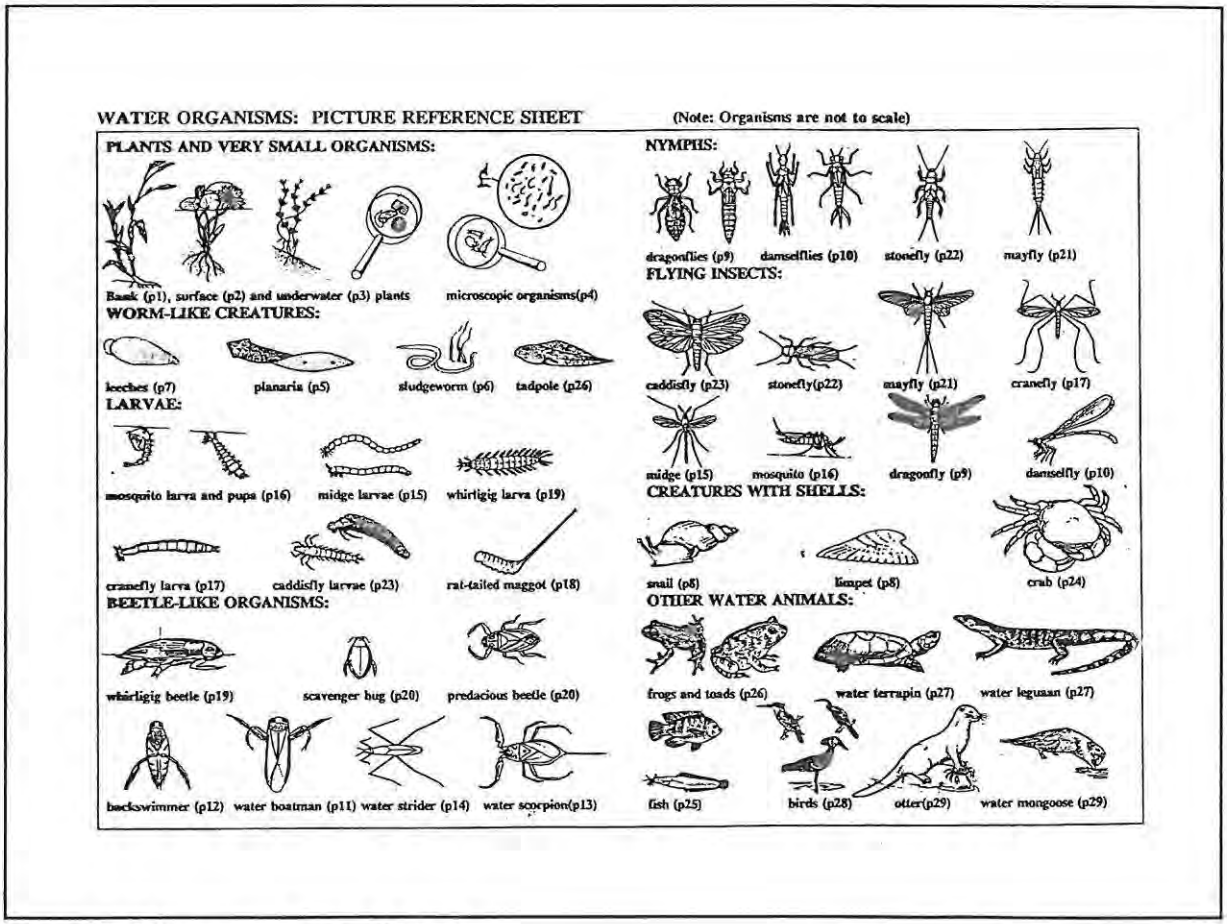


Figure 4.2 The centre page 'index'

from the Primary Science Project[37] investigated fieldwork needs in nearby schools (this process was later reported by O'Donoghue, 1990). The need for simple reference material soon became evident. Through cooperative work with the Umgeni Valley Project the *Reference Booklet for Water Study* was upgraded with new illustrations and text. A centre-page 'index' with line drawings of all the water organisms in the booklet is cross-referenced to further detail on other pages of the booklet (Figure 4.2).

The booklet, *Some common water organisms* (Umgeni Valley Project, undated) was field tested with pupils at the Umgeni Valley Project. 500 copies were then printed on the off-set lithograph at Umgeni Valley for field testing further afield. Feedback from the field testing was then assimilated and after further editing, the *Hands-On: Stream and Pond Life* (Choveaux, 1992) version was produced.

Running concurrently with the Primary Science Project was a similar collaborative process involving the Science Education Project[38]. In this project the focus was fieldwork related to soils and a field guide to soil and compost organisms was produced with a similar format to the water study guide (Londt, undated). This field guide was also printed at Umgeni Valley, field tested, edited further and then produced and sold on a cost-recovery basis (Londt, 1991).

4.5.1.1 The production of other *Hands-On* guides

The popularity of the first *Hands-On* guides for soil life and water life led to the development of three further field guides to inland ecosystems. These guides were developed following the earlier successful 'formula' with simple identification sketches on the centre pages that led the reader to further information on other pages. The latter booklets include *Hands-On: Grasses and Grassland Life* (Tainton, 1992), *Hands-On: Common*

---

37 The Primary Science Project (PSP) is a teacher upgrading project for teachers of pupils from standards 3 to 5 (now grades 5 to 7).

38 The Science Education Project (SEP) is a teacher upgrading project for teachers of pupils from standards 6 to 8 (now grades 8 to 10).

Household Life (Londt and Wittington, 1992) and *Hands-On: A Forest Community* (Cooper, 1993).

The production of these three booklets demonstrated that once a simple formula or structure for the booklets had been developed, in this case through lengthy collaborative processes with the 'soils' and 'water' booklets, the groundwork had been laid for further similar materials.

The development of field guides for the marine environment was done at the same time as those for inland ecosystems. Small committees worked on different ecosystems and produced *Hands-On* field guides to east coast *Dune plants* (Williams, *et al.*), *Sandy shore* (Ashwell, 1991), *Rocky Shore* (Kee, *et al.*, 1992), *Estuaries and mangroves* (Kee and Ashwell, 1992) and *Reefs* (Herbert, 1992). These booklets took a long time to develop largely because the committees lacked an individual with appropriate computer skills and the necessary confidence, knowledge of the subject and coordinating drive, who could 'pull the resource together'.

The *Hands-On* field guides equip teachers who have little or no biological training to conduct field-work studies with confidence (refer 3.7.3). Questions commonly asked during fieldwork such as: *What is it called? What does it eat? What does it do?* can easily be answered using the *Hands-On* field guides. Ease of use, coupled with interesting facts in a 'did you know?' section, have contributed to the popularity of these materials.

From 1991 to 1995 over 1000 copies per year have been sold through the Share-Net mail order service (refer Appendix B). The *Hands-On* field guides have also been periodically updated (e.g. Londt, 1992; Choveaux, 1992) and the *Hands-On: Soil and Compost Organisms* booklet has also been incorporated into a school text book (Clacherty, 1992).

4.5.1.2 Participation as a dominating ideology

The first *Hands-On* field guides were developed at a significant time in the development of environmental education resource materials in South Africa. A growing concern about inappropriate 'top-down' or 'centre-to-periphery' strategies had been gradually gathering momentum and the notion of 'participation' seemed to provide *the* answer (O'Donoghue and Taylor, 1988a). Through the Share-Net printing infrastructure this promise of an alternative 'bottom-up' or 'grass-roots' orientation seemed to be within reach (O'Donoghue and McNaught, 1991).

Unfortunately, participatory approaches applied in a technicist (2.9.2) manner and seen to be the 'right' way to do things can also be problematic. The fervent application of an alternative disposition simply because it is the latest right way to do things, without being responsive to the immediate needs and context can be counterproductive.

A number of resource material development projects were established with a strong participatory orientation that did not achieve their objectives. These included a project designed to develop a field guide for a hike from the Howick Falls to the Karkloof Falls, a syllabus guide for ecology and a recycling booklet. These resources have, as yet, not been published although a number of years have gone by since their inception. It seems possible that a dominating participatory ideology militated against one coordinator simply taking the draft material and producing the resource which could, if necessary, be re-worked later.

Had participatory approaches been forced on the development of the three additional *Hands-On* guides it could well have led to a situation of 'pseudo-participation' or the application of 'participatory development' simply because it seemed the correct thing to do. Teachers could well have been drawn into a situation in which they had little interest and few choices:

> For, more often than not, people are asked or dragged into operations of no particular interest to them, in the very name of participation (Rahnema in Sachs 1992:116).

4.5.1.3 From needs to opportunities

Although the development of the *Hands-On* resources began with an investigation into the current needs of teachers when conducting fieldwork (3.7.3) the investigation soon broadened as other opportunities became apparent. These opportunities developed through 'collaborative partnerships' in the struggle to develop better materials for pupils and the outcomes sometimes went beyond the perceived needs at the outset of the project. Needs-based solutions may lead to a focus on 'what do I need' rather than 'what can we *do* and with what resources can we work, to overcome our difficulties'. In my experience in the Share-Net project the former orientation can inhibit the realisation of opportunities as people passively wait for their needs to be fulfilled rather than becoming active seekers of solutions by investigating potential opportunities.

It was our observation that responding to teachers' needs in a direct way can lead to paternalism as the support service, in this case Share-Net, tries to provide for all needs. This disposition may inhibit the development of collaborative partnerships which could become possible through a clarifying struggle to make things better.

4.5.1.4 The ideological orientation of the material

The development of the *Hands-On* booklets demonstrates a shift from conventional structural functionalist (2.9.1) approaches in that the resource materials were not setting out to convey a particular message or encourage a particular behaviour pattern. This had been the case with early Umgeni Valley Project fieldwork resources and ACE materials (Wildlife Society, 1976). The *Hands-On* booklets were designed to support an enquiry process through which participants actively found out about natural resources, however. In this regard the field guides were not designed as 'structures' with particular 'functions' for a 'target group' but rather as reference guides supporting the objectives of the teachers and pupils in a flexible manner that was responsive to the learning context and the local ecosystem that was being studied.

The field guides did not elevate the importance of, or even the need for, a qualified field-officer; they could easily be used by semi-literate beginners. This was evident through feedback received at numerous workshops between 1990 and 1995 (refer, for example, Appendix A, Eshowe workshop, 13-15 February 1990) where participants quickly grasped ways in which the materials could be used. Diary records covering this period record meaningful encounters with nature and rich discussions with, and amongst, workshop participants. At the Eshowe workshop, for example, a participant looking for soil organisms during fieldwork noted with considerable enthusiasm 'I found it in *my* book' and then proceeded to explain to other members of the group the particular role the organism played in the ecosystem. Again a shift in 'power gradient' (2.17 and 4.4) is evident as resource materials helped equip participants to speak about what they had discovered. Previously participants at workshops would simply listen to an informed workshop presenter.

4.5.1.5 Features of the development process

In summary the following features of the development process for the *Hands-On* field guides appeared to contribute to the success of the series:

- a coordinator with word processing skills and access to production facilities working with practising teachers,
- considerable dialogue about the materials required,
- the adaptation of appropriate existing material,
- the development of a centre-page reference sheet,
- the employment/participation of an artist,
- the trialling of materials with pupils and co-workers,
- the editing of the materials by an expert, and finally,
- the re-editing, and adapting of the materials as the need arises.

4.5.2 Case B: The *Beginners' guides*

The *Hands-On* guides focus on ecosystems whereas the *Beginners' guides* are guides to particular species of *fauna* and *flora*. The *Beginners' guides* were usually developed by an expert with little input from teachers or participation from other potential users.

4.5.2.1 *The Beginners' guide to dragonflies and damselflies*

The *Dragonflies and Damselflies* booklet was the first of a number of field guides developed by experts through Share-Net at Umgeni Valley. Pat Caldwell, a local dragonfly and damselfly expert, worked with Rob O'Donoghue (Natal Parks Board) who provided support with word processing, artwork and layout, and staff at Umgeni Valley who printed and assembled the booklet (Caldwell, 1990). The booklet was compiled using a computer and *WordPerfect 4.2*. Line drawing artwork (also by Calder) was added by means of 'cut-and-paste'.

4.5.2.2 Other *Beginners' guides*

A wide range of *Beginners' guides* were subsequently developed in a similar manner. These included *Some common trees of the Okavango* (Taylor, 1991), *Some common spiders* (Roff, 1992), *Some common waterbirds* (Stead, 1992), *Seaweeds* (Kee, 1992), *Common butterflies* (Feltham, 1994), *Ferns of Ferncliffe* (Crouch, 1994), *Trees of the Umgeni Valley* (Eccles, 1994), *Common freshwater fishes of Natal* (Peterson, 1994) and *Common marine fish* (Mann, 1995). Each of these booklets was produced by an expert who was able to compile and share some aspects of his or her research. As with the *Hands-On* field guides the *Beginners' guides* are sold through the Share-Net mail order service (refer Appendix B) although most sales were a result of promotions done by the author. This is to be expected when one considers that the authour probably developed the resource in response to a perceived need.

Discussions with users of the *Beginners' guides* reveal that the booklets are often purchased by nature enthusiasts who do not have the commitment to a particular topic to purchase an

expensive, commercially published field guide. A large proportion of *Beginners' guides* are also purchased by school pupils who use the booklets for project work or to pursue a particular interest or hobby. The *Beginners' guides*, therefore, do appear to be useful 'stepping stones' to the more comprehensive texts that are commercially available. Such texts are therefore referenced in each *Beginners' guide* under the heading *Further Reading*. The production of the *Beginners' guides* also demonstrated that considerable opportunities exist for the adaptation of inaccessible scientific material into simple booklets for wider circulation.

4.5.2.3 Features of the *Beginners' guides* development process

The development of these resources did not involve much participation or trialling as had been the case with the early *Hands-On* materials. Their development did, however, draw on the experience of producing the *Hands-On* guides. Most of the *Beginners' guides* have a centre-page which serves as a useful illustrated index and reference sheet that is cross referenced to other pages in the booklet. The pattern of development involved an expert, usually using his or her own knowledge of the topic and word processing skills. Support from an artist, and from the Share-Net printing infrastructure, led to the final publication of these inexpensive resources.

4.5.3 Case C: *Our Tree World*

In the late 1980's Eco-Link, a 'grass-roots' resource development initiative in Mpumalanga (previously Eastern Transvaal province) produced a chart entitled *The Living Tree*. This chart with its vibrant colours was popular with teachers and pupils as they could see the numerous animals that are associated with a large tree in Africa. Discussions with teachers during workshops in 1990 led to the observation that the chart appeared incomplete without a story about the tree. Rob O'Donoghue therefore approached Sue Hart, the founder of Eco-Link, to tell (make up) a story about the tree. This Sue duly did, sitting under a large fig tree to record the story onto tape. This tape was later transcribed, illustrated and a booklet was produced through Share-Net.

4.5.3.1 Features of the *Our Tree World* development process

The outlook of the author of the booklet, her willingness to share 'her story' and the enthusiasm of the producer of the booklet, Rob O'Donoghue, demonstrated the importance of a drive to see the project (or booklet) through to completion. At times this support involved hard work with uncooperative computers as well as with artists with many other commitments.

4.5.3.2 The importance of materials being able to 'stand alone'

The importance of 'stand alone' resources was evident here. Although developed to complement the chart, the booklet can be used independently. Feedback on other resources that require different materials to be used to support each other and where the booklets, charts and teachers instruction manuals cannot 'stand alone' has generally not been encouraging. This was evident in the production of the St. Lucia package through Share-Net (Strong, 1993). Instruction sheets, a book, chart and various information sheets were all necessary to enable the teacher to master the package and this led to a complexity that some found confusing. Rather, teachers appeared to prefer to muddle their way through the resource in their own way. This is possibly an outcome of teachers or other users of the materials not wishing to be constrained by the instructions which require a particular way for

the resources to be used.

4.5.3.3 The risk of institutional tensions

Collaborative resource material development projects often run the risk of raising institutional tensions. This was particularly evident with the early development of the Share-Net concept. The Society management, as well as the management of the Natal Parks Board were concerned that jointly developed materials bearing both (or more) logos would dilute the potential credit their respective organisations would receive. *Questions such as would there be royalties?* and *to which institution would the kudos accrue?* were continuously evident. Such concerns are dealt with in Share-Net by demonstrating the obvious benefits of collaborative approaches, and by trying to keep one's 'eye on the ball' to produce better educational materials and not institution building *per se*. Ironically, cooperative ventures often lead to cooperating institutions receiving considerable acclaim *because* of the collaborative orientation.

With the production of the *Our Tree World* booklet, which involved Eco-Link, the Natal Parks Board and Share-Net, the maturity of the participants, the 'ordinariness' of the final product as well as the obvious lack of potential financial income from sales meant that tensions never became an issue. Where larger amounts of funding are involved tensions between different participants and their institutions can, however, be detrimental to a project (refer for example Chapter 6.5).

4.5.4 Case D: The *Enviro Facts*

4.5.4.1 The need for concise information

Written and verbal requests for information from school pupils and the public have steadily increased in recent years. These requests for material on particular environmental issues are placing increasing pressure on conservation organisations (Paxton, 1994). Following a survey (Umgeni Valley Project, 1990) of the more commonly requested environmental topics the concept of simple fact sheets, the *Enviro Facts*, was developed.

The *Enviro Facts* are 60 fact sheets on, for example, urban conservation, the ozone layer, and endangered species. Each fact sheet provides an overview, or orientating framework for a particular topic. The fact sheets aim to be concise, up-to-date, easy-to-understand and South African in perspective. Each fact sheet includes a list of *Further Reading* to allow the reader to locate more information on the particular topic. Also included are *Useful Contacts* such as the names and addresses of organisations active in each field covered. Differing viewpoints and contentious issues are often included in the fact sheets as *Topics for Debate*, providing stimulating ideas for discussion. The *Enviro Facts* have proved very popular and are selling in increasing numbers (Appendix B).

4.5.4.2 The development process

The impetus for the production of the *Enviro Facts* was provided by a South African chain store, *Pick 'n Pay*, who were launching a series of 'Green' displays in their supermarket outlets and also saw the need for information sheets on environmental issues. A joint project was therefore established and a steering committee was formed. Representatives of the South African Nature Foundation (now WWF-SA), who provided funding, the Natal Parks Board (origination and editing), *Pick 'n Pay* (printing and free distribution through *Pick 'n Pay* outlets[39]) and the Wildlife Society, who provided further distribution opportunities through Share-Net, all served on the steering committee. A coordinator, Linda Paxton, was

---

[39] The free distribution was never satisfactory and led to much wastage. For a more detailed discussion on this issue refer to Gowar, 1992.

appointed and a number of prominent scientists were approached to help develop the material. The response from scientists was enthusiastic and almost without exception their commitment to the project was voluntary.

The need for a dedicated coordinator who was able to develop a close working relationship with the scientists who were helping to produce the material was clearly evident in the production of the *Enviro Facts*. It was also important to involve prospective users, such as teachers and school pupils, in the early development processes so as to ensure that the final pamphlets were suitable and appropriate to their needs. A series of 'development and feedback' workshops were therefore held throughout South Africa. These workshops also included participation from conservation officials who regularly dealt with the public and schools.

Although the *Enviro Facts* were essentially developed through a top-down process of 'experts' writing for the public, they did not have an overt structural functionalist (2.9.1) orientation in that they did not seek to inform people of particular conservation messages, or try to manipulate behavioural outcomes. The fact sheets do offer the readers options for remedial action, however, under the heading '*What you can do*'. How these options are applied is, however, dependent on the teacher or individual reader of the material and the choices he or she makes.

4.5.4.3 Retaining power through science

Discussions with scientists during the compilation of the material revealed significant ideological issues. The desire that remedial action should be directed by scientists led one water expert to comment that one "..... should not let people loose - they may not handle things as best possible". The same scientist felt that the idea of starting a local community catchment management project was also not realistic in that specialised knowledge and coordinated effort was needed. Both these examples demonstrate that remedial action was perceived to be something that could only occur under the direction of experts, most likely

scientists, and that the people most affected by the problem had little to offer to its resolution unless managed correctly (Paxton, 1994). The power gradient evident in the contributing author's position clearly elevates scientific expertise.

4.5.4.4 Views of knowledge and education

When re-writing the fact sheet on ozone the 'specialist scientist' consulted preferred that certain facts, which he acknowledged were accurate, be left out. His concern was that if particular facts were included they would not reflect a simple, clear message and this could even raise doubt about the seriousness of the ozone issue. This position implies that people are more likely to act on the basis of a clear direct message and change is viewed as a rational process to manage behavioural outcomes. The assumption is that by providing people with scientific knowledge about global change predictable behavioural change will result. Wynne (1994:186) suggests that this knowledge could equally paralyse people into an "end of the world" outlook that could further inhibit them from taking appropriate action!

Paxton (1994) also describes how another scientist was alarmed that a matric pupil had used the fact sheet to challenge the teacher's view of the topic and that there appeared to be some confusion about what the 'correct' view really was. The utilitarian view of knowledge that underpins this orientation to learning cannot accommodate the uncertainty inherent in many environmental problems and issues. Neither can the view be accommodated that education is a process of encouraging informed debate rather than the discovery of clear facts to be communicated more widely.

4.5.4.5 The responsive capacity of the *Enviro Facts*

The ongoing development of the *Enviro Facts* has involved constant interaction with users and each fact sheet invites readers to provide further comment and ideas. This has led to many constructive comments and ideas for revision as well as suggestions as to how the materials can be used in a range of different ways.

In order to facilitate adaptation of the materials to local needs, the *Enviro-Fact* sheets are copyright-free. Printed on A4 paper and folded to A5 format, the fact sheets are loosely bound so that they can easily be taken apart and photocopied individually. The fact sheets are also available on a computer diskette. This has meant that other resource development projects, teachers or individuals, are able to selectively copy the resources or redevelop them according to their own particular needs and context. The fact sheets have been particularly useful in support of environmental education workshops and courses that are offered by the Society (refer Chapter 3.11).

An example of the adaptive use of the *Enviro Facts* occurred during the first Rhodes University-WWF International Certificate Course in Environmental Education (6.3.4). As part of an assignment, students were expected to select a fact sheet and redevelop it for their own teaching situation. A number of the students were from other African countries and this meant they were able to customise the resource to their own local situations.

A further recent development has been the placing of the *Enviro Facts* on the Internet, and feedback is already positive and constructive. Suggestions have included providing further cross-referencing to other environmental materials as well as directing queries to specific Society staff members. The establishment of an environmental 'news-group' on the internet is a further possibility to be explored.

4.5.5 Case E: The *Teachers' handbooks*

The *Teachers' handbooks* (sometimes referred to as the *Teacher activity guides*) are booklets designed to provide teachers with a range of activities related to seven different topics: soils, water, forests, the greenhouse effect, arbor day, nocturnal activities (night activities for teachers while sleeping over during an excursion) and creative encounters (a junior primary range of activities). Each booklet was compiled by an editor who collected a range of activities, usually well known through personal experience, and assembled these according to a particular theme.

The *Teachers' handbooks* were assembled using simple word processing and cut-and-paste graphics. They have proved extremely popular with teachers and sales have steadily increased over the past five years (refer appendix B). Teachers are encouraged to write in with comments on the booklets or submit additional ideas for inclusion in subsequent editions and useful, ongoing feedback is received.

Informal feedback from teachers indicates that the *handbooks* are sought after and are fulfilling a useful need. The inexpensive production of the materials through the Share-Net printing infrastructure (4.4), the visibility provided to the materials through workshopping (Chapter 3) and their availability through the Share-Net mail order catalogue are three factors that appear to be contributing to the increasing sales.

The production of these resources illustrated how easy it was for one coordinator to collect material, already in popular use, and group it according to particular themes. The duplication of the resources was then done at the Share-Net printing infrastructure and the resources sold through the Share-Net mail order service.

4.5.6 Case F: Water monitoring resources

By 1991 water pollution problems, exacerbated by drought, were reaching crisis proportions in KwaZulu-Natal. In a response to this crisis Rob O'Donoghue (Natal Parks Board) worked with the USA based Global Rivers Environmental Education Network[40] (GREEN) to develop low-cost water quality monitoring materials. These materials were then used as part of community projects in Grahamstown (Ashwell, 1992) and Stellenbosch (SWAP, Undated). Through these action research processes, water kits were adapted and improved and by the beginning of 1994 were sold from Share-Net at Umgeni Valley in three formats: the Starter Kit, the more advanced Coli-Form Tin and the GREEN Manual (O'Donoghue, 1993c).

The water monitoring kits contain simple apparatus that can be used to investigate water quality. They include tests for visible life, total coliform bacteria, turbidity, temperature, acidity and alkalinity. Each kit contains a simple manual which guides the monitoring process and offers suggestions as to what can be done to improve the conditions in the stream/river catchment. These kits were sold in large numbers and by August, 1994 had been purchased from all parts of South Africa (Appendix Eiv.). The kit has a compelling ACTION acronym as a framework for fieldwork activity (Figure 4.3):

A	-	**A**sk about local and indigenous knowledge,
C	-	**C**heck catchment conservation, river quality and health risk
T	-	**T**est water life and water quality
I	-	**I**nform others to get support and encourage local action
O	-	**O**utline a catchment conservation plan
N	-	**N**etwork with other local and global 'GREEN' groups.

Figure 4.3 The ACTION framework

---

40 'GREEN' Global Rivers Environmental Education Network. School of Natural Resources, University of Michigan, 430 East University, Ann Arbor, U.S.A.

4.5.6.1 A critical reflection on planned change

As research related to the materials proceeded, further myths in environmental education were revealed. I learnt to ask questions about the statements people made and the questions they were asking. The following question was often asked of the water kits: *Do they work?* and it was not unusual to be informed by disappointed field officers *The kits don't work!* Sensitive questions related to these questions and statements began to reveal a deeper meaning or underlying ideology. People often believed *working* to mean that the use of the kits would *cause* the users ('them') to become environmentally aware and adopt the *right* behaviour.

The acronym, *ACTION* (Figure 4.3), appears to provide a systematic process that will lead to particular outcomes. When used with structural functionalist (2.9.1) expectations the kit would appear, therefore, to be the ideal tool to cause change. Teachers and field officers reported, with some disappointment, that pupils had not followed the acronym routine accurately and that the testing of water quality had not necessarily led to the desired local action.

The objective of using the kits as tools to cause change in others will lead to outcomes that differ significantly from the objective of simply using the kits to find out more about water quality. The desire to cause change in others through managing social processes of fieldwork with water kits often led to a compelling rhetoric that was not matched in the daily reality of water quality monitoring. The rhetoric is often credible in committees or at a board room level but it is the employees (field staff) who have to make it work in practice. Employees, themselves victims of an inherent belief in modernistic change (2.9), set about their task with enthusiasm only to become disillusioned when the change in the target group fails to go according to plan. Levin (1980:34) makes the following point about expectations of change agents:

> If planners and reformers use such terminology as *change agents, managed change* and *planned change*, they and their followers tend to believe that the use of language and the logic of rational change imply a control of the change process itself. In contrast a review of educational reform and implementation literature suggests that the rhetoric of reform is probably its most important manifestation, rather than the change it claims to produce.

Levin may well have been referring to Monroe (1993) who recommends that: "Specific strategies are provided that could be helpful in designing materials, programs and campaigns with an environmental message". This, she believes, will enhance ".....efforts to change behaviour" (1993:28). This outlook on social change is also evident in *Agenda 21*, one of the documents from UNCED that was adopted through global consensus at Rio. Agenda 21 proposes the development of public education programmes directed at decision makers (Wynberg, 1993); again, a linear causal view of social change is evident.

Once field officers and teachers gave up the idea of using the water quality monitoring materials to manipulate change in others the field work appeared to proceed with less contrived effort. Enthusiasm to *find out* jointly with participants, rather than field work to *cause change* in the participants, led to richer field work experiences that appeared to be more meaningful to all concerned.

4.5.6.2 Why resources alone cannot direct change

The kit may be used to *support* better education processes but the expectation that it can *direct* social change is doubtful. Rather, it simply contains some of the tools that can be *given away* or shared (Taylor, 1993). To assume that it can operate as a systematic procedure to direct outcomes is a technicist error (2.9.2) that, unfortunately, is prevalent in environmental education. The expectation that a kit (or any educational material or media, for that matter) can cause the desired change in the users, fails to accommodate the non-rational nature of social change (O'Donoghue, 1997), or the importance of a social milieu in which the materials are applied, including the people, places and issues involved. The weaknesses inherent in assumptions about causal change are clearly articulated by Papagiannis *et al.* (1982) and Popkewitz (1984).

4.5.6.3 Redevelopment and future opportunities

As had been the case with the *Enviro Facts,* feedback from users of the kits was encouraged and considerable verbal and written feedback was received (e.g. Kruger, 1995). This

feedback was used in the redevelopment of the kit (Paxton, 1996). Feedback, and other experience gained in the development and dissemination of the water kits, frequently revealed that the *enthusiasm* and *disposition* of the individual[41] who is sharing or demonstrating the resource, are key factors in terms of how well the kit will be received by pupils and how effectively it will be used. Rather than setting out to cause change in participants, an open-ended approach to fieldwork that encourages *dialogue* amongst learners (talking about what they are discovering), *encounters* between learners and real issues (monitoring water quality) as well as *reflections* on the issues at hand (thinking about issues pertaining to water quality) became a helpful orientation (O'Donoghue and Janse van Rensburg, 1995). This 'open' process orientation to learning seemed to overcome many of the linear, causal, structural functionalist limitations evident in early Society approaches to environmental education and was influenced by, and developed with, our growing understanding of *symbolic interactionism* (Charon, 1979).

To conclude, low-cost water quality monitoring has enormous future potential for environmental education in South Africa, particularly if it is not done with manipulative intent. It encourages a spirit of enquiry amongst participants and addresses issues concerning an important natural resource in a relevant way. Current local developments include computer networking between schools in the KwaZulu-Natal midlands (O'Donoghue and le Roux, 1996) about local water quality issues as is being done by GREEN (1992) in the USA and Australia.

---

[41] The disposition of the person sharing the resource is a further key theme of this study (3.5.1).

4.5.7 Case G: The *East Coast Reefs* booklet

The *Hands-On: East Coast Reefs* (Herbert, 1992) booklet has been selected as a separate case study because aspects of its development process were unique. It was also a development project that revealed common misconceptions in environmental education.

The development of the booklet was prompted by the popularity of the other *Hands-On* booklets and the compiler, Trish Henchoz's personal interest in scuba diving. Her experiences of diving, including the comprehensive training courses, revealed a paucity of appropriate literature on off-shore life. A simple field-guide for scuba divers was therefore proposed and this was compiled through a series of workshops with key marine scientists and members of the scuba diving community.

4.5.7.1 Early development tensions

During the early development process,5 tensions about ideas and expertise became evident (Henchoz, 1996, pers. com.). Concerns about royalties, kudos and acknowledgement dissipated to a large extent, however, when it was realised that the booklet was not likely to realise considerable revenue and would be sold, not for profit, but on a cost-recovery basis through Share-Net. Gradually commitment to the development of the resource grew as contributors gave fully and freely of their time and expertise.

4.5.7.2 Misconceptions about the resource

As the development process proceeded two misconceptions were revealed. One of these was the strong conviction that unless the booklet was in colour, few people, and especially not scuba divers, would purchase it! The second misconception was the assumption about prospective users of the booklet. It was believed that only people with access to the coast, and diving opportunities, would purchase the booklet. In both cases statistics on booklet

sales reveal otherwise! The enthusiasm which greeted the booklet led to its becoming a best-seller for Share-Net within the first year following publication (Appendix B, Figure 5). Furthermore, large numbers of 'inland' pupils and adults have purchased the resource, many of whom are unlikely to ever embark on scuba diving!

4.5.7.3 Promotion by compilers and authors

When the compiler of the booklet, Trish Henchoz, left Share-Net, sales of the booklet declined. This demonstrated the important role the compilers and authors of booklets can play in promoting the booklets and, in this case, maintaining personal links with dive shops, scuba diving schools and the scuba-diving fraternity in general.

4.5.8 Case H: The *Action series*

The booklets in this series have environmental action as their focus. The titles of the booklets in the *Action Series* are: *28 Alien plant invaders in Natal* (Caldwell, 1992), *Riverine vegetation in Natal* (Guthrie, 1991), *Health gardening* (Chadwick, 1994), *How to grow incema grass* (Mander, *et al.*, 1995a), *Knowing and growing muthi plants* (Mander, *et al.*, 1995b), *Greening the KwaZulu-Natal coast* (Borchers, 1995) and *Greening the KwaZulu-Natal midlands* (Borchers, 1996). These booklets provide basic information which includes options for possible remedial action.

4.5.8.1 *Riverine vegetation in Natal*

The first booklet in this series was *Riverine vegetation in Natal* (Guthrie, 1991), a booklet that was developed from a University of Cape Town Botany honours project. The honours project had set out to establish which species of plants or trees should be grown to stabilise vulnerable stream banks in KwaZulu-Natal. The supervisor of the project, Eugene Moll, had heard about low-cost publishing through Share-Net, and decided to send a copy of the thesis to Umgeni Valley for consideration as a more accessible publication. Rob O'Donoghue also saw the potential (opportunity) for the re-development of the thesis and a small working group was established. Working with a committee that included the honours project researcher, Iain Guthrie, the inaccessible honours project report was redeveloped into a simple field guide (refer Appendix A. December, 1991). This guide used a similar conceptual framework to the *Hands-On* series with a pictorial index on the centre pages.

4.5.8.2 Comments on the Action Series

Once the first booklet had been produced other resources using a similar style and development process were developed (refer 4.5.8, above, for titles). This experience was similar to that of the *Hands-On* field guides (4.5.1).

The action series of booklets were developed in response to growing requests for guidance on what to do about environmental problems. Whereas earlier requests for information from

the Society had tended to be queries about environmental issues (Paxton, 1994), increasingly requests were requiring specific information on how to take remedial action. Examples of this include: "We would like to plant a tree for Arbor day. What tree should we plant and how should we plant it?" or "I have invasive plants on my property - how should I eradicate them?" This shift in the nature of the enquiries received matches a global trend towards environmental concern (Dunlap, *et al.*, 1992). The *Action Series* was not, therefore, a proactive initiative; as with the *Enviro Facts*, this series was developed in response to requests for information from the public and schools.

Two recent examples of this form of cooperation are the booklets *How to grow incema grass* and *Knowing and growing muthi plants* (Mander, 1995a and b). Both these booklets are proving popular with people interested in Indigenous Knowledge Systems (IKS) and provide useful facts and accessible ideas related to indigenous knowledge.

The development of the *Action Series* of materials emphasised the importance of a responsive capacity in one further way. Organisations like the Institute of Natural Resources (INR) and the National Botanical Institute (NBI) had the necessary information and expertise within their organisations to produce the material. They lacked the capacity to produce inexpensive, accessible publications that could reach a wider audience, however. With the support of an inexpensive production and printing infrastructure at Share-Net, and the mail-order network through which to market the materials, production and wider circulation became possible.

4.5.9 Case I: A *Guide to Teacher Workshops*

In developing a resource to support teacher workshops Penny Gumede (Umgeni Water) had much difficulty working with a desk-top-publishing (DTP) expert to produce a teachers' guide. The problem seemed to stem from the DTP expert having difficulty relating to the requirements of teachers. The situation was made more difficult in that Penny was unable to visualize what the technology was capable of producing and yet in some ways was a victim of its 'sophisticated power'. This observation is important in terms of others' ability to adapt and re-develop materials. Issues relating to presentation that are often uppermost in the DTP world, such as over-simplified language and bold, dominating headings, detracted from the flow of the resource and resulted in a presentation style that was inappropriate for teachers. This process led to lengthy delays and the production of a great deal of unsatisfactory material (Gumede, 1995, pers. com.).

A similar situation was evident when Louis Aukema[42], a desktop-publishing expert, joined the Share-Net project in a voluntary capacity. Aukema's ability to develop sophisticated computer-generated graphics led to many hours of creating complicated drawings with little substantial text or meaning. The development of a range of handouts for permaculture courses, for example, illustrated how easy it was to become carried away by what the technology is capable of, rather than by the immediate resource needs. Fortunately, Aukema's capacity to be responsive to the project's other computer needs meant that a wide range of appropriate materials were also produced such as the *Hands-On: Fynbos Life* booklet (Kelly, 1996).

---

[42] Louis Aukema was tragically killed in a car accident on the 5th of May 1996. The eulogy, which was delivered at the memorial service, is attached (Appendix Ei). The eulogy is attached because it illustrates the richness and personal commitments that have been so important in shaping the Share-Net project's development. It is a good example of an 'intangible human shaping process' which makes projects like this special (refer 7.6.3).

4.5.9.1 Planning the production process

An understanding of the production capacity of both the DTP as well as the printing technology is important when planning a new resource. Criteria such as page and margin sizes and illustrations with narrow lines that do not reproduce well can ruin a resource when not carefully taken into account. A coherent plan for the final production of the resource is, therefore, essential prior to embarking on the resource development process. This latter point may seem obvious, but it is not unusual to come across material that is not published simply because the final production process was not thought through and proved excessively expensive or inappropriate.

The manner in which materials are produced and the available technology have important implications for materials development. It was only convenient, for example, to print Share-Net resources in one colour (usually black) on the offset lithograph. The use of two or more colours on the lithograph printer was expensive and time consuming. The acquisition of the *Duplo*, a 'copy-duplicator' printing machine, however, made it possible to add colour to resources through an inexpensive, simple process. The concept of 'mother tongue' languages, such as Zulu, in colour alongside the English text in black, or vice-versa, is an example of the use of a particular form of technology in an innovative way (please see Appendix Eiii for an example).

4.5.10 Case J: *Enviro-Picture Building*

Madlusuthe's farm was initially developed as a resource for supporting adult literacy training. This board game tells the story of the Madlusuthe family who live in a typically African, rural setting. The game also shows a number of problems that the family face such as inadequate sanitation, a lack of clean water and soil erosion. The resource had obvious potential in a wider environmental education context, although initially some racial stereotyping was evident. Through Share-Net the original game was redeveloped to remove these and generally improve the resource. Five hundred copies, in black and white, were then printed through Share-Net for further field testing.

The resource was then demonstrated at teacher workshops (Chapter 3) and proved popular as an orientating framework for environmental issues. After the two year period of field testing the material was edited further and three other versions were developed. These were *The Urban Jungle,* which portrays a city, *Reserves and Neighbours* (3.11.2), a resource that deals with a game reserve and the people who live nearby, and *Catchments and the Coast,* which portrays a typical east coast catchment.

These four *Enviro-Picture Building* resources were eventually published by Shell in full-colour and are now available through the Shell Education Service mail order catalogue. Each resource highlights environmental issues and encourages possible solutions. The cards used to build the overall picture illustrate particular environmental issues and information about the issue, and list further reading and contact organisations.

The playing of *Enviro Picture Building,* whether as a cooperative or competitive game, can be fun and it usually generates much laughter. Feedback on the use of the resource indicates that it has been used as a stimulus for:

- project work,
- for building other pictures, for example, of the participants' own environment,
- for writing a story or developing a play, and
- for taking action in addressing environmental problems.

Enviro Picture Building can be used to encourage discussion and thereby support language development. It is also suitable for a wide range of ages and language abilities. As these resources deal with a wide range of environmental concerns and ecosystems, many Share-Net resources can support *Enviro Picture Building;* these are linked by cross-references on the back of the game cards. For this reason the *Enviro Picture Building* resource is particularly useful as an introductory activity when conducting teacher workshops (Chapter 3).

4.5.10.1 Features of the development process

Important features of the development process included the trialling and pilot testing of five hundred copies of the black and white version of the resource through Share-Net before the resource was published commercially. Trialling the resource was important in that it is too expensive to print a low print run in colour for trialling. Feedback during field testing also led to a number of modifications to the resource such as standardising the format to A6 size cards. The reason for this is that four A6 cards fit perfectly onto an A4 sheet, making the photocopying of the material convenient. This size is also compatible with the Shell Education Service's language display board which is an ideal board on which to build the *Enviro Picture Building* game.

4.5.10.2 Redevelopment

The *Enviro Picture Building* resources are particularly suitable for redevelopment to local conditions. Field staff in Zanzibar, for example, used the resource to develop their own local version. The colour pictures of South African environmental issues were simply replaced with jumbo sized photographs (conveniently A6 size as well) taken in Zanzibar of local issues relevant to that country. Feedback from South African teachers also reveals that many of them replace cards in the resource with their own drawings or involve pupils in redrawing the pictures as a classroom activity.

Agricultural and environmental education field staff also use the resource when conducting community meetings. When substituted with local examples of environmental problems, the pictures are easily recognised by the audience who do not need to be literate to participate actively.

4.5.11 Case K: The Environment Clubs Scheme

During the 1990's workshops for large numbers of teachers and community workers were conducted (refer Chapter 3 and Appendix A). During workshops, participants often asked to be kept informed of future resource material developments. A comment frequently made by teachers was: "But I had no idea such resource materials were available! How can I keep in touch with future developments?" Clearly closer links with resource development within Share-Net was required. A mailing list appeared to be the obvious solution. This idea was rejected, however, because it would be expensive to run, it would place an added burden on staff and it could also contribute to the profusion of unread mail that is currently being sent to schools and environmental organisations. A different solution was to use the Society's existing Environment Clubs Scheme. Through the Clubs Scheme updates of all materials are sent to clubs on a regular basis and teachers who were not members of the clubs scheme were encouraged to join through the payment of an annual subscription.

A significant proportion of the costs of running the clubs scheme is recouped through membership fees. Since each club has 10 or more members, and the members can share the costs between them, mailing costs to individual members as well as to the Society are kept to a minimum. In the future, therefore, people who wish to maintain institutional links with Share-Net resource materials will be encouraged to form an environment club. In order to provide better support for clubs an *Action Kit* was developed (Paxton, 1995).

4.5.11.1 The Clubs *Action Kit*

The Clubs *Action Kit* provides information on how to run and organise a club. Central to the kit is an environmental year planner (Appendix Eii) indicating all environmental days, such as Arbor Day, World Environment Day and Marine Day. Clubs (and teachers) can plan the whole years' activities on the year planner. The kit also includes *Getting Started,* a booklet that is designed to inform club participants about planning processes related to environmental activities. These include how to run a committee, how to manage money, planning ahead (using the year planner), certificates of club membership and membership

cards. A quarterly newsletter informs clubs of recent resource material developments. The planning materials in the Clubs *Action Kit* provide useful frameworks that can be applied in schools. The supporting capacity of the clubs scheme to link people to resources became increasingly evident as this study proceeded.

Weaknesses of the Clubs Scheme

Although the Clubs Scheme appeared to solve some of the problems teachers were experiencing in keeping in contact with Share-Net developments, many difficulties are still evident. Some of these are:

- ideally clubs should be supported by Society staff who can meet with the club and provide ongoing support. Unfortunately, salary and travel costs prohibit frequent contact[43],
- material is sent to the club with the expectation that it is shared amongst all members. In some cases this is not done, and
- club membership reflects a wide range of ages and particular interests. It is difficult, therefore, to provide material that accommodates these requirements.

Notwithstanding the above, the Clubs Scheme does help to provide continuity between Share-Net developments, club members and participating teachers.

---

[43] Encouraging adult members of the Society to support local youth clubs as a voluntary commitment to conservation is proving effective in some areas. This arrangement provides an opportunity for 'armchair' members to make a greater commitment to the work of the Society than simply paying membership fees.

4.6 Concluding comments on resource material case studies

The objective of this chapter was to address the question: *How should future Share-Net resource materials be developed?* This was done by presenting a number of case studies of resource materials development so as to establish useful principles and patterns from these that could guide future initiatives.

4.6.1 Common features of the resource development process

Although the development of each resource has its own particular needs, a number of common features of resource development are evident:

- dialogue between prospective resource developers and users, particular at the outset of the resource development process, is important;
- a coordinator with word processing skills proved a key factor in the successful development of materials;
- involving wider participation in the development process is important although care must be taken not to become trapped in a top-down or bottom-up dialectic;
- an assessment of existing materials, and the appropriate adaptation of these for possible use in future materials can save time and resources;
- the participation of an artist, ideally as part of the project team, is important for developing well-presented materials;
- the trialling and re-editing of material prior to the production of large or colour print runs;
- engaging an expert to do final editing ensures that scientific errors are kept to a minimum; and
- finally, making the material available in different forms e.g. as hard-copy, on computer diskette or even through e-mail, contributes to the materials' adaptability for wider use.

4.6.2 Responding in a range of situations

Most of the Share-Net materials have been developed in a style that encourages flexibility

and an open-ended approach to their use. This has meant that the materials are often used in ways which go beyond the initial intention. An example of this is the use of the *Enviro Facts* by announcers on local and national radio. The fact sheets have frequently provided useful source material on environmental days for continuity announcements on radio. The *Enviro Facts* have also been widely used as source material for articles in popular magazines (e.g. du Toit, 1995).

The responsive capacity of the Share-Net project itself has also enabled the realisation of a number of opportunities that were not apparent when the printing infrastructure was developed. This responsive capacity is enhanced through making the materials available as printed material for photocopying, on disk for redevelopment or as artwork masters (Share-Net, 1992).

A further advantage of the Share-Net resource materials is that they can be used to complement each other or as 'stand-alone' resources. This means it is a simple matter to compile a particular pack of resources for a particular need. In preparation for Arbor Day in 1995, for example, an Arbor Day pack was assembled and sold for R8.00. In the pack were a range of materials from the Share-Net catalogue specifically relevant to Arbor Day. Similar packs have been assembled for other national days.

4.6.3 The adaptation of materials

By making Share-Net materials available copyright-free, teachers, community workers and curriculum working groups have been able to use materials as they are or even adapt them for wider use. The printing of Share-Net materials on A3 or A4 sheets in a black and white format means that they can easily be copied and trialled as part of a local development process. Artwork and text is now widely used and often appears in teachers' hand-outs and notes, as well as in most environmental education centres in South Africa. The adaptation of material in support of curriculum development processes was, for example, applied by the Centre for Applied Science and Mathematics Education (CASME) in developing a new

framework for skills assessment in science education (CASME, 1995).

Feedback from users has revealed that materials are used in a wide variety of ways in support of further material development. The adaptation of materials from a diskette format has proved particularly useful in some circumstances. The *Enviro Facts*, for example, have been redeveloped from disk on numerous occasions to suit different audiences. Adaptation of materials from disk also occurred in the development of a Western Cape version of the *Hands-On* series, *Hands-On: School-yard Life* (Christians, 1993). The *Clubs Action Kit,* too, has been adapted and used in Swaziland (Masuku, 1995) and Namibia (Botma, 1996).

4.6.4 Additional support for the adaptation of materials

To support the adaptation of Share-Net materials and the development of new ones, a number of simple reference guides and support materials were developed. These include *An Easy Reference Guide to WordPerfect© 5.1* (Auld, 1991), *Share-Net Illustrations for Inland and Coastal Habitats in Natal* (Share-Net, 1992), *Quick Reference Notes to WordPerfect© 6.1 for Windows* (Auld, 1995) and an *Easy Reference Guide to English Grammar* (le Roux, 1995).

The two *WordPerfect©* guides were developed to help resource developers word process or adapt existing text for their own resources. Appropriate artwork was often needed, however. For this reason a series of illustrations, *Share-Net Illustrations for Inland and Coastal Habitats in Natal*, was compiled to enable resource developers to simply cut-out pictures and use them to illustrate their own texts.

The *Easy Reference Guide to English Grammar* is a pamphlet that can be used alone but preferably in conjunction with *WordPerfect©* 6.1's *Grammatik*, a computer based grammar and style analyser, which proved a helpful tool in aiding the editing process. This check picks out common errors, such as sentences that are too long, incomplete punctuation and suggests possible alternatives. A statistical check on the *Hands-On* materials, for example,

recorded a *Fleisch* reading score of 78, which indicates a readability index of 'easy' to 'fairly easy'. *Grammatik* has also been used by field staff at Umgeni Valley who are learning to write better English.

The technology we were using was essential for the preparation of high quality materials. As tools for text analysis the mechanical techniques come with the danger of reducing material to a systematic and mechanistic procedure. In our experience of their use within the Share-Net project they can, unfortunately, also leave the user a victim to the apparent power of the machine. A sensitivity to 'technicising' people and processes developed within the project which appears to have reduced the dangers of a mechanical orientation to some extent. In using such techniques, therefore, we were anxious not to fall victim to technicist (2.9.2) assumptions relating to learning and the limiting effects that machine-edited language can have on text[44].

4.6.5 Some weaknesses evident in the case studies

The hope that resources can, in themselves, cause appropriate social change was found to be wanting especially with regard to the water quality monitoring materials. Such an assumption fails to take a broader view of learning and change into account where the social context in which the resource is used takes on considerable significance. In themselves resource materials cannot teach. In a supportive social context, however, where a teacher or community worker is able to use a resource with participants to explore an environmental issue, the resource materials may support better learning. When researching the use of resources in the field, we found that they could help provide data which in turn could raise the level of debate pertaining to an environmental topic or issue (refer discussion of Beck, 1992, 2.9.3).

---

[44] It is often the grappling with the meanings of words that is important for learning and a complex problem presented as a simplified abstraction may detract from greater understanding. This issue is addressed by Popkewitz (1991) in his critique of 'popularism and critical theory traditions'. He notes that, while at one level writing should be made to be understandable, the argument about language is more complex because of the values and interests carried in discursive practices. He concludes that "..... claims about making language accessible should be scrutinised" (1991:234). Spivak, in Lather, (1996:544) is more forthright "we know plain prose cheats".

A utilitarian view of knowledge, where the assumption is made that knowing about an environmental issue will lead to people taking remedial action was also evident in these studies. Pupils doing fieldwork at the Umgeni Valley Nature Reserve did not, for example, apply their newly-found knowledge in establishing catchment conservation projects as was expected by their field officers. Taking action to solve environmental problems appeared to be part of a wider social context where many other variables assume greater importance such as other interests, group dynamics and the influence of significant others.

4.7 Opportunities for collaboration

Opportunities for collaboration between environmental specialists, educators and other users of the materials have been provided through the developmental processes. Local collaborative resource development initiatives have, to some extent, led to a closing of the gap between producers and users of resources:

> The gap between educationists and publishers needs to be closed, or at least narrowed, if educational change is to be effected. (Kromberg, 1993:3).

This is particularly evident through the many phases of trialling and redevelopment that have occurred.

A recurring feature of the development of Share-Net materials has been the amount of time that specialists have volunteered to support projects. Over 100 people have given, at no charge, specialist advice on the 60 topics covered by the *Enviro Facts,* for example. This has enabled materials to be produced inexpensively and has supported wider dialogue around environmental issues.

4.8 Concluding comment: Resource materials as a tangible focus for networking

Through the development and use of materials a tangible focus for discussion and action became possible. This focus is often lacking in workshops, forums and discussions as people try to address pressing environment and development issues within a maze of verbal rhetoric. Politically correct language alone is of little value without the applied focus that resource materials can reveal about the world around us. Having to express environmental

content in a written or illustrated format provides people with an opportunity to clarify their thinking as they develop the material.

I noticed an example of this when compiling a fact sheet on Ozone. Although we had often presented talks on the topic it was only when producing a fact sheet that we realised how little we actually knew about the Ozone issue. The development of the resource provided an opportunity to critically discuss the material being produced in a focused, tangible way.

Adaptable resources, suitable in differing social contexts, can provide a useful focus for processes of environmental education. In Chapter 5 these ideas will be taken further as the concept of wider networking and collaboration is developed.

CHAPTER 5 THE CASE FOR A NETWORK

Communication is less effective than community in the utilization of knowledge Lawrence Stenhouse (1975).

5.1 The study so far

Chapter 2 considered the origins of the Wildlife and Environment Society (the Society). The issue of an 'us' and 'them' orientation to environmental education was raised and the concept of Share-Net, a resource materials development network, was introduced. In Chapter 3 resource material workshops conducted over the past 15 years were examined and shifting trends and orientations were discussed. Workshops *for* teachers gradually gave way to workshops *with* teachers during which the opportunity to select and adapt resources was offered.

Chapter 4 considered a number of 'case histories' of resource material development. The importance of cooperation between individuals and organisations was evident here and a number of principles and patterns for future resource development were described. In this chapter the concept of networking is developed as an orientation to environmental education that does not run the risks of intervention centred approaches. This orientation to resource materials development challenges the early structural functionalist approaches favoured by the Wildlife Society until the late 1980's.

The focus question for this chapter is:
How can networking offer better support for the emerging processes of environmental education?

5.2 Background

In 1990 a paper outlining the possibilities for a resource material development network was published in the EEASA Bulletin (Taylor and O'Donoghue, 1990). This paper drew on earlier work (Lacey and Williams, 1987) and challenged the structural functionalist (2.9.1) dispositions of many conservation agencies and environmental education projects at this

time. The paper argued the case for a network and provided practical examples of networking with regard to resource materials. This chapter draws on policy documentation, occasional reports, workshop documentation and published papers (Table 5.1) to reveal and clarify networking within the Share-Net project. Other cases of networking in environmental education are then explored. Concern is expressed about networks that are used with deterministic intent to achieve the objectives of the initiating organisations.

5.3 The weaknesses of top-down approaches

In the past, conservation agencies, including the Society have been trying to *do* environmental education by communicating clear messages about conservation problems and by developing resource materials with which they hoped to promote change in schools (Taylor and O'Donoghue, 1990). Unfortunately, these 'top-down' or 'centre-to-periphery' approaches seldom led to the intended changes in the 'target community'. Such approaches assume a linear, causal relationship between educator and learners and fail to acknowledge the complexities involved if meaningful learning is to occur. A greater understanding of processes of change suggests that 'target-group' communication strategies and other attempts at the rational management of change are unlikely to be successful (Popkewitz, 1988 and Janse van Rensburg, 1995). Evaluation research that focussed on processes of environmental education within projects of the Society and KwaZulu-Natal midlands also demonstrated the weaknesses of causal approaches and linear assumptions about social change (O'Donoghue, 1990).

Rational approaches, designed to cause change are often associated with a sense of "we know what's best for them" and a distinct power gradient (4.4 and 3.6.4) from 'those who know' to 'those who need to know' becomes evident (1.2 and 2.2). This 'us' and 'them' disposition can further jeopardize the relationship between 'educator' and 'target audience' even causing resentment that may become counterproductive to meaningful learning (Taylor and O'Donoghue, 1990). Simply put, critical reflection and significant social change do not necessarily follow from the receiving of clear conservation messages or externally

developed materials: "....we cannot assume that such knowledges will mobilise people 'to make sacrifices to achieve remedial goals'" (Gough, 1996:5).

In a critique of rational approaches to managing change Popkewitz also questions the notion of systematic, rational change and places emphasis on the discontinuities and ruptures evident in developing institutional settings:

> To study the past in the present is to locate breaks, discontinuities, and ruptures in the institutional life. There is no serial and sequential movement of events or institutions, nor can we ascribe change to the motives or beliefs of historical actors (1991:15).

5.4 A participatory orientation

As problems with 'centre to periphery' orientations became apparent, and 'top-down' approaches were generally seen to be unsavoury, a swing to participatory approaches occurred (Taylor and O'Donoghue, 1988). Participatory orientations seemed to be a step in the right direction but have, unfortunately, been unable to provide all the answers and, with few exceptions, such orientations to educational reform have met with little sustained success (Papagiannis, *et al.*, 1982 and Lotz, 1995). Participatory approaches become particularly problematic when embraced as technicist (2.9.2) solutions or as a 'cure-all' into which participants are "dragged" with little choice (Rahnema in Sachs 1992:116 and 4.5.1.2). The participatory activities may simply become a legitimation exercise or the 'right way to do it'. In such cases, the participation is not genuine, and is perhaps more aptly termed pseudo-participation (O'Donoghue, 1990).

5.5 The concept of networking

Disillusionment with top-down approaches and widespread doubt about interventionist orientations (Chapters 2- 4) were placing environmental education projects and individuals under pressure to look for alternatives. Building on participatory approaches, networking was becoming a fashionable alternative by the early 1990's.

Participatory resource development at the Umgeni Valley Project demonstrated the

importance of cooperation between individuals and organisations with a range of different, but complementary, skills and equipment. Initially resource production facilities at the Umgeni Valley Project were not sophisticated and this meant limited options. As individuals working alone in our own institutions we lacked expertise and suitable technology. Through collaboration with other institutions, however, scientific knowledge, writing ability, artistic and layout skills as well as funding to acquire the technology (4.4) all contributed to the production of resources (e.g. the *Hands-On* guides, 4.5.1).

Cooperating institutions such as local schools, the Natal Parks Board, the Umgeni Valley Project, the Primary Science Project and the Science Education Project contributed in different ways to the production of the Share-Net materials. Through collaboration many disadvantages could be overcome. Examples of this included the contribution of expertise on soil organisms from Natal Museum in Pietermaritzburg, artistic support from the Natal Parks Board, and field testing of material in local schools. Technology, such as 'photo-reproduction' equipment at the Natal Parks Board which is used for making high quality master copies, was also shared.

Experience with the development of the early resource materials also taught us that if we were going to be successful we would have to rely on our own ingenuity and commitment, as well as our capacity to work effectively with others. This was well summed up by Henry Ngcobo who, when asked what he had learnt from the development of the *Hands-On: Soil Organisms* booklet (Londt, 1992), replied: "I learnt that if there is something I need to know then there is likely to be someone out there who can provide me with the answer" (Ngcobo, 1991, pers. com.). Although we did not yet recognise it at the time we were becoming part of a cooperative network. Cooperation was taking place because we had specific needs and working together with others gave us the capacity to deal with some of these needs and even realise wider opportunities. It would have been futile to expect others, whether they were friends, the government, or even a local NGO, to come along and

'network' us![45]

Slowly we were developing the capacity to reflect on everyday activities and learning to act with others to address the tensions and ambiguities around us (Wildermeersch, 1985). If these existing processes of cooperation in the development of resource materials were useful to us it seemed desirable to broaden the processes and involve others in wider networking. An alternative to the Society's earlier interventionist approaches to resource development appeared possible.

A network may be described as a structure, whether informal or formal, that enables people to share information and to work together. Networks should therefore involve information exchange, active participation in that information exchange and interaction between suppliers and users of information (adapted from Goldstick, 1993). This open definition of networking differs markedly from the *targeted message* approaches described in earlier chapters (1.2; 2.7.1 and 3.7.4). It also summarises the nature of the early resource development work at the Umgeni Valley Project.

A networking orientation, which did not promise control over the educational outcomes, provoked doubt and even tensions within the staff and membership of the Wildlife Society, many of whom had implicitly supported the idea of social change resulting from well-communicated messages. By treating teachers as partners and supporting local initiatives, however, especially around the development of educational materials a greater sense of confidence and even productivity started to develop (Powell, 1989). Tangible evidence, in the form of resource materials and popular support from cooperating teachers, gave an indication that these collaborative orientations had considerable potential.

---

[45] This disposition became apparent at a networking conference in Kenya (Taylor, 1992a). Participants appeared to have realised that *networking* was the latest trend to be part of and were trying to convince foreign donors and other organisations to fund networking and *do it for them.*

Other issues relating to decision making were evident at this time. At a macro level we were attempting to address concerns relating to networking between organisations as well as trying to find the funding to appoint new staff who would be able to help manage a rapidly growing project. At a micro level we were struggling to produce enough booklets to meet orders; this included mastering the printing machines, collating, binding, packaging and mailing. Even the purchase of the correct type of stapler was an important 'micro' issue. The tensions between addressing conceptual issues such as "was the networking orientation merely a more subtle form of the 'us' and 'them' issue?" as well as issues concerning the future direction of the project, in addition to micro problems such as the ink being too thick for printing on a freezing Howick morning, were continuously evident!

Fortunately we were supported by many willing helpers (many of them voluntary) and decision making was aided by dialogue around the problems we were facing. We were learning that there was seldom one 'right way' to do things and the best thing to do when things went wrong was to try to ask clarifying questions of people who might be able to help. In this way we tried to focus on what appeared to be the greatest need at any one time and continuously looked for opportunities. Uncertainties relating to future directions as well as potential tensions between cooperating organisations were continually part of the daily work environment.

An example of developing institutional tensions around networking was evident in 1991 with regard to the water quality monitoring materials (4.5.6). The concern had been expressed at a senior management level that cooperation with Natal Parks Board and the Society could reduce the kudos and publicity accruing to Umgeni Water. A presentation to and discussion with the Umgeni Water management committee (MANCO) in October 1991 helped to allay these concerns and to illustrate the benefit of joint exposure for Umgeni Water *with* other organisations. The importance of discussions to address, and if possible, alleviate concerns before these became entrenched, and a threat to ongoing cooperation, was evident here.

5.6 The Share-Net workshop

The publication of the paper on networking (Taylor and O'Donoghue, 1990), and discussions at various workshops in which examples of the early 'Hands-On' booklets were used, as well as the desire to widen networking to include other individuals and organisations involved in resource material development, led to a further workshop on resource materials development. This workshop was held at Midmar, near Howick and was reported in some detail in Chapter 2.17.

At the workshop the early experiences with resource material development at the Umgeni Valley were shared and other cooperative initiatives were developed (Banach, 1991). While compiling the proceedings it became apparent that participants had always been networking with each other to a greater or lesser extent. The most commonly used mechanism for achieving cooperation had been a telephone. It was therefore decided to produce a 'phone book of participants rather than proceedings. The 'phone booklet was mailed to each person who attended the workshop. The 'phone book listed names, addresses and telephone numbers in alphabetical order as well as a reference section of participating organisations (Share-Net, 1991). The booklet has subsequently become a popular tool for enabling people to get in touch with each other and several updates have been produced. Updates enable active resource material developers who did not attend the initial workshop to have their particulars listed in subsequent editions (Share-Net, 1993a and 1995a). The updates also mean that participants can have their details removed if they are no longer active in resource material development. The 1993 version of the booklet also lists special interest areas so people who require information on, for example, computers, could make contact with people who are active and skilled in that field.

Rather than starting a new network, the developing concept of Share-Net sought to strengthen existing links and, where possible, widen participation. There is, therefore, little centralised control in this form of networking and no overt coordinating body. The telephone booklet simply provides a mechanism through which people can maintain existing

The booklet is also available on computer diskette enabling people to customise their own copies. In this way Share-Net is:

> ..... an informal, collaborative structure through which individuals, projects and agencies can both contribute to, and benefit from, current environmental education resource development activities in southern Africa (Share-Net, 1991:1).

5.7 The importance of personal contact

An important feature of the networking through Share-Net has been the personal relationships that people developed at the early workshops and then maintained through other meeting opportunities. The annual EEASA workshops (EEASA, 1990 to 1995) provided opportunities for people to renew acquaintances and share the latest developments in resource materials. One helpful innovation in this regard has been the EEASA 'market place' where participants at the workshop bring and display their resources. Even materials in their developmental stages are displayed to invite wider comment and contributions. A notable feature of the networking through Share-Net has been how seldom projects develop jointly when partners have not had the opportunity to meet in person and get to know each other. Sophisticated communication networks such as telephone, fax and e-mail provide excellent support for networking but, in our experience, are no substitute for personal interaction.

5.8 Local resource development projects

Running concurrently with the workshopping and papers on networking were various local resource material development projects. These saw the development of a number of *Hands-On* field-guides co-compiled with teachers (4.5.1 and O'Donoghue, 1990). This experience in 'grass-roots' resource materials development was also published in the *International Journal of Science Education* (O'Donoghue and McNaught, 1991). Materials were developed, duplicated on an off-set litho printing machine (4.4) and marketed through a cost-recovery mail order service (3.8.3). The underlying orientation to the development of the resource materials had, by this time, evolved to a process of giving away the tools of science rather than materials designed to 'get the message across' (Taylor, 1992b and 1993).

These projects were very important from a networking point of view in that they provided tangible products around which the interactive networking could take place. Through the development of the materials, relationships were developed between people and organisations and these often led to greater, future opportunities. An example of this was the development of the early water quality monitoring materials. This development involved staff from a range of departments of the Natal Parks Board, the Society and Umgeni Water. Early developments such as the production of the water quality slide led to the development of further materials and these processes were made easier by the early cooperation during the development of the water quality slide.

5.9 Wider networking

The significance of other individuals or organisations developing their own materials or adapting existing ones for their own use has been described in Chapter 4. To support this process, and at the same time to deal with the large numbers of requests (both telephonic and personal) for assistance with regard to word processing, a booklet, *An easy reference guide to WordPerfect©*, a programme often used by resource material developers, was developed (Auld, 1991; 1995 and 4.6.4). These booklets were then sold through the Share-Net mail order service and each year about 700 copies have been purchased. This resource is particularly significant in terms of networking because it supports people to become actively involved in resource material development rather then simply remaining passive receivers of other people's material. Sharing the materials in an adaptable format also supports the redevelopment of material to local conditions and circumstances (e.g. Christians, 1993).

The phenomenon of people passively receiving materials is very apparent in the quantity of materials provided for distribution by organisations such as the United Nations Environment Programme (UNEP), the World Wide Fund for Nature (WWF) and the International Union for the Conservation of Nature (IUCN). Feedback from staff of the Society as well as discussions with teachers during workshops (Chapter 3) indicate that this randomly

distributed material is seldom used. This is not surprising: the failure of centre-to-periphery material development is now widely reported (e.g. Papagiannis, *et al.*, 1982 and Popkewitz, 1988).

The production of the *Catchment Action News-Flash* (Share-Net, 1993b) illustrated the possibilities for enabling local decentralised networking. In this news-flash all individuals and organisations who had purchased a particular Share-Net educational resource, the *Catchment Action Starter Kit* for lowcost water quality monitoring, were sent an update through the mail that provided further details on the project as well as information on how participants could purchase refill packs. Included in the news-flash was a list of *all* individuals who had purchased the kit with their names and telephone numbers.

More than one thousand individuals were listed and grouped alphabetically according to postal code regions. This enabled many local cooperative projects to expand and grow as participants were able to see the names and contact details of other people who were doing work similar to them and who were living nearby. Local cooperation as a result of the *Newsflash* was very evident during a teachers workshop I participated in at Knysna in the southern Cape on the 26 October 1993 (Appendix A). Teachers from different local schools had purchased 'Starter kits' after seeing these discussed on a national television programme and were using these to do water quality monitoring in Knysna. Only on receipt of the newsflash did they realise that other schools were working on the same stream nearby. The teachers made contact with each other and fruitful cooperation resulted. This cooperation was particularly encouraging in that affluent schools in the Knysna region made contact with less affluent schools and shared resources and findings. Both rich and poor do, after all, share the same rivers!

This initiative reveals the importance given in the Share-Net project to a shift in power from a centralised, coordinating, networking structure to local initiatives. Our reasoning was that the success or failure of the project rests with the local individuals who, using appropriate

resource materials to investigate and act upon issues (*The Catchment Action Starter Kit*), are able to develop local networking links for support and greater cooperation (*The Catchment Action News-flash*, Share-Net, 1993b).

5.10 Networking in the Western Cape

Western Cape participants at the first national Share-Net workshop organised a follow-up workshop in their region from the 8 - 10 of March 1991. This workshop was held at the DeHoop field centre and also sought to strengthen existing links between individuals and other organisations in the region. At the opening of the workshop a *potjie* (three legged pot) was used to symbolically represent environmental education. The three legs represented people, places and publications (resource materials) respectively, all supporting the processes of environmental education which were symbolically located in the pot itself.

A directory of local contact names and addresses for the Western Cape was produced after the workshop (Klein, Wagiet and Kelly, 1991). This directory also listed names and addresses, projects and places of interest to environmental education. The Western Cape directory was widely used in the first year after it was produced but developing EEASA structures in the Western Cape, which maintain lists of contacts, as well as the use of the national Share-Net directory, have led to it falling away (Kelly, 1996, pers. com.).

5.10.1 Low-cost publishing in the Western Cape

A further outcome of resource materials development in the Western Cape was a joint proposal between the National Botanical Institute (NBI) and the Ecological Clubs for Children Organisation (ECCO) to develop an *Environmental Resource Guide Series* (Slingsby and Low, 1991). This cooperative venture resulted in the production of various field-guides in the Western Cape such as *Ants of the Western Cape* (Slingsby, 1991). Further pocket guides for the Western Cape have been produced through ECCO including booklets on rocky shores, frogs and spiders as well as a number of *Greening Guides*. These materials are available from the National Botanical Institute in Cape Town as well as from the Share-Net mail order service.

5.10.2 Selling the material

The development of low-cost publishing in the Western Cape shared many features with the developing Share-Net concept in KwaZulu/Natal. Materials are produced copyright-free for nonprofit educational purposes and where appropriate, a wide range of people participate in the compilation and field testing of the resources. Field testing of materials is made viable as print runs are initially kept low. Materials produced are sold to recoup expenses and external funding is used to purchase capital equipment such as a computer, appropriate software and laser printer (for origination of materials) as well as a *Rhiso-graph* membrane duplicator for multiple copies that are inexpensive and of a reasonable quality. The *Rhiso-graph* was purchased with funding from Shell and the sale of material has led to a steady income which has reduced the risk of external funding dependency (refer to Chapter 6 for a fuller discussion on funding issues).

Although economic issues are dealt with in more detail in Chapter 6 they are raised here because the income from the sale of resource material was important to financially sustain the local networking initiatives. This revenue helped the ECCO project reduce its dependency on donors and yet still provide a local 'node' around which people could meet, share ideas and produce resources.

5.10.3 *We Care Primary*

The development of the *We Care Primary* series of resources too, is a significant example of cooperative networking in resource materials in the Western Cape. This resource was developed following criticism of the original *We Care!* package (South African Nature Foundation, 1987) for its technicist orientation and blanket-marketing and packaged orientation (O'Donoghue and Taylor, 1988a and Taylor, O'Donoghue and Soutter, 1988). The development of the junior *We Care Primary* materials therefore involved greater teacher participation, although this workshopping process did not produce the expected outcomes. Tensions in the expectations surrounding the development process as well as problems related to pseudo-participation were all evident in this development process (Lotz, 1995; 4.5.1.2 and 5.4).

5.11 Resource material networking in other parts of South Africa

By 1991 resource material development projects were being established in other parts of South Africa by the Society's regional education projects. A research project by Erasmus, for example (1991), recommended the need for lowcost resource materials for teachers as well as teacher training workshops. A joint initiative was therefore established between the MacGregor museum and the Society. Materials developed through Share-Net and suitable for use and adaptation in the Kimberley region were provided to support the initiative. The Society helped provide a computer for the project and the museum proved a useful meeting place for teachers as well as a place where they could look at, trial and purchase resources.

Other regional branches of the Wildlife Society have also set up resource material displays for visiting teachers. These displays are sometimes known as 'cardboard libraries' (refer to Figure 4.1 for photographs). The displays include the *Enviro Facts*, *Hands-On* materials, the *Beginners' Guides* and *Teachers' Activity Handbooks* (refer Chapter 4) and are arranged according to the space available at the local project offices or shops. These include the Western Cape (Cape Town), the Eastern Cape (East London and Port Elizabeth), KwaZulu-Natal (including the Umgeni Valley Project near Howick and the Treasure Beach Environmental Education Centre in Durban) the Free State (Bloemfontein) and Gauteng (Johannesburg). Teachers are able to peruse the materials at these local 'resource nodes' and, when staff are available, ask questions and discuss resource material issues and needs. Most regions also offer teacher workshops that include displays and demonstrations and discussions about the resource materials although these services depend on the interest and enthusiasm of local Society staff.

The workshops and discussions with teachers, community workers and other interested members of the public in other parts of South Africa further contributed to the interactive networking capacity of Share-Net. Steadily an interlinking series of 'resource nodes' were being developed, each unique to local circumstances and needs. The resource materials, in particular, helped provide a focal point around which the "dialogue, encounter and

reflection" (4.5.6.3) could take place.

5.12 The development of policy within the Society

As conventional approaches to environmental education were increasingly challenged within the Society, policy debate became an important issue. A policy review process was therefore initiated in 1991 that included wide-ranging consultation of Society members. This process culminated at the Society's *Quo Vadis* Workshop in Johannesburg in May 1992. At this workshop elected members of the Society ratified a draft environmental education policy for the Society with less of a 'structural functionalist' (2.9.1) orientation than previous policies. This policy aimed for an enabling orientation and offered a model of learning that encouraged dialogue, reflection and 'real-life' encounters (Wildlife Society, 1994 and 4.5.6.3). This policy document supported cooperation and networking with other organisations. The desire to control the direction of the learning processes was tempered with the need to share resources so as to enable participants to clarify local approaches to environmental education.

Four years later, following the South African general election of 1994, a further national review and strategic planning meeting was held by the Society at Golden Gates Highlands National Park[46] (Taylor, 1996c). At this meeting the Society reaffirmed its commitment to environmental education and resource material networking. By this time the Society's environmental education projects in other parts of South Africa had gained momentum, particularly in terms of resource materials. Projects were actively using, selling, adapting and workshopping materials and this activity has contributed significantly to wider networking processes.

---

[46] For a recent overview of wider, national environmental education policy developments in South Africa refer to Taylor (1996b) a copy of which is attached (Appendix C).

5.13 Other environmental education networks

Various other environmental education networks have been established or are in the process of being established in South Africa and elsewhere in Africa. Case studies of these networks follow, providing comparative material to the development of Share-Net. Where appropriate, therefore, comments will be made on the rationale behind these other initiatives.

5.13.1 The Department of Environment Affairs

In 1991 the then Department of Environment Affairs (DEA) commissioned a workgroup to investigate what environmental education networks existed in South Africa. The objective was to assess existing networks with a view to establishing a new or enhanced network. The working group's report (Taylor, 1991) concludes that:

> .....the most successful way in which enhanced cooperation can be achieved is by supporting the infrastructure already in existence (1991:1).

This conclusion was similar to the findings of the Midmar workshop but was, nonetheless, unusual at a time when organisations were climbing on the 'network bandwagon' and setting up their own new networks (see below). Other recommendations included the maintenance of a directory of environmental education agencies (Department of Environment Affairs, 1992) and that assistance be made available to institutions such as Rhodes University (to maintain and develop the Murray and Roberts Chair of Environmental Education's database of information) as well as that of Share-Net in KwaZulu-Natal. It was also recommended that both Rhodes and Share-Net develop their databases and provide a photocopy service to the public.

5.13.1.1 Underlying assumptions

An underlying assumption of the DEA initiative may be paraphrased as follows: 'People are in need of information, and some institutions have, or should have, the information they require. A network must be established, therefore, that can make the information as accessible and inexpensive as possible to all who need it'. While it may be a good idea to do this, it is simplistic to assume such direct causal relationships between the people who

need the information and those who can supply it. Experiences with Share-Net at the Umgeni Valley Project suggest that requests from the general public and schools often require a personal response to clarify an issue rather than a direct answer to a straight-forward question. The importance of a caller being able to clarify needs and to discuss issues with someone informed about environmental education and resource materials is an important service, therefore, if meaningful interactions are to occur.

A similar finding was evident at the Murray and Roberts Chair of Environmental Education at Rhodes University (Janse van Rensburg, 1995, pers. com.). The disposition of the person responding to the requests, therefore becomes very significant; enthusiasm, patience, an ability to listen and carefully clarify needs and develop opportunities, are essential. The disposition of the person involved in providing the educational service is a recurring theme of this study (3.5.1).

5.13.2 European Research and Training Centre on Environmental Education

Unfortunately, in many instances, once the notion of 'networking' became popular, projects simply changed the rhetoric and continued to pursue the same structural functionalist (2.9.1) ideology which had underpinned centre-to-periphery styles of education in the past (Popkewitz, 1988).

A recent survey of networks in Africa commissioned by the European Community (European Research and Training Centre on Environmental Education, 1995) illustrates this point. The survey asks the question *What are the target groups of the network?* (Question no.5). The ideology behind this question is steeped in a 'target group' orientation. This is limiting and potentially alienating. It makes assumptions about environmental education as being a process of knowledge transfer from *us* to *them*. If a network is really a move away from 'top-down' approaches, the assumption that the network can have a target is nonsense. If on the other hand, the network is a collaborative activity to benefit all participants one must necessarily give up ideas of control by one group over another. Under these

circumstances learning is possible for all partners and not a matter of domination by the articulate or the economically powerful. Environmental education then becomes far more than the acquisition of knowledge and can become a process whereby the misconceptions can be revealed, explored and engaged with. For a more detailed response to the European Research and Training Centre on Environmental Education's questionnaire please refer to Appendix Fiv.

A similar example is evident in a recent South African discussion document titled *Towards a New Environmental Policy for South Africa* (Department of Environment Affairs and Tourism, 1996). Under the heading of environmental information, the question is asked: "Can information change attitudes and behaviour?" (p76). By focusing on behaviour change this question implies an overt or covert desire to do just that! It is ironic that this ideology, which seeks to cause change in people through directed information, should be evident in a document that purports to be 'participatory' and claims to overturn the previous government's "command and control" thinking (Holomisa, 1996:iv).

5.13.3 ECOSA

Education and Communication for Sustainability in Africa (ECOSA) was a research project that set out to investigate the nature of environmental education in Africa and provide a database of environmental education programmes currently being implemented across the continent. The project was conducted under the auspices of the International Centre for Conservation Education (ICCE).

Commencing in May 1994, ICCE sent questionnaires to more than 1 000 organisations and individuals throughout the continent. Qualitative grass-roots research was undertaken in three selected countries - Mali, Mozambique and Uganda - and visits were made to ten more. In July 1995, towards the end of the research phase, a consultative workshop was held in Durban, South Africa during which forty African and Africa-based practitioners were able to discuss issues raised in a specially prepared interim report. The principal

outcome of this workshop was the *Durban Accord*, a series of resolutions which aim to promote wider networking (Vare, 1996).

5.13.3.1 A comment on ECOSA

This high profile research process suffered many of the weaknesses of positivistic research (Reason and Rowan, 1981 and Popkewitz, 1984). Many of the outcomes and recommendations were predictable prior to the commencement of the research. The research process was also dominated by an outlook of *us* researching *them* when in fact considerable experience of supporting environmental education in Africa was available to the ECOSA team prior to their embarking on this particular research process. This information did not, therefore, need to be researched out with such elaborate and expensive research mechanisms. In acknowledging this, the director of ICCE pointed out, however, that the European Commission who funded the research would not have been prepared to fund environmental education in Africa without a survey "to first establish what was going on" (Boulton, 1995, pers. com.).

The questionnaire survey suffered from many of the weaknesses of the research conducted by the *European Research and Training Centre on Environmental Education,* which was reported on above (5.13.2). Fortunately, field visits and a number of workshops complemented the survey and a number of useful outcomes of the research are evident. These include:

- a database on diskette that can easily be used to analyse the results of the questionnaire which are arranged according to countries,
- greater opportunities for networking amongst participants who attended workshops, and
- a range of recommendations related to formal education, training, materials production, curriculum, funding and research.

ECOSA is now recommending the formation of an Africa-based information network,

ECOSA-Net: "This would operate through local, national and regional nodes (connected electronically) which would be charged with the updating and dissemination of ECOSA data" (Vare, 1996:10-12). As a networking institution ECOSA-Net may run the risk of becoming dependent on donors with little capacity to develop income from services rendered, however (refer Chapter 6).

However, if ECOSA-Net is able to develop a focus for cooperative action, such as on resource materials, it could make a significant contribution to environmental education in Africa. Such a focus could enable participants to learn through dialogue, encounter and reflection while supported by resource materials and to gain meaning from the interactive processes around the development and use of resources.

5.13.4 The East African Environment Network

A further example of a network conceptualised from a top-down orientation was apparent at the East African Environment Network (EAEN) Conference held in Nairobi in May 1992. Here a number of presentations were characterised by a zeal to 'get the message across' through whatever method or technique available and networking at times appeared to become a process of knowledge transfer from those who know to those who were perceived to be 'unaware' (the target group). This orientation to networking has a 'power gradient' that could well alienate the target group who may feel they are being 'preached at' in a condescending manner. This outlook on networking is unlikely to foster greater participation from those who may be made to feel that they 'do not have the message'.

With reference to funders of the EAEN a recent editorial acknowledges support thus: "graciously funded by those who appreciate the role played by the media in spreading the environmental gospel" (EAEN News, 1996:2). When appropriate, it may be important to 'spread or get messages across' to others. This may be the case, for example, when specific, direct information is needed such as when the public need to hear about a possible flood or the risk of a particular disease. With regard to the meaningful understanding of

complex environmental issues, or when misconceptions are held by the public (as is frequently the case with the uncertainty of environmental issues) simply giving people *more* messages is unlikely to be of much use.

Here dialogue to achieve clarity and clarify misconceptions is important and is likely to have a longer-term, more meaningful effect than a lecture or 'media message', where the articulate (the powerful) are seeking to inform others. This does not mean, therefore, that dialogue is always necessary when informing adults or pupils, but it is appropriate in certain circumstances and can enable a levelling of the power gradient (2.17 and 4.4). Ostensibly this is the intention of many networking initiatives.

It was also apparent at the conference that the EAEN lacked a focus for action (e.g. resource materials) or themes (e.g. curriculum reform) around which members could interact if it were to prove productive as an ongoing network in the longer term (Taylor, 1992a). A focus for action may also be helpful to the EAEN when seeking further funding.

5.13.5 The International Development Research Centre

The International Development Research Centre (IDRC) has supported a network of research endeavours across Africa. Unlike the East African Environment Network the IDRC has a focus on research and this provides participating members with a theme for cooperation (Schreuder and Taylor, 1995).

In a reflection on an IDRC conference held in Kenya in August 1994, Kinyanjui (1995) contrasts two dominant approaches to environmental education in Africa, the first of which he describes as being represented by the UNESCO/UNEP[47] environmental education programme that was initiated in 1975. While Kinyanjui acknowledges the importance of this programme in influencing national governments and Ministries of Education to address the implementation of environmental education in the education process, he contrasts this

---

[47] United Nations Environment Programme, Nairobi, Kenya.

approach with that evident in South Africa which he describes as:

> ..... rooted in local communities, bring with it local participation, knowledge, orientation and geared towards dealing with concrete realities of daily life (Kinyanjui, 1995:2).

Provided the IDRC maintains its research focus and is able to address local, relevant environmental issues and maintain its funding sources (members being paid for research consultancies and workshops being funded by 'Aid Agencies') it seems likely that it will be able to sustain itself financially.

5.13.6 The Southern African Developing Community

International networking involving South Africa has been inhibited by South Africa's isolation during the *apartheid* era. The Southern African Developing Communities - Environment and Land Management Sector (SADC-ELMS) has, however, been initiating various strategies to promote greater networking in the sub-region. One such workshop was held in Namibia in March 1994 with the specific objective of clarifying and fostering cooperative environmental education networking (Hertzman, 1994).

In the opening speech of the workshop, Namibia's Deputy Minister of Education questioned approaches to environmental education by asking: "Has environmental education really failed, or does it have inherent weaknesses that have escaped us in our fervour to get the message across?" He continued to portray conventional approaches to environmental education as: "solutions imposed by an informed and benevolent elite" (Taylor, 1994). This workshop challenged much of the conventional wisdom embedded in terms such as 'target group' and '*preaching* to the converted'. The Namibian workshop was followed by a further international workshop on networking. This workshop was held at the Umgeni Valley Project, in February 1996, and was also organised by SADC-ELMS.

The second workshop focussed on regional networking and cooperation regarding training in environmental education and the development of resource materials. The workshop

had been called following a two year research study which concluded that, according to its assessment, "the Umgeni Valley Project was the most suitable institution to act as the Regional Centre for environmental education and networking" (Gretener, 1996:20).

At the workshop the concern amongst participants that the networking centre would become a grand[48] place that coordinates others and grows and benefits at the expense of smaller regional projects was evident. This tension was evident throughout the workshop although the idea of a centre being a place for training courses and a meeting place where ideas and resources could be shared was emphasised thus: "Rather, it is a place that can develop regional capacity through providing facilitatory networking, training and the opportunity of sharing educational resource materials" (Bakobi and Taylor, 1996:1). This idealistic observation could well be challenged in the turbulence of an international political economy[49] where lobbying to attend courses, *per diem* allowances and travel perks are a serious issue (refer 6.3.3 and 6.3.4).

Even if funding is found to establish the proposed centre (SADC-ELMS have made a commitment to do so) the task of developing the Centre will be a difficult one. Not only will expectations throughout the region run high but assumptions and ideological conflicts with regard to training and networking are likely to create significant tensions. Furthermore, SADC-ELMS feels that it is important that once established the proposed centre should become financially self-sustaining. This is likely to be a challenging task!

---

48 The striving for a single, simplified, large-scale solution is described by terms such as 'grand theory', 'grand plan' or meta-narrative (refer Docherty, 1993:11, 417-8).

49 The term political economy is used here to denote the link between policies (the plans of an institution and how these plans are 'policed') and the economics of the institution (the patterns of funding). The reader is referred to Papagiannis, *et al.* 1982, for an exploration of this concept.

5.14 Networks and funding dependency

The issue of adequate funding is crucial if networks are to survive. Often a small, informal and voluntary network requires little funding until demands on services of volunteers become excessive. *Greenway,* a network of environmental non-government organisations, was established between groups from Poland, Hungary and Czechoslovakia in 1985 (Vartikova, undated). Until 1991 the network was maintained with a purely voluntary base existing on the strength of personal contacts. Since 1991 *Greenway* has established a secretariat and now consists of 31 member organisations and is the only central and eastern European network of environmental NGO's. The *Greenway* secretariat is responsible for producing a bimonthly newsletter, supporting various working groups on environmental issues as well organising meetings, conferences and workshops.

As a 'network' of 'networks' *Greenway* appears to be fulfilling a useful need in Eastern Europe but the financial support available for the secretariat is uncertain. Like many other similar networks *Greenway* is unable to support itself financially from the services it offers and must rely on external donations. This funding dependency can leave a project financially vulnerable, a risk that was alleviated to some extent with Share-Net through the sales of resource materials. This issue was addressed in some detail in a research report on Share-Net (Taylor, 1995a) and is examined further in Chapter 6.

5.15 Some concluding comments

The realisation that people are already networking to a greater or lesser extent was an important realisation in the early development of Share-Net. Once this became apparent network support could take the form of supporting these existing interactions. This was possible, for example, with the production of the Share-Net telephone address booklet.

Centralised control and outside management of a network may inhibit personal and institutional commitment and meaningful networking processes. Enabling people to

participate as partners sharing expertise and skills, however, may contribute to greater collaborative processes. A shift in participation and power from network organisers to local initiatives through partnerships is, therefore, most important. Small local projects often realise opportunities that large *grand plan* networks cannot. The circulation of the *Catchment Action News-flash* is an example of a networking initiative with little centralised control of outcomes but which offered local initiatives an opportunity to become more involved in cooperative projects.

Networks that lack a focus may lose momentum. Share-Net, for example, focuses on resource materials while the IDRC has a focus on research. Without a common concern networks may simply become networks for networking's sake and fail to support meaningful participation and interaction. This issue is evident to me from recent participation in two collaborative environmental education initiatives. The first of these was the Durban based *Environmental Communicators Forum* (ECF). The ECF was an active forum for a number of years while its objective was focussed on environmental education venues in Durban. Once the interest group broadened to wider issues it appeared to lose momentum and was eventually disbanded. The IUCN *Commission on Education and Communication* is a further example of a cooperative forum that may become more effective with a specific focus for action (IUCN, 1996).

A process of meaningful dialogue between teachers and learners and amongst learners, encounters with real issues and reflection on relevant environmental concerns appeared to stimulate meaningful learning and participation within the Share-Net project. These forms of interaction are important if networks are to go beyond the sending and receiving of information and provide support for processes of engagement around common problems, with other co-learners, that can lead to meaningful learning as misconceptions and myths become revealed and debated.

A lack of ongoing, self-sustaining funding is a problem for the establishment and

maintenance of networks. Unless networks are able to generate some form of income they will become dependent on external funding. In the case of Share-Net a significant proportion of running costs is recouped through resource material sales. A review of other networks without a specific activity as a focus revealed that a similar ability to generate revenue through services offered was not likely, although participating members of the IDRC were able to generate funding through research consultancies. In the following chapter the issue of finances to support and sustain environmental education initiatives is examined further.

Table 5.1. Policy documentation, occasional reports, workshop documentation and published papers. A chronological data record.

Date	Document	Comment
1990	Towards a cooperative network: Share-Net (Taylor and O'Donoghue, 1990).	An EEASA Bulletin paper outlining a network strategy and criticizing interventionist approaches to resource materials development.
1990	Share-Net Workshop (Share-Net, 1991).	A workshop to clarify networking in EE resource material development. Share-Net directory produced.
1990	Share-Net workshop in the Western Cape (Klein, Wagiet, and Kelly, 1991).	Western Cape version of Share-Net directory produced.
1990	Action Ecology masters thesis (O'Donoghue, 1990).	Thesis on "Environmental education, evaluation and curriculum change: the case of the Action Ecology Project".
1991	Western Cape 'lowcost' publishing initiative gets underway (Slingsby and Low, 1991).	Various materials produced as cooperative, copyright-free ventures between different environmental organisations.
1991	Share-Net: People Places and Publications for EE (Banach, 1991).	A paper on Share-Net published in the library journal *Innovation*.
1991	EE: the development of a curriculum through grass-roots action (O'Donoghue and McNaught, 1991).	O'Donoghue and McNaught paper in the *International Journal of Science Education*
1991	Dept. of Env. Affairs report on networking (Taylor, 1991).	Report recommending cooperation in networking in South Africa by promoting and supporting, existing networks.
1991	A report on EE in the Northern Cape (Erasmus, 1991).	A research report to the Society by Suzanne Erasmus, Northern Cape Branch, recommending voluntary commitment (jointly with the MacGregor Museum), resource material development and teacher workshops.
1992	Report on the *East African Environment Network* Conference (Taylor, 1992a).	This report considers the flaws in a network that is not focussed, e.g. on resource materials.
1992	Developing Networks of Grass-roots science curriculum action (McNaught, *et al.*, 1992).	A paper that describes participatory approaches to curriculum development. This paper reflects on the many associated curriculum projects in Natal at the time.

Date	Document	Comment
1992	Quo Vadis documentation (Wildlife Society, 1992b).	These documents were compiled to support a series of meetings and discussions designed to clarify where the Society was going from an EE point of view.
1993	"Giving the tools of science away" (Taylor, 1993).	A short article in the IUCN's "Nature Herald". This short article which first appeared in *Our Living World* and was later edited into the *Nature Herald* with the following preamble "...participatory methods as a means to changing behaviour."
1993	"Museum education - a potential Dodo in the future South Africa" (Erasmus, 1993).	A paper stressing cooperation amongst NGOs and recommending teacher workshops and resource material development and support.
1994	EE Policy Guidelines for the WLS (Wildlife Society, 1994).	This short, accessible booklet was produced following a lengthy consultation process with members and staff. It has a 'loose interpretivist' style, with simple common sense directions.
1994	The Administration, Management, Production and marketing of Share-Net EE Resources (Waller, 1994).	A course work assignment by a participant on the Gold Fields course. The assignment documents sales and trends for Share-Net as well as outlining marketing strategies.
1994	IDRC workshop on research in EE: Kenya (Schreuder and Taylor, 1995 and Kinjanjui, 1995).	Two reports on the workshop outlining alternatives to conventional interventionist approaches.
1995	EE and Networks in the Commonwealth (European Research and Training Centre on Environmental Education, 1995).	An investigation into the current status of EE in the Commonwealth, with specific reference to the role of networks in promoting environmental awareness.
1995	Share-Net: Case studies in a risk society (Taylor, 1995a).	FRD research report summarising outcomes of a research investigation into Share-Net.
1995	Share-Net: Progress or Paradox (Taylor, 1995d).	Paper on Share-Net published in the *Southern African Journal of Environmental Education.*

CHAPTER 6 ECONOMICS AND POLICIES

One of the central problems of scientific establishments financed and controlled by extraneous agencies thus becomes that of the balance between dependence and independence (Elias, *et al.*, 1982:4).

6.1 The study so far

Earlier chapters of the study have addressed issues relating to research design (Chapter 1), the Wildlife and Environment Society of South Africa (the Society) and educational resource materials (Chapter 2) and resource material workshops (Chapter 3). Materials development projects and resources were then considered in Chapter 4 while Chapter 5 dealt with the emerging concept of networking. The issue of finances to sustain projects has recurred throughout the previous chapters. This chapter considers issues relating to income and expenditure especially from the point of view of a non-government organisation which has limited sources of ongoing funding.

This study commenced with a critical look at 'modernism' as an orientation that can exacerbate environmental problems. The study also revealed that environmental education, steeped as it is in solving problems from modernist perspectives could, unwittingly, contribute to problems rather than alleviate them (refer Chapter 2). This chapter illustrates, through case *vignettes,* that well intentioned financial support can also perpetuate unhelpful modernist orientations.

The focus question for this chapter is:

What economic principles should be followed to ensure financial sustainability in an environmental education project with limited capacity for raising ongoing funding?

6.2 Background

The financing of educational projects is said to be increasingly difficult, especially in so-called 'less developed countries'. In recent years, however, environmental education, especially when linked to a 'development' orientation, is receiving increasing financial

support[50]. There is concern, however, that much of the current financial support tends to be short-term and does not contribute to ongoing financial sustainability. A further concern is that in some instances receiving money from donors can contribute to funding dependency. This chapter explores these issues further through a financial critique of Share-Net. Case *vignettes* of other related projects are also explored and various inferences are made.

6.3 Funding dependency

In a large-scale survey of factors inhibiting 'environmental education networks' in Commonwealth nations, the item listed most frequently was *more financial support* (European Research and Training Centre on Environmental Education, 1995:2). Although the validity of this research is questionable (refer to the discussion on this issue, Chapter 5.13.2) it does demonstrate the problematic financial situation of many environmental education initiatives. A review of networks (Chapter 5) also revealed that networks that are unable to generate at least some portion of their financial income through services offered may not be able to be financially sustainable in the longer term.

Relying on funding from donations or sponsorships which are sourced outside the services or resources that an environmental education project provides may also contribute to its losing effectiveness in the longer term. This is because the project may be more inclined to respond to the interests of the funding agency rather than to those of the participating individuals or clientele. Furthermore when projects are entirely dependent on outside funding they could be jeopardised financially if the funding agency's policy changes and the funds are discontinued. Ideally, therefore, goods or services provided by an environmental education initiative should, in themselves, generate at least some economic return. This is particularly important for resource material development projects in that people may well value a resource more highly if they have paid for it:

---

[50] See for example the establishment of the 'Green Trust' and 'Gold Fields Benefactor Scheme' of WWF-SA both of which provide large sums of money to environment and development education projects. Other groups such as ABSA bank, USAID, Murray and Roberts, Shell (SA) and Anglo-Vaal have also made substantial donations to environmental education initiatives in South Africa in recent years.

> ..... people value services more highly and take a stronger interest in the nature of the services when they directly contribute finance or labour, however small in amount (Williams, in Bray, 1987:7).

The following case *vignettes* illustrate these observations by considering a number of non-formal environmental education initiatives from a financial point of view.

6.3.1 *Action Magazine* in Zimbabwe

Action Magazine in Zimbabwe is an example of a resource that is made available primarily through external funding and not through the sale of the resource itself. A popular comic-style educational magazine, it is developed, published and printed in Zimbabwe with considerable donor agency support. Since the resource is targeted at the youth, many of whom are very poor, the magazine is given away free. This means that the financial sustainability of the project does not necessarily depend on whether the clients (in this case youth from low socioeconomic areas) want or use the resource, but rather on the funders in Northern Europe who will continue to fund the magazine if *they* feel it is appropriate to the needs of poor Zimbabweans!

This places the project leaders in a dilemma. They feel they cannot sell the magazine (Murray, 1993, pers. com.) because their clientele cannot afford to buy it, and yet from a financial point of view the project is only secure while influential people in northern Europe are satisfied with the product. This could become problematic in that the Europeans are not the users of the resource.

The relationship between policy (the objectives of the magazine) and economics (how the magazine is funded) could also influence the editorial content. The editors could, for example, develop the content and layout of the magazine in a manner perceived to be favourable to the foreign funding agency rather than to the needs of the local users of the resource. This issue will be considered further following a description of the Science Curriculum Initiative in South Africa (SCISA).

6.3.2 SCISA

SCISA was established in response to concerns about the status of science teaching in South Africa. As a curriculum project it aimed to promote relevant general science and the concept of teachers as curriculum developers as well as to support teacher groups and broad-based decision making (SCISA, 1989 and McNaught *et al.*, 1992). Funding proposals resulted in substantial funding being secured for the project from a large South African development trust. This funding was provided for an initial three year period and most of the funding was required for the payment of a staff member and administration assistant who were responsible for the day-to-day running of the project.

Materials produced through the SCISA project were developed in a format suitable for trialling and were not made available for sale. Once the initial donor funding was exhausted, therefore, the project encountered severe financial difficulties. Income derived from the teaching of courses at the local university did alleviate the financial situation to some extent, but this strategy was inadequate and too late to rescue the project (Keogh, 1994, pers. com.).

The initial project planning that led to the establishment of SCISA reflected a similar disjointed political economy as *Action Magazine* in that the financial income to the project was not directly linked to the provision of services or sales of materials. This meant that the SCISA project was unable to move beyond its dependency on the initial funding and achieve a measure of financial independence.

Both *Action Magazine* and SCISA are resource development projects that have had difficulty in adequately linking the resources they produce to direct financial income. This fact can severely hamper the projects' longer term financial viability and may influence the production and editorial content of the resource materials. While SCISA has effectively ended as an independently funded institution, staff at *Action Magazine* are realising income through commercial desk-top-publishing work. They are also attempting to sell the

magazine to individuals and organisations who are able to afford the cover price or at least a portion thereof (Action Magazine, 1993).

These two cases provide further evidence of an 'us' and 'them' gap that is evident throughout much of this study. In this instance the gap is between the resource developers and the people for whom the resource materials are intended. The resource material developers were, due to the nature of the funding for the project, running a risk of potentially distancing themselves and their resources from the users.

6.3.3 The Mananga Management College in Swaziland

To illustrate a different point related to funding, the next example is taken from the Mananga Management College in Swaziland. This College has a reputation for running some of the most effective management courses in Africa. Although the fees are high (board and tuition cost over US$ 1 000 per student per week) the college has a long waiting list of prospective students. This would appear to be a very successful financial situation although most students are sent to the College on bursaries supported by agencies for international development (AID agencies). This means that little, if any, personal financial investment is made by the students to study at the college.

The students who attend the Mananga courses are often employed in poorly paid posts. The chance to attend a course therefore provides an opportunity to learn and develop skills as well as the following benefits:

- The qualification may help enhance the students' 'marketability' which could lead to promotion or even a better paid job, whether in the students' country of origin, or not.
- *Per diem* payments for attending the course can, if they are substantial enough, be saved and used to supplement a students' income on returning home after the course (Heylings, 1995, pers. com.).

These factors, and the attitude of the sponsors, could seriously affect the potential learning on the course. If the accommodation is of hotel standard, the lectures, seminars and other study opportunities are sufficiently entertaining and there are adequate facilities for informal recreation, then the course is likely to be considered successful since it is satisfying the needs and aspirations of both participants and funders! Meaningful learning may become secondary. This issue will be addressed further following a description of the WWF-I course in South Africa.

6.3.4 The WWF-I course in South Africa

The first Rhodes University-WWF International Certificate Course in Environmental Education was run during October and November 1995 in South Africa. Seven of the 15 students who attended this first course were from other African countries. The course covered environmental issues, trends and patterns in environmental education, the environment crisis as well as resource and curriculum development and challenged conventional thinking on these topics.

Issues related to the funding of the course were quick to surface when some foreign students expressed dismay that *all* their expenses were not covered by their bursaries including medical insurance and even their excess baggage costs for their return journeys home (Janse van Rensburg, 1995, pers. com.). The significance of *per diem* allowances was also a potential bone of contention especially when it seemed likely that these allowances would have to be used during the course for course-related expenses including social outings, rather than just for the purchase of gifts and other items for taking home. The 'AID should pay for everything' subculture, quickly spread to some of the South African participants, who had initially been 'only too pleased' to be sponsored to attend the course at all[51].

Fortunately, on the Rhodes/WWF-I course, the problems of issues relating to money and

---

[51] Due to isolation during *apartheid* South Africans have had relatively little experience with international donor organisations.

donor funding were placed on the course agenda for discussion as soon as they surfaced. This was done both to address the issues, as well as to grapple with the negative effects donor funding might have within processes of environmental education. Furthermore, the attitude and disposition of the students, which was generally very positive, allowed a healthy debate on an issue that could otherwise have proved very problematic. 'Real life tensions' (including tensions that challenge a course participant's strongly held beliefs) can provide important learning opportunities. Unfortunately such tensions may manifest themselves as complaints about tangible commodities such as food or money, rather than as more subtle and difficult-to-articulate complaints which could be paraphrased as 'I'm uncomfortable because my views are constantly being challenged'.

With plentiful outside funding such issues may recede from view or be 'smoothed over', rather than being discussed and addressed, through the provision of more support staff to care for students, better facilities and food as well as higher *per diem* allowances. This may lead to more satisfied students in the short term, but opportunities for learning could be missed and the 'AID should pay for everything' subculture would be reinforced. Unfortunately, even if the funding were available, this would not be a long term solution to a problem that is essentially located within a culture of AID funding being provided simply for one's attendance of a course.

If learning is seen as the acquisition of knowledge that is considered suitable by the student and satisfactory to the funder then again a stable 'political economy' will prevail. If, however, learning also involves the revealing of, and engaging with, myths and concepts that the student may hold dear - and the learning process becomes a painful one - the stability of the course could be disrupted.

This issue is a further more subtle manifestation of problematic 'us' and 'them' differentiations. It may be paraphrased as follows: 'We are poor and come from African countries that have been exploited by the rich northern nations; they owe us a huge debt....'.

The criteria students will consider in selecting courses could be influenced more by the value of the *per diem* allowance, the accommodation and course 'comfort zones' than by the challenging nature of the courses. To be successful according to these criteria, courses and educational resources may well perpetuate the very myths of modernism that need to be challenged.

Unfortunately, for significant learning to occur in the context of environmental education, the views of the students will often come under close, and sometimes troubling scrutiny, a factor that may not be in the interests of a stable college or a harmonious course. The pattern of funding could, therefore, mitigate against satisfactory, challenging, courses although they may satisfy the AID agencies and the perceived needs of students.

The importance of operating within available resources and seeking to sustain education activities by generating an income is a challenging proposition. This brings a large number of the donor processes and modes of project management into critical relief threatening the foundations of many current, donor supported, activities.

6.4 The finances of the Society and Share-Net

6.4.1 Limited external funding for running costs

Although the Society has occasionally received large sums of money to support its work the funding has tended to be for a particular capital development, or related to a particular project or issue of limited duration. Covering running costs, including full-time staff members' ongoing and escalating salaries is therefore a continuous problem for management. To alleviate this problem, and at the same time offer a professional service, the following two simple principles have been followed wherever possible:

- a realistic charge is placed on services rendered,
- funding from donors is used for capital expenses (rather than running costs). This means that the funding can be used to generate further income. An example of this is the use of fundraising income for the construction of

buildings that can be rented to generate further revenue.

These two principles have helped reduce the Society's dependence on external funding to some extent. As explained above, funding support can have detrimental effects, especially when the project is concerned with educational materials and courses in environmental education.

6.4.2 Tensions related to copyright-free materials

The decision to make the Share-Net materials available copyright-free (2.17.2) had the potential to raise tensions in the Society. For many years the Society had realised considerable income through the sales of its commercially published handbooks and the concern was expressed that other organisations or publishers may use the material for financial gain at the Society's expense[52]. This issue revealed an interesting dilemma. As project managers we were anxious to "give away the tools of science" (Taylor, 1992b:4) and therefore encourage the wider production of resources, but we were also committed to generate income to keep the project financially viable and reduce funder dependency (refer 6.4.3 below).

By inserting the clause "Text and illustrations in this booklet may be reproduced copyright-free by any school teacher or member of the Environmental Education Association of Southern Africa" in each resource and by selling materials as inexpensively as possible (to

---

[52] Ironically, corporate funding policies at this time were particularly supportive of cooperative approaches to resource development. Considerably more funding was therefore likely in the form of sponsorships, than would have been the case from resource material sales.

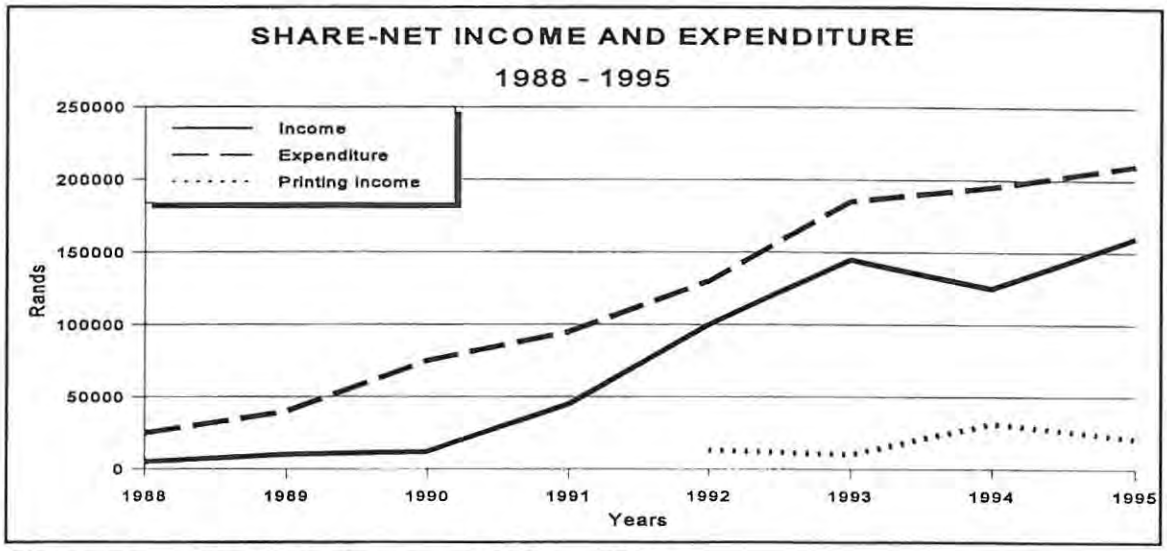


Figure 6.1. Share-Net Income and Expenditure

reduce the risk of competition) Society tensions were overcome to some extent. The collaborative nature of the Share-Net project and the need to share materials as widely as possible, however, suggests that these are only partial solutions and Share-Net project management will need to cope with these uncertainties in the future.

6.4.3 Avoiding funder dependency within the Share-Net Project

A policy of using financial sponsorship to fund capital expenditure as well as research and development has been followed in the development of Share-Net. Printing equipment, for example, that was purchased through donations was used to print educational resource materials that could be sold. This policy thus reduces the dependency on sponsors and if the current sponsors of the project were to withdraw the project would not be dealt a crippling financial blow.

The need to keep generating income also provided the Share-Net printing and publishing infrastructure at Umgeni Valley with an incentive to maintain quality and commitment to the users rather than simply to satisfy the funders. As time passed the income to the Share-Net printing and publishing infrastructure at the Umgeni Valley Project increased considerably

although, unfortunately, it was not able to overtake rising expenditure (Figure 6.1). It should be noted that the figures reflected in these graphs do not include income derived through outside sponsorship.

In the 1988/'89 financial year the average monthly income was R325 and the expenditure was R3 036. By the '94/'95 financial year the average monthly income was R13 300 and the average monthly expenditure was R17 500. This means that although the project is running at a loss, the financial viability of the project is more secure since the monthly loss is proportionately less (from a loss of 89,3% in 1988/'89 to 24% in 1994/'95). This economic situation has only become possible through appropriate financial policies.

These data demonstrate that while it is possible to generate considerable income through the sales of educational materials this income may not match expenditure in a sustainable manner while the objectives of environmental education are being pursued. This is largely due to the fact that many participants in environmental education are not able to pay market-related prices for materials and courses. Furthermore, those individuals who are able to pay the necessary costs may not be prepared to! Teachers who are only vaguely interested in environmental education, for example, are unlikely to be prepared to pay a substantial amount of money to attend an environmental education workshop.

Although it has not proved possible to generate more income than expenditure within the Share-Net project the economic principle of using fundraising revenue to fund capital equipment that can realise further revenue, as opposed to funding running costs, has proved invaluable. A further crucial factor in the development of the Share-Net infrastructure has been the running of the project on business principles wherever possible. This has meant not giving away resources for free as well as keeping expenses to a minimum.

In developing funding policies for the project, the major project funders, Gold Fields (through WWF-SA) and Shell SA, agreed to allow the printing infrastructure to be used for

commercial printing (refer Figure 6.1, *Printing income*). This meant that although the printing technology had been installed for printing environmental education materials, it could, when not in use, be used to do outside printing to secure further income to the project. This helped sustain the project financially, especially when the printer was not fully utilised or when the sales of materials were down.

The effects of this policy were very evident during 1994. The South African general election of that year, and associated uncertainty of a country in transition, contributed to a major reduction in the purchase of resources from Share-Net (refer Figure 6.1 above and Appendix B. Figure 1 and 5). The loss of income from resource sales was, however, overcome to some extent by increasing the number of outside printing jobs, and in 1994 alone, over R40 000 was generated in this way.

The policy of purchasing equipment that can generate further funding, rather than funding running costs, has, therefore, resulted in a significant measure of financial security being achieved by the project.

6.4.4 Hidden costs and benefits

Unfortunately the need to keep costs to a minimum has meant that 'employees' sometimes work as volunteers with no remuneration or, in some cases, for a small allowance. Working with Shell SA, this problem was turned into an opportunity to address unemployment in the region by taking on unemployed youths who could then learn job skills and, if possible, find jobs elsewhere. In recent years staff members who had worked as student trainees (Monica Ngubane, Bongani Shelembe, Dennis Makhabela and Mzo Maphanga), were able to find reasonably well paid positions elsewhere, aided by the skills learnt from being involved with the project. This apparent solution does, in turn, place greater stress on permanent staff members (themselves usually poorly remunerated) who must 'retrain' staff on a continuous basis. The need to keep expenditure down and, at the same time, employ professional staff with reasonable salaries, causes major problems for the ongoing management of the project.

It is important to note that a number of costs to the project are not reflected in the above figures. These include management costs external to the Share-Net project itself, e.g. financial administration and other costs which are carried by the Society. They also include rent (including residential and business accommodation), as well as external secretarial and management support.

A significant trend in the relationship with funders of projects within Share-Net has been a movement away from donations for various tasks, to an orientation where the funder becomes an active partner in the project sharing in the inevitable successes and failures. When purchasing printing equipment, for example, employees of Shell who had printing experience visited the project to advise on the type of technology that was under consideration. Support from the Gold Fields Foundation, too, has extended to cooperation with their training section as well considerable personal support from individuals in that organisation. A further example of such cooperation is well illustrated in the development of the *Enviro-Picture Building* resources. As outlined in 4.5.10 these resources were trialled, in black and white, through Share-Net for a period of two years and later published in colour by the Shell Education Service (Share-Net, 1995b).

6.4.5 Voluntary benefits

Other hidden costs to the project also include time spent by employees of other cooperating conservation organisations on resource materials development. In this regard individuals in organisations such as the Natal Parks Board (NPB), the Oceanographic Research Institute (ORI), the World Wide Fund for Nature (WWF-SA), other conservation organisations, the museums and members of the Society have made considerable inputs of time and expertise to the project. This has often enabled resource material projects to work better because of joint funding support and through a pooling of resources (refer O'Donoghue, 1990; Erasmus, 1991 and Chapters 3, 4 and 5).

6.4.6 Marketing and sales of materials

Revenue from the sales of materials is of great importance to the project from a financial point of view. It is also important that the sales, feedback and patterns of use of materials are monitored constantly to assist with project management decisions with regard to the reprinting or revision of existing materials.

For a series of graphs and a discussion on the sales of materials the reader is referred to Appendix B. These data illustrate the wide range of different interest groups and organisations that are now using environmental education resource materials including schools, water authorities, universities, technikons, libraries and museums. This wide use of the material further illustrates that the scope of environmental education has broadened considerably in recent years.

The magnitude of sales through Share-Net is surprising. Share-Net booklets cost, on average, R6.00 and are produced in a simple black and white, folded and stapled, A5 format. And yet, with no direct marketing strategy or advertising campaign over 8 000 booklets were sold in 1995[53]. This means that booklet sales alone realised over R48 000 worth of gross income to the Society in 1995.

6.5 Two case *vignettes* of funding relationships

6.5.1 The ABSA / Society / WWF-SA partnership

In 1994 meetings between WWF-SA[54] (The World Wide Fund for Nature - South Africa), the Society and the ABSA[55] Foundation led to a joint environmental education project. The ABSA Foundation, with the support of its affiliated banks, awarded the Society a sum of

---

53 These sales demonstrate the important role played by workshops (Appendix A) and other 'word of mouth' contacts in promoting the sales of materials.

54 WWF-SA is a non-government body that has been established with the purpose of raising funds for conservation and environmental education projects. WWF-SA also evaluates project applications and monitors project progress.

55 ABSA: A large consortium of South African banking institutions.

R100 000 to support its environmental education projects, nation wide. The funding was allocated for:

- field excursions,
- the development and dissemination of educational resource materials,
- the running of environmental clubs and,
- where possible, for optimising the educational potential of conservation projects (Taylor, 1995e).

The following year the ABSA Foundation decided to donate a further R300 000 to the project. This amount of funding exceeded the expectations of the Society who raised the concept of investing the funding (possibly with an ABSA affiliated bank) so that the various environmental education projects could 'live off the interest' rather than use up the capital amount. A project proposal was therefore developed with this orientation (Taylor, 1996a).

Unfortunately, tensions were developing among staff at WWF-SA who were concerned that if the funding were invested, and the interest accrued to the Society, they would not benefit financially from the project and may have to carry the administration and monitoring costs of a project that could continue indefinitely. In a letter to ABSA WWF-SA therefore withdrew from the project stating that they could not remain part of an ongoing project that could place their institution at a financial risk and through which they could not derive financial benefit (Macdonald, 1996, pers. com.). This letter recommended that ABSA either donate the funding to the Society *(in toto)* or take it back.

This letter led to tensions between WWF-SA and the Society who rejected the manner in which the unilateral withdrawal was conducted. On receipt of the letter ABSA withdrew the funding from the project but were not prepared to accept WWF-SA's withdrawal from a project that, by all accounts, was a success (Brummer, 1996, pers. com.). ABSA therefore proposed a mediation process between the three organisations to resolve the conflict and following top-level discussions a satisfactory arrangement was reached. Through this

arrangement the Society agreed to use the funding within a year of it being allocated.

The case of the ABSA project is reported here for the following reasons:

- it demonstrates that intermediate funding organisations need finances from current projects to sustain their own institutional needs and these needs can influence the way projects are planned and conducted;
- it also illustrates how interpersonal goodwill is a crucial part of any funding relationship - it was through this goodwill that the project could be resuscitated[56];
- it illustrated how the issue of funding for projects can detract from a project's environmental education objectives; and
- finally, it illustrates the risk involved when an institution acts without adequate consultation of other project partners (or executants).

This situation is a further illustration of how a modernist orientation (Chapter 2.9) associated with assumptions about technicicist project evaluation, regular reporting procedures, progress and apparently efficient bureacratic controls, may lend an air of complacency to a project and inhibit a more critical examination of underlying issues and tensions. This outlook, which seeks to manage and financially control a project in a particular manner, may even inhibit the effectiveness of the project. These issues could well be the subject of further research.

6.5.2 USAID

In September 1995 the United States Agency for International Development (USAID) announced a joint financial award to the Society and two 'community-based' organisations in Port Elizabeth (Ubuntu Environmental Trust and the Southern African Environment Project - SAEP). The objective of the award is to promote environmental education in

---

[56] Interpersonal goodwill is a further example of 'intangible human shaping processes' that can enable projects to overcome difficulties and become more effective.

historically disadvantaged[57], urban areas.

6.5.2.1 The role of the Society

In the USAID project it is the responsibility of the Society to:

- manage funding allocations;
- conduct teacher workshops;
- develop and disseminate resources (with participation from users wherever appropriate);
- provide appropriate field courses and excursions for teachers, pupils and community leaders;
- provide courses in environmental education for adults, including community workers and teachers;
- provide support for schools or community groups that wish to develop food gardens or appropriate muthi-plant or indigenous plant propagation suitable for urban and peri-urban agriculture; and
- promote and support environmental youth clubs in urban and peri-urban areas.

6.5.2.2 A structural functionalist orientation

In the development phases of the project the structural functionalist (2.9.1) orientation of USAID was problematic. This orientation was evident in comments such as:

> It would be useful to quantify, when and where possible, the positive and sustainable impact that grant activities are having on urban communities (Hawkins, 1996, pers. com.).

This perspective is not peculiar to USAID. A similar orientation is, for example, evident in the *Connect* newsletter (1995:7). A reporting schedule calls for reports with headings such as *Target groups* and in the results section, asks the question: "Did the activity produce any

---

57. 'Historically disadvantaged' is a contemporary term used to denote black South Africans who have been economically, educationally and otherwise disadvantaged through the policies of *apartheid*.

concrete changes?" As in earlier commentary (Chapter 1, 2 and 3) this reporting procedure confirms the 'us' and 'them' duality where those who know are assumed to be acting on those who do not. Using the reporting procedure as a technique to induce change also assumes a linear, rationalist, and manipulative, view of social change.

Popkewitz, when referring to centre-to-periphery and problem-solving approaches notes that both hold a belief that:

> .... the problem of change is an administrative one. Both approaches rely upon a 'rational' sequence in which a planner/researcher identifies the logical sequences or outcomes of an intervention and the way people are to be moved efficiently toward the desired goal (1988:91).

By applying what had been learnt through the Share-Net project it has been possible to convince USAID officials to do more than simply fund particular outcomes that have been pre-determined. A portion of the funding has therefore been used to equip regional projects with technologies that support responsive materials development according to local, developing needs. In Port Elizabeth, for example, computers, printers and a photo-copier were purchased. This technology is now available for developing resources and adapting Share-Net materials in support of 'life skills' courses and other projects.

6.5.2.3 Institutional tensions

Cooperation between Ubuntu and the Society has led to tensions. Norton Tenille (SAEP consultant to the project) has expressed his concern that the Society has not been able to empower[58] or build the capacity of Ubuntu (Tenille, 1996, pers. com.). This statement is underpinned by three key assumptions. These are:

- that the Society does, in fact, have more capacity than Ubuntu,
- that the Society is able to build Ubuntu's capacity, and
- that staff members of Ubuntu would like to have their capacity 'built' by the

---

58 For a critique of assumptions about empowerment the reader is referred to Popkewitz who states: "Implicit in the notion of empowerment is that power is something to be given by those who have power - a commodity to be bartered" (1991:236).

Society.

The idea that a large, predominantly white, membership-based and apparently successful organisation (the Society) is able to build the capacity of a local community-based organisation simply because both are partners in a collaborative arrangement runs the risk of paternalism:

> When A considers it essential for B to be empowered, A assumes not only that B has no power - or does not have the right kind of power - but also that A has a secret formula of a power to which B has not been initiated. In the current participatory ideology, this formula is in fact, nothing but a revised version of state power, or what could be called fear-power (Rahnema in Sachs, 1992:123).

6.6 Closing comments

The desire to apply bureaucratic procedures so as to ensure success can, ironically, inhibit project outcomes. According to Popkewitz (1995) bureaucratic control favours routinization and the solution becomes administrative and technical (2.9.2). In a revealing critique of the invention of statistics as a modern science for control, Popkewitz explores the social context in which statistics emerged as a mechanism (technique) for control:

> The invention of statistics, for example, was tied to the modern states efforts to govern all aspects of the health, labor and education of its citizens. Statistics, French for state arithmetics (in Britain it was called political arithmetic), involved both qualitative and quantitative information (1995:xi).

Another function of clear objectives and reporting that accurately matches intentions is to assist in securing the 'comfort zone' of the funding manager or agency. Funders are content when things appear to be going according to plan! The realisation of wider opportunities, particularly when these are not planned, can lead to concern. This study suggests that a broadening orientation where the focus is on potential opportunities rather than on specific behavioural objectives, enables wider, sometimes extraordinary, outcomes. It is unlikely that many of these could have been envisaged at the early planning stages.

Throughout this study the significance of 'intangible human shaping processes' is evident:

- in the early development of the Society's environmental education initiatives (Chapter 2 and Figure 2.1);

- in the resource material workshops and through developing relationships with teachers (Chapter 3);
- in the development of resources and the voluntary contributions of many individuals (Chapter 4); and
- through collaborative initiatives and networking (Chapter 5).

In this chapter it became apparent that 'intangible human shaping processes' are evident when dealing with economic issues. These processes are particularly pertinent when tensions and institutional conflicts arise.

It becomes evident that careful financial planning and sound business principles are essential if projects are to be effective and become financially sustainable. Working within the constraints of existing resources and trying to generate funding from environmental education activities is a challenging necessity if longer term effectiveness is to be realised. Closer examination also reveals, however, that in the financing of projects it is often the personalities and relationships between executants and funders that become particularly important. Bray goes so far as to conclude that:

> ..... community management and financing is less a science than an art. Above all, it depends on the personalities of the participants, and on their relationships with each other (1986:80).

CHAPTER 7 CONCLUDING COMMENTS

There is a sense of humility that must come to those who seek to guide the outcomes of people and institutions (Popkewitz, 1988:92).

7.1 The study so far

Issues relating to the research design of this study were developed in Chapter 1. The origin of the Wildlife and Environment Society of South Africa (the Society) and developing approaches to environmental education and resource materials, were then discussed in Chapter 2. In Chapter 3 resource material workshops were reviewed as developing opportunities for sharing materials and for fostering further participation in resource development. Chapter 4 reviewed a number of case studies of resource material development opening up the emerging concept of networking which was addressed in Chapter 5. Here the development of networking within Share-Net was contrasted with emergent perspectives on environmental education encountered in widening interaction with projects in other parts of Africa. Economic issues were examined in Chapter 6 and the importance of a developing project that is able to sustain its own financial momentum was emphasized.

The purpose of this research was to *review and illuminate* the processes of resource development within Share-Net with the purpose of understanding and *enhancing* the effectiveness of the project. In this final chapter attention is given to key trends (Table 7.1) that have emerged within the research and how these might serve to inform a continuing project.

7.2 The research orientation

7.2.1 The location of the research

As stated in Chapter 1 this research was located within the flow of events of the Society's environmental education programmes and the developing Share-Net project. The study is both embedded within, and reflective on, daily action during the period I have worked for the Society, from 1981-1996. During this time actions were, wherever possible, under

scrutiny and reflections on the developing story were written up and re-read from regular reports and papers in local journals and bulletins.

Although this historical material proved invaluable as data sources for the study the writing up of the study was particularly difficult because many Share-Net project commitments could not simply be suspended during the period of review. Daily work pressures, including copious incoming material (letters, faxes, e-mail and comprehensive documents) all seemed to need attention. Reports also had to be prepared about the Society's ongoing environmental education projects and the funds used had to be accounted for. These daily work demands seemed to force a precedence over the additional reading and writing that was necessary for this study. Possibly this was because it was easier for me to deal with the daily, often pressing if superficial issues, rather than grapple with a disciplined review and critique process.

Once the review process was engaged with, however, examining the developing story in the context of everyday issues proved a most valuable part of the study. It provided a platform for continuing developments, the scope of which were certainly not envisaged when the study commenced. The period of review also seems to have provided an ordered view within the many distracting and demanding work projects that I have continuously been endeavouring to, and often failing to, accomplish as I would like.

Curiously, this platform of better understanding is unlikely to support a more systematic and strategic approach in the future. The contrary seems to be more to the point as a developing orientation indicates a continuing responsiveness within wider opportunities. In this sense the review has proved helpful in developing confidence and clarity about the period gone by and enabled me to be more comfortable within the inevitable risk,

uncertainty, discontinuity and ruptures[59] that mark the daily realities of the Share-Net project located within an institution and world in states of transition.

Along the way Popkewitz's *political sociology* helped reveal a picture of false rationalities, and the work of Beck (1992), enabled me to expose the complexities of risk and reflexivity that have been a constant reference point in this study. The concept of reflexivity seemed to offer a great deal within a project that is finding effectiveness through seeking and sharing widening responsive opportunities within a changing South African landscape. The tensions and discipline of a contextual *re-reading* (as described in Lather, 1996), is a further useful concept for understanding the developing research narrative. Re-reading enabled me to grapple with prevailing modernistic orientations and to see new meaning in Beck's notion of risk society and reflexive modernisation. This was a helpful orientation in a time when modernism persists in seeking rational processes and contrasts with the compelling uncertainty and unsettling insights of the post-modern (Docherty, 1993).

7.2.2 A shifting orientation to research

Debate and interaction with these key texts throughout the period under review has meant that my orientation to research has shifted as time passed. This change has, at times, made the reporting process difficult, because I felt the need to re-examine why a particular investigation was conducted, rather than simply report the outcomes of the enquiry. Although this clarifying review did complicate matters it often made the study more meaningful and rewarding. This has meant that reporting and review processes have varied over the years (e.g. Taylor, 1987a and Taylor, 1995a). Events early on were often understood in a somewhat naive, taken for granted, manner. In this way earlier chapters in this study sometimes err in presenting a positive and somewhat naive account of events and developments.

---

[59] Again the reference to Popkewitz (1991:15). His work on power (political sociology) and social change has provided a stabilising theoretical perspective throughout this study. This was often found illuminating when reached for from within the uncertainty of the daily reality of the developing Share-Net project.

A trend towards greater respect for the social context in which the research endeavour was located has become apparent as time passed. This led to increasing doubt about an instrumental research orientation that might seek to 'manage, control or direct' social change:

> There is a sense of humility that must come to those who seek to guide the outcomes of people and institutions (Popkewitz, 1988:92).

An early example illustrates how research to monitor and control with a multiple scalogram analysis (MSA) technique, in 1988, sought to monitor participants' perceptions of different environmental education resource materials (Taylor, O'Donoghue and Soutter, 1988). A further example was the way surveys were used to establish needs and attitudes of teachers with reference to educational materials in the early years of workshopping (Chapter 3.7.3). With hindsight I developed a shifting perspective on the data and the research orientation. When applying these early research 'instruments' it was not readily apparent, at the time, that the data was as much being shaped by the research effort, as being 'discovered' within a *'neutral'* or *'objective'* perspective (as discussed by Janse van Rensburg, 1995). This does not mean that the research orientation and techniques were erroneous or even inappropriate. It does reveal, however, that the control I was seeking as a researcher was far more tenuous than I thought to be the case at the time. As a greater understanding of rationalist (2.9) orientations in research developed, assumptions about the findings, and indeed the reasons why the investigations were conducted, have come under increasing critical scrutiny.

As we[60] grappled with notions of change, meaningful learning and grounded engagements with resource materials, prevailing institutional and social orientations were an inherent part of our daily reality. Struggling with problematic terms such as structural functionalism, scientism and technicism and revealing their limiting impact in our work has not meant that the Share-Net project has somehow transcended or moved beyond these orientations. Terms

---

[60] The words 'we' and 'I' are used almost interchangeably in this closing part of the study. The collaborative nature of the study has meant that the understanding grew within a collection of co-workers rather than for me as individual.

like these have, however, become useful sensitising propositions to identify processes and dispositions that emerged in and around the social realities in which we work. Such dispositions are not easy to pin down but the labels are useful for identifying limits and enable one to become less of a victim to them. In this way the terms help one to bring a 'sensibility' to a particular perspective that may be limiting or based on untenable assumptions that have not been examined and understood.

As stated above, becoming more informed about this cluster of modernistic orientations has not meant that we have moved beyond them in our work. To the contrary, many of the participatory and networking orientations appear to remain located within prevailing modernistic positions although the study was informed by, and in transition with/to, Beck's concept of reflexive modernisation (1992). Hopefully, though, we are now less victims of modernistic assumptions than we were when this work commenced.

What appears to have happened is a diverse and developing 'on site/in process' reflexive struggle. Sometimes academic discourse on structural functionalism led us to stand in opposition and idealise the notion of people setting up their own structures and functioning as they wished. This, in review, appears naive but it is in such ways that we struggled within re-orientations to do things better, sometimes erring too far into a reactionary position[61] that raised new contradictions and further reflexive struggles.

Working within the daily reality of the Share-Net project meant that much of the enquiry took on the popularist 'action research' perspective (Carr and Kemmis, 1984) although this research orientation was periodically challenged (Popkewitz, 1991:230) and redefined and took on a recursive, reflexive dimension. This orientation to research nonetheless enabled a shift from the desire to control and monitor from outside to one of engagement *within* issues

---

61 Strong criticism of "do and dump/instant cure" resource material projects are evidence of such a reaction (O'Donoghue and Taylor, 1988a:3). Unless the resource development process was *participatory* we were uncomfortable with it - with further research this position later became more accommodating of top-down approaches (refer Chapter 4) as we realised that they were sometimes appropriate.

which were successively described (narrated) and engaged with, when appropriate. The reader is referred to the Appendices for an illustration of the range of actions that took place within, and out of, the research process.

7.2.3 Interrogating the data

The collection and review of data as a developing grounded narrative in re-reading was a multi-faceted task that proved helpful both for understanding situations at the time as well as for providing rich material to reflect on later. As described in Chapter 1.4 the data included original documents, diary records, reports, published papers, survey findings, feedback on the use and adaptation of resources as well as records of participation in workshops and sales of materials. These data, as empirical evidence in the developing story, were organized into different streams according to four focusing research questions (1.3), and provided the material within which an emerging critical narrative could be woven.

The summarising of large volumes of historical material and records of events into tables (Chapters 2, 4, 5 and Appendix A) proved invaluable to a 'trend and pattern seeking' interpretation process, although this procedure of tabulating data was necessarily reductionist of much of the complexity and diversity of the social interactions. Constructing a chronology of events in a tabulated format was particularly helpful when trying to account for, and contextualise, trends and developing orientations. Interrogating the original material also proved a more manageable task when these were abbreviated into summaries for quick and constant reference (e.g. Appendix A). In this way data were interpreted in a developing story and what was revealed was acted upon, only to be revisited in later ongoing re-reading, when this was appropriate.

Working with the data was therefore an active documenting and re-reading process *in* my work context, rather than simply a process of collecting, organising and reporting information. A simple discourse analysis, for example, indicated a structural functionalist orientation in the quotation by Gcumisa (2.5 and 2.7.1) whereas discussions with

individuals who had been involved in those early courses (Cooper, 1996, pers. com.) revealed a richer context of interactive learning and 'hands-on' enquiry.

There was no neat, fixed plan for the research but the development of the research questions and their ongoing revision provided a coherent, yet flexible, guiding framework within the research process (Taylor, 1995a and 1995b). In this regard I have attempted to develop the research narrative where research in the developing context of the project was a:

> ..... means towards a 'disciplined intuition', fusing creativeness and self-criticism (Stenhouse, 1975:223).

7.2.4 Interrogating the data from different vantage points

The development and recording of successive streams of data meant that these could be interrogated for the diverse research questions from different vantage points, as if with differing 'spectacles' (points of view) and even with a changing location and focus (micro or macro interpretation[62]). The fact that workshops for teachers were popular and enjoyable, for example, could from one point of view, mean that they were successful. From another point of view one could argue that entertaining presentation-centred workshops could contribute little to meaningful engagement with issues on the part of the participants (3.6.4). Feedback from a course, e.g. the Rhodes/WWF certificate course, could be seen in the light of unusual shaping influences such as the students' dissatisfaction with their *per diem* allowances and the perceived quality of the facilities rather than from the point of view of meaningful learning (6.3.4).

7.3 Searching beneath conventional wisdom

The importance of the research orientation penetrating myths in prevailing thinking (conventional wisdom) became a further key concern as the study proceeded. The capacity to, wherever possible, 'suspend belief' in the obvious, or that which is seen to be

---

62 For a discussion of micro/macro issues in research refer to Knorr-Cetina and Cicourel (1981).

compelling and beyond doubt at times[63], contributed to deepening critical insight. The ability to *suspend belief* can enable one to expose new meaning and reveal the underpinning ideology of existing conceptual orientations. This orientation to research is illustrated by Barthes:

> A good proportion of our intellectual effort now consists in casting suspicion on any statement by trying to uncover the disposition of its different levels (Barthes, quoted in Smith, 1988:99).

Examples that illustrate the effect of 'penetrating the prevailing myth' include challenging notions such as 'target group' and 'the converted' (Chapter 2.2; 4.5.14; 5.3 and 5.13.6) as well as assurances that 'colour is essential' (Chapter 4.5.7.2) and assumptions about materials 'not being able to work' (Chapter 4.5.6.1) or being too complex for 'semi-literate' black children to cope with (Chapter 4.5.1.4). Patti Lather describes the search beneath conventional wisdom as an endeavour that:

> ..... helps us ask questions about what we have not thought to think, about what is most densely invested in our discourse/practices, about what has been muted, repressed, unheard (1991:156).

7.4 Issues illuminated by the research

7.4.1 Modernistic orientations

Modernistic orientations were explored (2.9) as underlying dispositions that, associated with structural functionalism, technicism and scientism can unwittingly sustain developing problems (O'Donoghue, 1993a). In the Society modernistic orientations were often apparent (2.10 and 2.11.1) but within a struggle of various other orientations, these came under question and led to broader, more productive actions and policies (Wildlife Society, 1994 and Taylor, 1996b). The quest for certainty through evaluation studies (2.7.3.1) also provided a 'site for struggle' and participatory orientations to evaluation were developed that proved more fruitful and supportive (2.7.3).

---

[63] Popkewitz recommends that ".... skepticism must be maintained" (1988:92).

7.4.2 Attempting to cause change in others

The weaknesses in early structural functionalist approaches (2.9.1) where courses and materials were designed to cause change in others by 'getting the message across' (2.11.1; 3.5 and 5.5) was an issue that came under critical review early on in the study. The search for causal links in social processes of change have increasingly been found to be less useful within a levelling of the power gradient (2.17; 4.4.; 4.5.1.4 ; 5.3 and 5.13.4). A disposition that attempts to cause change in others (the uninformed) can be counterproductive to a meaningful engagement with environmental issues and even alienate teachers at workshops (5.3). Problems with interventionist strategies, including 'awareness campaigns' are illustrated by Wynne as follows:

> The assumption is that increasing public awareness of global warming scientific scenarios will increase their readiness to make sacrifices to achieve remedial goals. Yet an equally plausible suggestion is that the more that people are convinced that global warming poses a global threat, the more paralysed they may become as the scenarios take on a mythical role of a new 'end of the world' cultural narrative. Which way this turns out may depend on the tacit senses of agency which people have of themselves in society. The more global this context the less this may become. Thus the cultural and social models shaping and buried within our sciences, natural and social, need to be explicated and critically debated (1994:186).

In this study an engagement of ideas, often located in practical fieldwork situations and supported by accessible reference guides (4.5.1) or other 'tools of science' (3.7.4; Chapter 4 and 5.8) showed greater potential for supporting better, more engaging processes of environmental education.

7.4.3 Prevailing thinking (theory)

Until 1986 theory did not appear to be very evident at Umgeni Valley and we considered ourselves to be *practical* field-officers. It is evident with hindsight, however, that strongly held beliefs (theories) shaped our practice (2.5). Examples of this are evident in the language of the time, e.g. "People have to be convinced....." (Taylor, 1983:3). This language demonstrates strongly held convictions (theories) but we did not consider ourselves to be 'theoretical'. In fact, we often rejected challenges to our assumptions about environmental education, by claiming that the challenge was *too theoretical.* In this way an

'uncritical sub-culture' of 'like-thinking' remained intact to some extent. Evaluation research (2.7.3), a critique of the Natal Parks Board Action Ecology materials and study overseas (2.8) helped reveal existing (hidden) theory and began a transition to greater understanding.

Our developing understanding of theory in practice helped challenge linear models of change. These included the ideal of 'awareness' leading to 'attitude change' and 'behaviour modification' that we had been striving for since the inception of the environmental education programmes of the Society (Taylor, 1984). The growing understanding also revealed how perceived environmental pressures, at the time, drove people to seek aesthetic and spiritual solutions (2.7.3.1) that could hold them together in a supportive conviction to 'save nature and promote change for a better world' (Richards and Shuter, 1977).

7.4.4 Name changes and politically correct language

This study commenced with a review of the development of the Society including the various changes in the name of the Society. The recent inclusion of the term 'environment' in its present name, the Wildlife and Environment Society of South Africa, reflects the broadening work of the Society over the past ten years (2.2). Changing the name of the 'Extension Division' to the 'Extension Service' (2.10) also reflected the nature of an evolving *service* for teachers and public alike, rather than simply being another administrative category. Developing collaboration within the project enabled partnerships to form as participants both "benefited from, and contributed to" resource development processes (2.17). Through these shifts the way the words are used can enable greater reality congruence (Mennell, 1992) as institutional descriptions become more clearly associated with the role played and the functions/processes of environmental education.

Throughout the study period, however, we had to grapple with socially acceptable terms such as 'awareness', 'target group' and 'the multiplier effect'. New 'politically correct' terms also appeared and these often seemed to mask an understanding of the developing

processes of environmental education. Terms such as 'empowerment' and 'capacity building' (rather than education), 'the community' (rather than other poor, black people) and 'facilitator' (rather than teacher) became popular[64]. These terms were often used in a 'progressive' institutional context that was purporting to overcome the previously dominant top-down orientations of *apartheid*. We grew to doubt whether they had, in fact, signalled a transition from the earlier structural functionalist (2.9) dispositions that people claimed they were trying to overturn.

In some instances the new terms even appeared to sustain prevailing power relationships and structural functionalist orientations, providing a 'new lease on life' to externally driven social engineering practices. Examples of contradictory ideas in a developing narrative of social change are evident, for example in Chapter 5: "What are the *target groups* of the *network*?" (5.13.2). The use of 'politically correct' terms, such as 'network', 'empowerment' etc. so as to ensure success can, ironically, inhibit project outcomes, providing a false sense of security and a semblance of progress (Popkewitz, 1995). These words may create an appearance of change or what Popkewitz had earlier termed 'change as motion' (1984).

The technicism (2.9.2) evident in intervention-centred orientations to change as outlined above is, ironically, evident in contemporary, and so called 'progressive', texts that argue for greater 'people participation'. Naidoo, for example, suggests that we: "…. should *structure* better communication" (in Kromberg, 1993:136, my italics). The implication here is that, if *we structure* better communication *they* will understand better. This style of language retains an 'us' and 'them' distance[65]. Potenza in the same book, recommends that:

---

64 Other terms that are also associated with empowerment rhetoric include: 'community based', 'ownership' and when referring to 'communities', *they* must 'buy into' the project.

65 The interaction between the former (us) and adoption/change amongst the latter (them) might better be grappled with as episodes of inter-epistemological meaning making amongst us and them. This orientation is possible amidst the social politics of Popkewitz and the reflexivity of Beck.

"..... teachers need to be *trained* to use new materials." (p58, my italics). The ideal of *training* teachers in this context can imply a causal *strategising* by those with power and knowledge for those who are perceived to need it. Both authors show evidence, at times, of a structural functionalist orientation to the use of resources which is in contrast to the book's foreword which aims to support "....the building of a sound and equitable education system" (Krut, 1993:4). As Popkewitz points out "The positioning of the popularist, in fact, supports the status quo of the intellectual" (Popkewitz, 1991:232).

7.4.5 Power relationships

Early workshops conducted by the Society often demonstrated an authoritative orientation by the leaders as well-informed figures who could put across the conservation message by providing an entertaining and compelling awareness-creating lesson (2.7.1 and 3.5.3). This orientation reflects a distinct power gradient from those who 'know' to 'others' and can be disconcerting to the teacher (workshop participant) who may not feel capable of presenting a similar charismatic or entertaining lesson to his or her pupils.

Political changes, at a national level, showed signs of a levelling of power gradients as South Africa moved through an equalising democratic struggle. At workshops teachers increasingly wanted to participate, decide and influence rather than be dictated to (targeted). Resource materials, too, developed outside the classroom reality of teachers or designed for others run the risk of being inappropriate and under utilized (O'Donoghue and Taylor, 1988a).

Instead of well-presented sessions *for* teachers, directing what they could or could not to do, workshops steadily evolved to a pattern of sharing a collection of materials *with* teachers and included discussions about the relevance and adaptability of the resources (Appendix A). In this way teachers are offered an opportunity to use, adapt and develop resource materials to enhance their own ongoing teaching practice. Teachers were also able to form collaborative partnerships with colleagues to develop resources still further (4.6.3; 4.6.4

and 5.11). Needless to say these ideals of partnership were not often attained but the developing, co-clarifying and sharing was useful and engaging in many productive ways.

Early workshops on resource materials that were dominated by a compelling 'performing seal' orientation proved popular, but did not provide *ongoing* opportunities for teachers to engage with, try out or even adapt the materials presented to them. A further example of a potentially inhibiting differential (power) gradient is evident in Chapter 5; here networks that are designed to coordinate others through a central organising structure create situations of institutional control that may inhibit local action (Bakobi and Taylor, 1996).

A significant shift in the power relationships thus became evident in the study. Instead of trying to be impressive, compelling presenters (3.6.4), we began to recognise the importance of being supportive demonstrators of existing materials and co-workers within the realising of opportunities by inviting people to try out the resources for themselves (Chapter 4). An example of a transformed 'power gradient' was evident during workshops with the *Hands-On* guides (4.5.1.1). Participants, many of whom had low reading competence with little biological experience, were able to identify, and read something about, organisms they had found in compost. The experience of using simple field guides often led to participants enthusiastically describing what they were discovering to their colleagues. A shift from *being informed* to *working things out* with accessible booklets equipped learners to make meaning of what they had encountered rather than simply absorbing what the expert had said.

7.4.6 The disposition of the workshop 'presenter'

Throughout the study the disposition of presenters and participants in workshops and during resource material development projects was a further important shaping factor. An enthusiastic disposition (3.5.1) to share a rich array of materials is likely to be more helpful than a superior outlook, for example, where the presenter feels he or she knows what the people need to hear (3.6.4). Learning to work productively with others was also a key

theme throughout the study (5.5) that challenged the earlier disposition to cause change in them (2.10 and 3.5.3).

The developing orientation (disposition) with which we approached teacher workshops was obviously very significant in terms of the relationships we developed and how much learning and engaged interaction occurred. It is difficult to articulate, however, how and what contributed to the many occasions where meaningful, engaged meetings took place. One can only reflect that 'intangible human shaping processes' contributed to some of these special events. This suggests that opportunities emerging in shared action appear to have more merit than a predisposition to enact a particular logic of change through awareness creation.

7.4.7 From needs to opportunities

Paying attention to teachers' needs proved helpful during workshop interactions (3.8). Supporting the development of wider opportunities, however, rather than simply seeking to address needs, proved a more useful shifting orientation. Constantly focusing on community needs alone can emphasise the analysis of needs in isolated and inward-looking ways and wider opportunities may not be realised (4.5.1.3). A 'needs based' orientation may be helpful for identifying what resources should be *delivered* particularly when justification is required to funders for services rendered, but it can lead to paternalism where resources are provided by those who have, to those who do not have.

Seeking opportunities for wider collaboration through a clarifying struggle to make things better became a more open and complex, but potentially more constructive orientation, than a naive intent to deliver resources to satisfy needs. Although working with participants to use, develop and adapt materials in different contexts appeared to have more potential it is, nonetheless, something of a muddy and uncertain process.

7.4.8 The funding of projects

In Chapter 6 the significance of linking policies and economics in an appropriate manner and developing a partnership with the funder rather than simply receiving funding for predetermined tasks was discussed. The concept of joint projects with the funding organisation (6.4.4) as well as using external funding to purchase capital equipment to generate income rather than using the funding for running costs was especially evident. Through this strategy a measure of financial autonomy has been achieved in Share-Net. This has reduced the risk of 'funder dependency' and thus moved the project into an economically more sustainable position (6.4.3) although rising expenses continue to jeopardize the ongoing financial viability of the project.

Of course finances play a significant role in influencing resource material development policies. This is illustrated by projects where donor funding is used to pay for resources which are than delivered to teachers. The risk here is that the materials may be written/developed with the shaping orientation of the donor uppermost in mind rather than the people who are most likely to use the resources (6.3). This is evident in current projects which seek funding to make and develop materials to be delivered to others[66]. Such funding proposals may receive funding if they are in line with topics that are considered important by funders although the strategy for development and dissemination of the material may be weak.

7.5 Lessons learned within the processes of resource development

In addition to the developing orientations above a number of further observations follow which may prove helpful in informing the future functioning and decision making within the Share-Net project. In this next section, therefore, I have tried to draw out these observations as they relate to the day-to-day resource development with teachers.

---

[66] This orientation is evident in funding proposals received by WWF-SA (Laws, 1997, pers. com.). Such proposals seek money to develop materials which can, in turn, be delivered to 'communities'.

7.5.1 The adaptation and re-development of the resource materials

One of the strengths of the Share-Net processes has been the development of resource material that can be adapted to a variety of different contexts. Through the opportunity to work on materials some individuals and projects have, with a little work and simple technology, adapted and developed resources. It is noteworthy that this opportunity can help people to grow in understanding and confidence through the experience of developing the materials. In working with materials they have to clarify their ideas often through debate with others, rather than simply being the recipients of other people's material. The copyright-free diskettes and photocopy masters have proved useful, therefore, in supporting school projects, teachers, government departments, continuity announcers on radio as well as popular magazines and school textbooks (4.5.1.1 and 4.6.3).

7.5.2 A responsive orientation

The need to develop capacity to cope with uncertainty and to be able to respond to needs and opportunities was another key theme throughout the study (3.6.2; 3.8; 4.5.4.5 and 4.5.8.2). Materials such as *Enviro Facts* (Paxton, 1994) provided conservation organisations with resources that could be used to respond to written and verbal requests for information on particular environmental issues from school pupils and the public (4.5.4.1).

Chapter 4 examined case studies of materials development and showed that the emergent project orientation moved beyond the oppositional concept of 'top-down' *or* 'bottom-up' in assuming a 'reflexive' orientation that is seeking to be sensitive to local issues and the social context. A number of other common features became evident in the review of resource material development case studies (4.6.1). These common features have been differentiated as possible orientating patterns and principles that may be useful in guiding future resource material development projects. The importance of a resource 'coordinator', preferably with knowledge of the topic and suitable desk-top-publishing skills, who can finally compile and produce the resource, is one example of an important feature of a successful resource material development process (Taylor, 1995a).

A printing infrastructure (4.4) with technology that could be used in a responsive way proved invaluable in the production of materials that could be sold on a cost recovery basis as well as for printing low print runs that could be used for trialling of materials. The printing infrastructure thus began to generate income to the project (6.4.3). A further, innovative response resulted from a call for material in mother tongue. After some clarifying debate about the merit of translating materials into mother tongue[67] materials were produced with Zulu text alongside English in a different colour (Appendix Eiii).

Responses to requests for materials and workshops from teachers and community workers were strengthened with the production of the *Share-Net Resources Guide* (Share-Net, 1994). The development of this resource helped us to see the whole developing pattern of materials. The resource also helped teachers plan which materials they could use or adapt and also enabled other members of staff, who were not as familiar with the materials, to conduct resource material workshops with more confidence (3.8.5 and 3.8.8). Teachers and their pupils were able to orientate their ideas with resources such as *Enviro Picture Building* (4.5.10). Other complementary materials are cross-referenced in the resource itself and the pictures provide an orientating framework. *Enviro Picture Building* has also proved useful in situations where literacy is an issue, for example at rural community meetings, as well as at teacher workshops. The resource is also suitable for use with groups of pupils of different ages and skills.

7.6 Optimising cooperation within the Share-Net project

7.6.1 The Share-Net directory

The Share-Net telephone directory (Share-Net, 1995) has proved a helpful resource to enable people to maintain contact with each other and ongoing resource material developments (5.6). What appears to be important is the personal contact between resource

---

[67] Under the ethnic dogma of *apartheid* materials in mother tongue were encouraged. Some argue that this was done to emphasize differences between people and a deliberate ploy to limit competence in English. This would prevent black people from competing with whites in the English dominated job market.

developers, a further recurring theme of this study. In the light of this it is important that updated versions of this directory continue to be made available through Share-Net as a booklet, and on diskette (for those who prefer it in this format), so that personal contact can be maintained between resource developers (5.7). The possibility of placing this information on the 'Internet', as well, is a concept to be considered in the future.

7.6.2 Linking through the *Environment Clubs Scheme*

A lack of ongoing information on the development of new resource materials is a weakness of Share-Net. To enable teachers to maintain contact with the project, and at the same time avoid the expense of a dedicated mailing list or costly newsletter, the decision was taken to promote the Society's *Environment Clubs Scheme* at workshops (4.5.11). Teachers who wish to join this scheme can do so either with colleagues or pupils and receive regular updates of resource material developments. A year planner (Appendix Eii) listing national environmental days is also provided for club members and these days are linked to flexible teacher packs which teachers can purchase for adapting to their own local circumstances. Unfortunately, due to financial constraints the personal support the Society is able to provide to clubs is limited. Most clubs must therefore rely on the mail for newsletters and what telephone support they can get from regional clubs organisers.

7.6.3 Intangible human shaping processes

The commitment many individuals and organisations have made to the environmental education projects of the Society in general and to the Share-Net project in particular is evident in the preface and acknowledgements to this study. These commitments, many of which were voluntary, have been described as 'intangible human shaping processes' in this study. Examples of such commitments are also evident in the early planning days (Figure 2.1) as well as 7.4.6 above. These 'shaping' commitments may be difficult to articulate and plan for but they have underpinned much of the work of the Society. It was these shaping processes that provided support within a struggle of conflicting alternatives, when funding was scarce or when other tensions became evident.

7.6.4. Institutional tensions

Early cooperative resource development had potential to raise tensions within the Society and between it and other cooperating organisations. Questions such as "would there be royalties?" and "to which institution would the kudos accrue?" were cause for concern (4.5.3.3). The idea of making materials available copyright-free (6.4.2) was also of some concern to the Society which had generated considerable royalties from published handbooks (5.10.2). Fortunately, a participatory orientation was increasingly gaining momentum in environmental education circles and these issues did not, therefore, pose a threat to the project. When tensions did become evident, however, they were addressed directly (5.5) and the advantages of cooperative ventures were demonstrated. The demonstration of the advantages of sharing expertise from different institutions and optimising complementary services[68] led to tensions being largely alleviated.

The seeking of funding support and acknowledgement for resource development led to competition between institutions. This was particularly evident when plans to invest sponsorship so as to generate ongoing interest for the Society were explored. WWF-SA, an organisation that raises funds to support conservation projects, became concerned that such a strategy would lead to other organisations, e.g. the Society, receiving the interest from funding to the detriment of their own institutional viability (6.5.1).

7.6.5 Share-Net as an 'object on a pedestal'

As a project Share-Net is becoming known for the development and sharing of resource materials and opportunities in environmental education. A risk becomes apparent, however, when what is essentially a collection of useful processes and ideas becomes objectivised with the expectation of causing social change: "Share-Net has so much to offer we must get *it* into the National Parks Board" (Parris, 1995, pers. com.). Although this is not necessarily the perspective that Parris holds an objectification of these rich learning processes and struggles can be misleading. This may inhibit the responsive insights and small-scale developing processes that appear to have been so fruitful. Unfortunately, potentially rich cooperative processes cannot readily be transferred (or communicated) from one context to another as one would transfer an object.

---

[68] Umgeni Water's Scientific Services provided considerable scientific input into the development of the water quality monitoring apparatus, for example.

7.7 Broadening perspectives

As the narration and interpretive review proceeded, a broadening and opening up of approaches to environmental education became evident (these are summarised in Table 7.1). The research provided an enabling and disciplining process of illuminating shifting processes and change rather than as a 'rallying model' for mobilising enthusiastic, converted conservationists. A broader view gradually developed both in the way I was addressing the research issues (Chapter 1) and the way the Society as a whole was viewing the concept of environmental education (Wildlife Society, 1994 and Taylor, 1996b). Interventionist approaches to environmental education within the Society have thus come to be increasingly challenged and more responsive orientations have developed that are not as steeped in structural functionalist perspectives.

Table 7.1 Broadening perspectives

Arena of Action	Conventional Perspective	Broadening Perspective	Chap.
Research orientation	Applying research techniques from the outside	Research as a process within action and reflective on action	all
Ideological orientation	Interventionist/causal	Responsive/reflexive	all
Approach to EE	Targeted messages and knowledge transfer. Facilitating change in others	Working together. Collaboration on projects and engaging with common problems and opportunities	all
Materials development	Top-down *or* bottom-up	Consultative and participatory processes related to the local context	4
Networks	Communicating and transferring knowledge	Cooperation around focussed, tangible resources/activities	5
Funding	From the outside, independent	Joint accountability and mutual problem solving with funder and participants	6
Economy	Fundraising to cover running costs and capital expenditure	Fundraising for capital expenditure. Ongoing income generated through sales of materials and services	6

7.8 Interim conclusions and implications for the future

Various other regions of South Africa have established, or are currently setting up similar Share-Net 'resourcing centres' where materials are produced and placed on display with other resources[69]. Teachers can visit to try out resources and if appropriate, make purchases and photocopies (5.11). Local resource material workshops are also offered at these places when requested by teachers. Although teachers may find new ideas and materials to support their work at such a networking node or meeting place it would be naive to assume that their teaching practice will be transformed as a result (Moodie, 1987 and Lotz, 1995). These supportive resourcing centres have considerable enabling potential for local partners to clarify and resource their environmental education activities, however.

In overview the following perspectives, dispositions and developing patterns have become apparent within this review of Share-Net resource development activities in a 'risk society':

- an orientation that invites *participation* is more likely to be successful than one that is exclusively expert driven (Chapter 3). These can go hand-in-hand in widening partnerships;
- educational resources should where possible, be produced in a *flexible and adaptable* format (Chapter 4), enabling materials to be used in diverse contexts and in differing ways;
- clear *plans for the production* of each developmental stage of a resource should be considered prior to the commencement of the project (Chapter 4);
- resources which support a clarifying engagement with *relevant local issues* should be encouraged (Chapter 5), as these are likely to develop a relevance in local activities;
- the project leader's roles should be clearly defined but these must be *responsive* to the needs of participating teachers and the many and varied opportunities that may arise (refer Chapter 3, 4 and 5); and

---

[69] Please refer to Appendix Fiii for a resource material development proposal for Mozambique.

- resource developers should endeavour to respond to requests for help and seek opportunities for providing collaborative support[70] amongst wider partnerships.

Within these emergent reflections the need for centralised coordination is diminished as individuals and groups of teachers or community workers are offered the opportunity to join together in pursuit of their own developing and changing objectives. Such local projects are often small scale and yet meaningful, particularly if power is not monopolised but shared through active partnerships (Chapters 3 - 6). This orientation is sometimes in conflict with a modernist disposition towards growth and the delivery of resources to target communities that is currently favoured by many non-government organisations and funders. Their logic of management, delivery and accountability is a product of their developing power relations and interests and presents as a rationale for change[71].

7.8.1 An open framework for learning

Evaluation studies at the Umgeni Valley Project (2.7.3), experiences with the *Action Ecology Project* and studies overseas (2.8) contributed to a rich dialogue about learning and change. Through this meaningful learning and the reading of books such as *The social construction of reality* (Berger and Luckmann, 1966) and *Symbolic interactionism* (Charon,

---

70 This problem seems to be enhanced when carefully planned strategies to 'get resources to teachers' are developed and resources are disseminated (e.g. through costly mass mailings). Ironically, it seems that an institution's capacity to respond adequately to simple requests from teachers for resources declines as its capacity to 'mass distribute' increases! This is evident in the production and dissemination of resources by the then Department of Environment Affairs (posters and pamphlets) as well as with the production of the early *We Care* materials by the South African Nature Foundation (Taylor and O'Donoghue, 1988a).

71 One thus finds that funders want proposals, plans and products measured against the money it costs to deliver services to concenting parties. This may become a self-perpetuating cycle within which the logic of expert facilitation/socially engineered change for 'development' is seldom questioned because the funder, expert and even community representatives come to work together in processes of reception and delivery of change. This is somewhat simply put to illustrate how 'development' can become a closed 'shop', with project as 'shopkeeper' developing and disseminating products to the needy.

1979) an open model of environmental education processes was constructed. This model developed as an open framework for learning involving *dialogue* (between teachers, resource developers and Society staff) during/around *encounters* with local environmental issues and problems (for example through fieldwork), and continuous *reflection*[72].

We could thus successively consider and re-consider (re-search) our ideas about processes of environmental education and resource materials development. These intermeshed processes in our day to day work contributed to, and benefited from, a rich and supportive learning environment. The interlinking array of complex processes became possible through a disposition to learn, enquire and challenge, supported by relevant environmental education resource materials.

The key events and observable details synthesized and documented in the study provided a sense of the interactive shaping of both resource materials and our own perspectives on environmental education. This did not happen as a rational, unfolding process that is so often assumed within modernist notions of change. In seeking to document the developing processes of Share-Net within pressing questions that shaped this review, this study may, however, give an impression of rational planned development, especially in Chapter 3. This impression does not do justice to the uncertainties and struggle that have always been a characteristic of the developing project. The realities were far more dynamic and human than that.

The developing Share-Net initiative was more like a shifting and somewhat *ad hoc* struggle of increasing clarity. What to do and how to act, was often an 'act of faith' or intuition and clarity would only emerge within the dialogue and cooperation that followed (O'Donoghue, *et al.*, 1994). Throughout the development of the Share-Net project a sustained engagement with the creative energy and needs of participating colleagues, teachers, community workers

---

[72] This included reaching to the literature, examining theory and analysing data. The concept of 're-reading' ideas is evident here.

and pupils is perhaps the most enduring image of all.

7.8.2 Large scale, rational interventions become increasingly questionable

Within this study we came to doubt, and see the need to review, many of the large scale institutional responses to the environmental crisis e.g. *The World Conservation Strategy* and *Caring for the Earth* (IUCN/UNEP/WWF, 1991). We also learnt that many apparently insignificant events and *ad hoc* meetings have had important shaping outcomes in the longer term[73]. The many large scale modernist responses with grand rationales but lacking in grounded social reflexivity (refer Docherty, 1993:11; pp417-8 and Coetzee and Graaf, 1996:1) are, unfortunately, still with us. These are likely to continue gathering momentum in a developing society that is increasingly learning to cope with 'development aid' and the externally mediated planning frameworks and the objective decision making orientations that go with this.

7.8.3 Open networks of small functional units may help foster change

Open networks and small functional units (e.g. the Society's local 'resourcing centres' in its shops, offices and at its environmental education centres) each growing within local cooperation and interdependence can support cooperative initiatives offering meeting places for meaningful dialogue, encounters and developing resource material projects. This pattern of change is evident in wider socio-historical trends where it is at:

> small functional centres that the foresight, more complex self-discipline, more stable super-ego formation enforced by growing interdependence, first becomes noticeable (Elias, 1939).

A concluding question of this study must, however, be who or what was shaped within the

---

[73] A similar observation is made by Andrew, *et al.*, in their examination of case studies in environmental education in Canada and Australia: "Our attendance at these meetings has also meant that we have come to know many of the people involved in the project and although this closeness presents some difficulties methodologically, the benefit of 'being there', 'being part of the furniture', trying to help in any way possible has obvious advantages. People communicate with us and they know we value what they are doing" (1996:38). The notion of "closeness" providing difficulties was not, however, at issue in this study. The grounded orientation of the research meant that we were more *within* the processes rather than methodologically *acting* on them.

relational dynamics of the Share-Net project? Of course, there is ample evidence in previous chapters that a great deal of shaping has taken place. Our orientations to research, evaluation and environmental education have changed (Chapter 1). The Society's approaches to environmental education have changed (Chapter 2), as have orientations to teacher workshops and the courses we offer (Chapter 3). Furthermore, the pool of materials we have developed has grown broader and deeper, and the way we develop the materials has changed (Chapter 4). Our approaches to networking are also becoming a little clearer and perhaps more effective (Chapter 5). Certainly we are working within a wider network of people, places and publications that now extends to other countries (Appendix F). Finally, our endeavours to secure the Share-Net project financially have led to a tenuous yet developing economic sustainability and we are more conscious of the financial risks we are likely to encounter in the future (Chapter 6).

There is ample evidence, therefore, that both resource materials and interdependent notions of environmental education have taken shape. Perhaps it was us, amongst an expanding network of participants, who, most of all, were reshaped within the challenging trajectory of the project and concurrent social change in South Africa, more so than the 'others' being reshaped by 'us'. We can, however, conclude that the shaping of materials, ideas and people went hand in hand in the challenging resource material initiatives we shared.

These, and many other 'intangible human shaping processes' have contributed to the development of Share-Net, an informal, enabling structure for cooperation amongst small scale interdependent functional centres situated within schools, colleges of education, environmental education centres and of course, within the facilities of the Society. Our hope is that the Share-Net initiative will not merely become another educational response in a demanding society, but a network of collaboration and responsive processes within a *post-apartheid* society attempting to address the risks of environmental degradation. Hopefully, our capacity to respond, which has been enhanced during this period of study, will enable us to cope with the environmental changes and challenges we must inevitably face together in the future.

REFERENCES

ACE (1984) *Annual report.* Umgeni Valley Project, Howick.

Action Magazine (1993) *SADC workshop report.* 25-28 January, 1993. Action Magazine, Harare, Zimbabwe.

Alusaf (1989) *Zululand wildlife clubs handbook.* The Wildlife Society, Empangeni/Richards Bay.

Andrew, J., Jickling, B. and Robottom, I. (1996) Ethics, education and wildlife issues. *International Research in Geographical and Environmental Education*, 5 (1), 31-44.

Ashwell, A. (Ed.) (1991) *Hands-On: The East Coast sandy shore.* Share-Net, Howick.

Ashwell, A. (1992) *Project Water: A case study of the development of an environmental education project.* Unpublished M.Ed. Thesis, Rhodes University, Grahamstown.

Auld, F. (1991) *An easy reference guide to WordPerfect 5.1.* Share-Net, Howick.

Auld, F. (1995) *Quick reference notes for WordPerfect 6.1 for Windows.* Share-Net, Howick.

Bakobi, B. and Taylor, J. (1996) *Proceedings: 2nd SADC workshop on environmental education.* Draft proceedings, Umgeni Valley Project, Howick.

Ballantyne, R and Tooth-Aston, P. (1989) In-service environmental teacher training in an apartheid education system. *International Journal of Environmental Education and Information*, 8(1), 1-10.

Banach, E. (1991) Share-Net: People, places and publications for environmental education, a collaborative network. *Innovation,* 2, 25-28.

Beck, U. (1992) *Risk Society: Towards a new modernity.* Sage, London.

Berger, P.L. and Luckmann, T. (1966) *The social construction of reality.* Doubleday, New York.

Borchers, H. (1995) *Greening the KwaZulu/Natal coast.* Share-Net, Howick.

Borchers, H. (1996) *Greening the KwaZulu/Natal midlands.* Share-Net, Howick.

Botha, P.R. (1989) Foreword, in Opie, F.W. (1989) *The outdoor classroom.* Maskew Miller Longman, Cape Town.

Botma, C. (1996) *A guide for environmental clubs in Namibia.* Rossing Foundation, Windhoek.

Bray, M. (1987) *New resources for education: Community management and financing of*

schools in less developed countries. The Commonwealth Secretariat, London.

Buckland, P. (1982) Technicism and De Lange: Reflections on the process of the HSRC investigation. *Perspectives in Education*, Special Issue, The HSRC Education Report, pp35-51. Journal of the Faculty of Education of the University of the Witwatersrand and the Johannesburg College of Education.

Berger, P.L. and Luckmann, T. (1966) *The social construction of reality; a treatise in the sociology of knowledge.* Penguin, Harmondsworth.

Caldwell, P. (1990) *Dragonflies and damselflies: A field guide.* Umgeni Valley Project, Howick.

Caldwell, P. (1992) *28 Alien plant invaders in Natal.* Share-Net, Howick.

Canter, D. (1977) *The psychology of place.* St. Martin's Press, New York.

CASME (1994) *A skills framework for assessment in science education.* CASME, University of Natal, Durban.

Carr, W. and Kemmis, S. (1984) *Curriculum evaluation: Philosophical and procedural dilemmas.* Deakin University, Melbourne.

Carr, W. and Kemmis, S. (1986) *Becoming critical.* Falmer Press, London.

Chadwick, A. (1994) *Health gardening: A guide to growing food for life.* Share-Net, Howick.

Charon, J.M. (1979) *Symbolic interactionism: An introduction, an interpretation, an integration.* Prentice-Hall Englewood Cliffs, New Jersey.

Cherryholmes, C.H. (1988) *Power and criticism: Poststructural investigations in education.* Teacher College Press, Columbia University, New York/London.

Choveaux, N. (Ed.) (1992) *Hands-On: Stream and pond life.* (Third Edition) Share-Net, Howick.

Christian, C.R. (1988) *Environmental education in secondary schools in metropolitan Durban: Opportunities and constraints in the use of the natural environment.* Master of Arts in Environmental Studies, University of Cape Town.

Christians, D. (1993) *Hands-On: Schoolyard life.* Share-Net, Howick.

Clacherty, A. (Ed.) (1995) *Environmental education policy options for formal education in South Africa, A source document for curriculum development in environmental education.* Environmental Education Policy Initiative, P.O.Box 613, Aukland Park, Johannesburg.

Clacherty, G. (1992) *Gardening for children: Standard three.* Centaur, Pietermaritzburg.

Clayton, J.F. (1980) *Towards a definition of environmental education.* Paper delivered at the UNISA Workshop on Outdoor Education. UNISA, Pretoria.

Coetzee, J.K. and Graaf, J. (1996) *Reconstruction, development and people.* International Thompson publishing, Halfway House, South Africa.

Cohen, L. and Manion, L. (1989) *Research methods in education.* Third edition, Routledge, London and New York.

Connect (1995) Vol. XX, Number 2, June, 1995.

Cooper, K. (Ed.) (1993) *Hands-On: A forest community.* Share-Net, Howick.

Cooper, K. (Ed.) (1996) *Policy documents of the Wildlife and Environment Society of South Africa.* The Wildlife and Environment Society of South Africa, Durban.

Council for the Environment, (1993) *National core syllabus for environmental education.* Council for the Environment, Pretoria.

Crouch, N. (1994) *Ferns of Ferncliffe: A rambler's guide.* Share-Net, Howick.

Curruthers, J. and Zaloumis, A. (1995) *People and parks.* Occasional paper number 1, The Wildlife Society, Durban.

Davies, A. (1996) *Forest plant community.* Share-Net, Howick.

Davies, K. (1996) *A year of special days.* Share-Net, Howick.

Degenaar, J.P. (1988) Environmental education as part of the school curriculum. *Spectrum.* 26 (3), 45-48.

Department of Environment Affairs, (1989) *White paper on environmental education.* Department of Environment Affairs, Pretoria.

Department of Environment Affairs, (1992) *Environmental education in South Africa: A directory of informal and non-formal activities.* Department of Environment Affairs, Pretoria.

Department of Environment Affairs and Tourism, (1996) *Towards a new environment policy for South Africa.* Department of Environment Affairs and Tourism, Pretoria.

Dilley, L. (1993) *An evaluation of educational media initiatives in South Africa.* SACHED Trust and the Argus group, Johannesburg.

Docherty, T. (1993) (Ed.) *Postmodernism: A reader.* Harvester-Wheatsheaf, Cambridge.

Doll, W.E. (1989) Foundations for a post-modern curriculum. *Journal of Curriculum Studies,* 21(3), 243-253.

Downing, H. (1977) *The Conservation Awareness Programme. Original draft of proposed objective planning framework for leaders and teachers in the Conservation Awareness Programme (CAP)*. Wildlife Society of South Africa, Linden.

Du Toit, J. (1995) Marine tales. In *On Track* magazine, October/November, pp32-33, Johannesburg.

Dunlap, R., Gallup, G. and Gallup, A. (1992) *The health of the planet survey*. The George H. Gallup International Institute, Princeton, New Jersey.

East Africa Environmental Network News (1995) December, Issue 4, East Africa Environmental Network (EAEN), Nairobi.

Eccles, B. (1994) *Trees of Umgeni Valley*. Share-Net, Howick.

Education Foundation (1996) *Educate for life: A catalogue of learning materials in South Africa*. Education Foundation/Media in education and Aurora Associates International, Braamfontein.

EEASA, (1990) *Proceedings of the EEASA workshop at Jonkershoek*. EEASA, Howick.

EEASA, (1991) *Proceedings of the EEASA workshop at Howick*. EEASA, Howick.

EEASA, (1992) *Environmental education and development: Proceedings of the tenth anniversary workshop*. EEASA, Howick.

EEASA, (1993) *Teaching Green: Proceedings of the 11th annual workshop held in Bloemfontein*. EEASA, Howick.

EEASA, (1994) *Proceedings of the EEASA 1994 workshop: Graaf-Reinet*. EEASA, Howick.

EEASA, (1995) *Proceedings of the 13th annual meeting - conferences and workshops - Kearsney College*. EEASA, Howick.

Elias, N., Martins, H. and Whitley, R. (1982) Scientific establishments and hierarchies. In *Sociology of the Sciences*. Yearbook 1982. D. Reidel Publishing Company, Dordrecht.

Elias, N. (1939) *The civilising process*. Vol. 1: The History of manners, 1987; Vol. 2: State Formation and Civilisation (US: Power and Civility) 1982. Blackwell, Oxford.

Enviro Facts (1993) Sixty fact-sheets on topical environmental issues. Share-Net, Howick.

Erasmus, S. (1991) *A report on environmental education in the Northern Cape*. The Wildlife Society, Kimberley.

Esterhuysen, P. and Napper, N. (1991) *The river of our dreams*. The Storyteller Group, Johannesburg.

European Research and Training Centre on Environmental Education (1995) *Environmental education and networks in the commonwealth.* European Research and Training Centre on Environmental Education, Bradford, England.

Extension Service (1989) *The Wildlife Society of Southern Africa's extension service.* Umgeni Valley Project, Howick.

Feltham, N. (1994) *Common butterflies.* Share-Net, Howick.

Feuerstein, M. (1986) *Partners in evaluation: Evaluating development and community programmes with participants.* MacMillan, London.

Fien, J. (1993) *Education for the environment: Curriculum theorising and environmental education.* Deakin University, Victoria.

Fien, J. (1994) Teaching for a sustainable world: Two Asia-Pacific projects in environmental education for teacher education. In *Environmental Education in the 21st Century.* Proceedings of the International Conference on Environmental Education. Guangzhou Environmental Science Association and Friends of the Earth (Hong Kong), pp. 242-267.

Gcumisa, M.S. (1981) *Environmental education as a working reality: The case study of A.C.E.* Paper presented at the University of Bophuthatswana, Mmbatho, 30 October 1981.

Giddens, A. (1982) *Profiles and critiques in social theory.* University of California Press, Berkeley.

Giddens, A. (1990) *The consequences of modernity.* Stanford: Stanford University Press.

Giddens, A. (1991) *Modernity and self-identity in the late modern age.* Cambridge University Press, Cambridge.

Glaser, B. (1978) *Theoretical sensitivity.* CA: Sociological Press, Mill Valley.

Goldstick, M. (1993) Some international environmental education networks. In Lindhe, V., Goldstick, M., Muturi, S., Rimmerfors, P. (Eds.) *Environmental education - experiences and suggestions.* Report from a Regional Workshop. Nyeri, Kenya, 4-10 October. Regional Soil Conservation Unit, Report Number 10, pp41-44.

Gough, N. (1996) *Rethinking the subject: (de)constructing human agency in environmental education research.* Paper presented at the Annual Conference of the National Association for Research on Science Teaching (NARST), St. Louis, Missourri, USA, 31 March - 4 April 1996.

Gowar, M. (1992) *An investigation into the distribution and use of Enviro Facts.* Unpublished honours dissertation, Geography Department, University of Natal, Durban.

GREEN (1992) *Introduction to the Global Rivers Environmental Education Network computer conferences*. GREEN, Michigan, U.S.A.

Greig, B. (1977) *A water study*. Joint Venture Handbook Number 1, The Wildlife Society, Howick.

Gretener, B. (1996) Second SADC workshop on environmental education. *Splash*, 12 (1), 20-21. Southern African Developing Community, Maseru.

Griffin, D. (1986) *Proceedings of the action ecology workshop*. Shell Education Service, Natal.

Guthrie, P. (1991) *Riverine vegetation in Natal*. Share-Net, Howick.

Herbert, D. (Ed.) (1992) *Hands-On: East Coast reefs*. Share-Net, Howick.

Hertzman, T. (1994) The SADC conference on environmental education. *Splash*, 10 (1), 21-22. Southern African Developing Community, Maseru.

Holomisa, B. (1996) In *Towards a new environment policy for South Africa*. Department of Environment Affairs and Tourism, Pretoria.

Hungerford, H.R. and Volk, T.L. (1990) Changing learner behaviour through environmental education. *Journal of Environmental Education*, 21 (3), 8-21.

Hurry, L. (1977) *The Umgeni Valley Project: Comments on an environmental education course for standard 5 boys*. Bantu Education Department, In-service training centre.

Hurry, L. (1978) *Conservation awareness and formal education*. Wildlife Society, Linden.

Irwin, P. (1989) *Modern trends in the concept of environmental education*. Unpublished mimeograph. Department of Education, Rhodes University, Grahamstown.

IUCN (1996) *Commission on education and communication at the World Conservation Congress*. Montreal, 12-23 October. IUCN, Gland, Switzerland.

IUCN/UNEP/WWF (1980) *World conservation strategy: Living resource conservation for sustainable development*. International Union for Conservation of Nature and Natural Resources, United Nations Environment Programme and World Wildlife Fund, Gland, Switzerland.

IUCN/UNEP/WWF (1991) *Caring for the Earth: A strategy for sustainable living*. The World Conservation Union, United Nations Environment Programme and World Wide Fund for Nature. Gland, Switzerland

Janse van Rensburg, E. (1993) Negotiating boundaries of space, time and theory in a distance learning course in environmental education. In *Kenton Olwandle: Proceedings of the twentieth Kenton conference*, Scottburgh, KwaZulu-Natal,

October 1993, pp279-283.

Janse van Rensburg, E. (1994) Social transformation in response to the environment crisis: The role of education and research. *Australian Journal of Environmental Education*, 10, 1-20.

Janse van Rensburg, E. (1995) *Environmental education and research in southern Africa: A landscape of shifting priorities*. Unpublished Ph.D. Thesis. Dept. of Education, Rhodes University, Grahamstown, South Africa.

Janse van Rensburg, E. (1996) Policy and research in transformation - or not? Southern African Journal of Environmental Education, 16, 68-76.

Joubert, T. and Steenkamp, L. (Eds.) (1995) *The integration of environmental education into formal education*. Discussion Document, Second Draft. Department of Environment Affairs and Tourism, Pretoria, South Africa.

Joubert, D. (1992) *Reflections on social values*. Human Sciences Research Council, Pretoria.

Kee, B. (1992) *Seaweeds*. Share-Net, Howick.

Kee, B. and Ashwell, A. (Eds.) (1992) *Hands-On: East Coast estuaries and mangroves*. Share-Net, Howick.

Kee, B., Ashwell, A. and Renald, T. (Eds.) (1992) *Hands-On: East Coast rocky shores*. Share-Net, Howick.

Kelly, A. (1996) *Hands-On: Fynbos life*. Share-Net, Howick.

Kinjanjui, K. (1995) Research agenda in environmental education in Africa. In *Integrating environment, social and economic policies*. Intersep, Nairobi. 2(1), 2-3.

Klein, C., Wagiet, F. and Kelly, A. (1991) *Share-Net address list 1991: People places and publications in environmental education*. A directory for the Western Cape Region. University of the Western Cape, Cape Town.

Knorr-Cetina, K. and Cicourel, A.V. (Eds.) (1981) *Advances in social theory and methodology: Toward an integration of micro- and macro-sociologies*. Routledge and Kegan Paul, Boston.

Kromberg, S. Ed. (1993) *Publishing for democratic education*. The SACHED Trust, Johannesburg.

Kruger, E. (1995) *Using water kits in a permaculture course*. A report to Umgeni Water, Farmer Support Group, Pietermaritzburg.

Krut, O. (1993) In Kromberg, S. (Ed.) *Publishing for democratic education*. The SACHED Trust, Johannesburg, pp3-8.

Lacey, C. and Williams, R. (Eds.) (1987) *Education, ecology and development: The case for an education network.* WWF/Kogan Page, London.

Lash, S. and Wynne, B. (1992) Introduction in, Beck, U. *Risk Society: Towards a new modernity,* pp1-8. Sage, London.

Lather, P. (1991) *Feminist research in education: Within/against.* Deakin University Press, Geelong, Victoria.

Lather, P. (1996) Troubling clarity: The politics of accessible language. *Havard Educational Review.* 66 (3), 525-545.

Le Roux, K. (1995) *A beginner's guide to English grammar.* Share-Net, Howick.

Levin, H.M. (1980) The limits of educational planning. In Weiler, H. (Ed.), *Educational planning and social change.* Unesco, Paris.

Londt, J. (Ed.) (Undated) *Some common soil organisms.* Share-Net, Howick.

Londt, J. (Ed.) (1991) *Hands-On: Soil and compost life.* Share-Net, Howick.

Londt, J. and Whittington, A. (Ed.) (1992) *Hands-On: Common household life.* Share-Net, Howick.

Lotz, H. (1995) Resource materials development in environmental education: Exploring some of the myths and tensions in participatory resource development in the We Care Primary project. *Southern African Journal of Environmental Education,* 15, 78-90.

Lyotard, J. (1993) Answering the question: What is Postmodernism. In Docherty, T. (1993) (Ed.) *Postmodernism: A reader.* Harvester-Wheatsheaf, Cambridge, pp38-46.

Mandela, N. (1993) In *Building a new South Africa: Environment, reconstruction, and development.* Whyte, A.V. (Ed.) A report from the International Mission on Environmental Policy. International Development Research Centre, Johannesburg, 1995, pp(v).

Mander, M; Heinsohn, D and Mander J. (1995a) *How to grow incema grass.* Share-Net, Howick.

Mander, M; Mander; Crouch, N; McKean, S and Nichols, G. (1995b) *Knowing and growing muthi plants.* Share-Net, Howick.

Mann, J. (1995) *Common marine fish.* Share-Net, Howick.

Masuku, L. (1995) *Action pack: A guide to starting and running a school environmental club.* Yonge Nawe, Swaziland.

McNaught, C., Raubenheimer, D., Keogh, M., O'Donoghue, R.B. and Taylor, J. (1992) Developing networks of grassroots science curriculum action. *Research in Science Education, 22,* 291-298.

Mennell, S. (1992) *Norbert Elias: An introduction.* Blackwell, London.

Monroe, M. C. (1993) Changing environmental behaviour. *Perspectives in Education.* 77, 28-30.

Moodie, P. (1987) The ecology of an ecology project and some suggested adaptations for survival. *Southern African Journal of Environmental Education,* 4, 3-7.

Mouton, J. (1996) Theory, metatheory and methodology in development studies: A heuristic framework. In Coetzee, J.K. and Graaf, J. (1996) *Reconstruction, Development and People.* International Thompson publishing, Halfway House, South Africa, pp16-38.

Nel, B.F. (1987) *The problems with technicism: Focus on South Africa.* Conference Paper, Early Childhood Education, Ramat-Gan, Israel.

O'Dea, J.W. (1994) Pursuing truth in narrative research. *Journal of Philosophy of education,* 28(2), 161-171.

O'Donoghue, R.B. (1986) Environmental education and evaluation: An eleventh hour reconciliation. *Southern African Journal of Environmental Education,* 3, 18-21.

O'Donoghue, R.B. (Ed.) (1988) *Action Ecology: Background papers for a strategy and research priorities workshop.* Natal Parks Board, Pietermaritzburg.

O'Donoghue, R.B. (1990) *Environmental education, evaluation and curriculum change: The case of the Action Ecology project (1985-1989).* Unpublished Med. thesis, Natal University, Pietermaritzburg.

O'Donoghue, R.B. (1993a) Clarifying environmental education: A search for clear action in southern Africa. *Southern African Journal of Environmental Education.* 13, 28-38.

O'Donoghue, R.B. (Ed.) (1993b) *The environment, development and environmental education.* Environmental Education Policy Initiative, Share-Net, Howick.

O'Donoghue, R.B. (1993c) *GREEN water quality monitoring in southern Africa: A field guide.* Share-Net, Howick.

O'Donoghue, R.B. (1994) A grand plan for Earth love education in southern Africa. The dream becomes a nightmare. So what went wrong? *Southern African Journal of Environmental Education,* 14, 35-45.

O'Donoghue, R.B. (1997) *Detached harmonies: A study in/on developing social processes of environmental education in eastern southern Africa.* Unpublished Doctoral

Thesis, Rhodes University, Grahamstown.

O'Donoghue, R.B. and Taylor, J. (1988a) Towards participant-centred resource development in environmental education. *Southern African Journal of Environmental Education,* 7, 3-5.

O'Donoghue, R.B. and Taylor, J. (1988b) *A Handbook of evaluation techniques for environmental interpretation.* Natal Parks Board, Pietermaritzburg.

O'Donoghue, R.B. and McNaught, C. (1991) Environmental education: The development of a curriculum through 'grass-roots' reconstructive action. *International Journal of Science Education,* 13(4), 391-404.

O'Donoghue, R.B., Taylor, J. and Nel, B. (1994) *The shaping of environment, science, and technology education within the Share-Net project in southern Africa.* A paper presented at the IOSTE Convention, Veldhoven, The Netherlands.

O'Donoghue, R.B. and Janse van Rensburg, E. (1995) *Environments and methods (first draft).* Share-Net, Howick.

O'Donoghue, R. and le Roux, K. (1996) Water Indaba on the Web. *On Stream* magazine, 7, 4-5. Umgeni Water, Pietermaritzburg.

Opie, F.W. (1989) *The outdoor classroom.* Maskew Miller Longman, Cape Town.

Papagiannis, G.J., Klees, S.J. and Bickel, R.N. (1982) Toward a political economy of educational innovation. *Review of Educational Research*, 52(2), 245-290.

Paxton, L. (1994) *An investigation into the need for environmental information in South Africa: A case study of the Enviro Facts project.* Unpublished M.Ed. Thesis, Rhodes University Education Department, Grahamstown.

Paxton, L. (1995) *The environment clubs 'Action kit'.* Share-Net, Howick.

Paxton, L. (1996) *Catchment action manual.* Share-Net, Howick.

Peterson, M. (1994) *Common freshwater fishes of Natal.* Share-Net, Howick.

Popkewitz, T.S. (1981) The social contexts of schooling, change, and educational research. *Journal of Curriculum Studies,* 13(3), 189-206.

Popkewitz, T.S. (1984) *Paradigm and ideology: The social functions of the intellectual.* Falmer Press, London.

Popkewitz, T.S. (1988) Educational reform: Rhetoric, ritual, and social interest. *Educational Theory,* 38(1), 77-93.

Popkewitz, T.S. (1991) *A political sociology of educational reform.* Teachers College, Columbia University, New York.

Popkewitz, T.S. (1995) Foreword. In McLaren, P.L. and Giarelli, J.M. (Eds.) *Critical theory and educational research.* SUNY, New York, pp xi-xxi.

Powell, M. (1988) In: Taylor, J., O'Donoghue, R and Soutter, R. (Eds.) (1988) *Proceedings of a workshop for co-operation in the development and implementation of environmental education resource materials.* Umgeni Valley Project, Howick, pp7-8.

Powell, M. (Ed.) (1989, 1990 and 1991) *Annual environmental education reports.* Umgeni Valley Project, Howick.

Pratsch, T. (1982) (Ed.) *Environmental education: A collection of papers from the Treverton conference.* Treverton College, Mooi River.

Pringle, J.A. (1982) *The conservationists and the killers.* T.V.Bulpin and Books Africa, Cape Town.

Rahnema, M. (1992) Participation. In Sachs, W. (Ed.) *The development dictionary.* London: Zed Books.

Reason, P. and Rowan, J. (Eds.) (1981) *Human inquiry: A sourcebook for new paradigm research.* New York: John Wiley and Sons.

Richards, D. (1984) The use of wilderness in environmental studies across a school curriculum. *Southern African Journal of Environmental Education,* 1, 20-24.

Richards, D. and Shuter, K. (1977) *Reflections on wilderness.* Purnell, Cape Town.

Roff, J. (1992) *Some common spiders.* Share-Net, Howick.

Sachs, W. (Ed.) (1992) *The development dictionary.* Witwatersrand University Press, Johannesburg.

Schreuder, D. and Taylor, J. (1995) IRDC Workshop on research issues in environmental education in Eastern and Southern Africa. *Environmental Education Bulletin,* 10, 20-22. Environmental Education Association of Southern Africa, Howick.

SCISA (1989) *A critical analysis and recommendations for general science: Stds 3-7.* Workshop Report, SCISA, University of Durban Westville, Durban.

Share-Net (1991) *Address list: People, places and publications.* Share-Net, Howick.

Share-Net (1992) *Share-Net illustrations for inland and coastal habitats in Natal.* Share-Net, Howick.

Share-Net (1993a) *Address list: People places and publications.* Share-Net, Howick.

Share-Net (1993b) *Catchment action news-flash number 1.* Share-Net, Howick.

Share-Net (1994) *Share-Net resources guide*. Share-Net, Howick.

Share-Net (1995a) *Address list: People places and publications*. Share-Net, Howick.

Share-Net (1995b) *Enviro-picture building*. Including "Madlusuthe's Farm", "Reserves and Neighbours", "The Urban Jungle" and "Catchments". Shell, Cape Town.

Sharpe, G.W. (1976) *Interpreting the environment*. Wiley, New York.

Slingsby, P. and Low, B. (1991) *Environmental resource guide series: Proposal for an ECCO/BOTSOC/NBI project*. Unpublished Proposal, National Botanical Institute, Cape Town.

Slingsby, P. (1991) *Ants of the Western Cape*. ECCO, Kleinmond.

Smith, P. (1988) *Discerning the subject*. University of Minnesota Press, Minneapolis.

Soutter, R. (1988) *A letter to members of the environmental education community*. South African Nature Foundation, Stellenbosch.

South African Nature Foundation (1987) *We Care!* South African Nature Foundation, Stellenbosch.

Sparks, A. (1990) *The mind of South Africa: The story of the rise and fall of Apartheid*. Mandarin, London.

Stead, D. (1992) *Some common waterbirds*. Share-Net, Howick.

Stenhouse, L. (1975) *An introduction to curriculum research and development*. Heinemann, London.

Stout, M. (1991) *Postmodernism, deconstruction and comparative education: The primacy of multiple narratives*. Graduate School of Education, UCLA.

Strong, M. (1993) *The St. Lucia pack*. Share-Net, Howick.

SWAP, (Undated) *Schools water project*. Various resource materials are available from SWAP. University of Stellenbosch Department of Didactics, Stellenbosch; and Juta publishers, Cape Town.

Tainton, N. (Ed.) (1992) *Hands-On: Grassland life*. Share-Net, Howick.

Taylor, J. (1983) Plan to soften impact on estuary. In *Evening Post* newspaper, Tuesday December 13th, page 3. Port Elizabeth.

Taylor, J. (1984) *ACE annual report*. Umgeni Valley Project, Howick.

Taylor, J. (1985a) *Mkambati environmental education centre: Preliminary report*. Umgeni Valley Project, Howick.

Taylor, J. (1985b) *African Conservation Education project*. Project Summary, Umgeni Valley Project, Howick.

Taylor, J. (1987a) *Interpretation: An evaluation of the Mary Rose exhibition using schema theory*. Unpublished masters dissertation, University of Surrey, England.

Taylor, J. (1987b) *Extension division: Preliminary strategy proposals*. Umgeni Valley Project, Howick.

Taylor, J. (1989a) The White Paper on environmental education and the Wildlife Society's role. In *African Wildlife,* 43(4) 206-211.

Taylor, J. (1989b) Report on the Soweto conference of environmental education (9-11 February, 1989). In *African Wildlife,* 43(3) 157.

Taylor, J. (Ed.) (1989c) *KwaZulu wildlife clubs handbook.* A joint; Bureau of Natural Resources / Wildlife Society Publication, Umgeni Valley, Howick.

Taylor, J. (1991) *Fostering co-operation amongst environmental education agencies in South Africa.* Draft Report for the Department of Environment Affairs, Pretoria.

Taylor, J. (1992a) *Report on the East African Environment Network conference*. Unpublished report, Share-Net, Howick.

Taylor, J. (1992b) Giving away the tools of science. *Our Living World.* South African Nature Foundation, Stellenbosch, pp4-5.

Taylor, J. (1993) Giving the tools of science away. In *Nature Herald; Commission on Education and Communication.* IUCN Newsletter 4, p11.

Taylor, J. (1994) A platform for EE networking. In *Splash*, 10(1) 22, Southern African Developing Community, Maseru.

Taylor, J. (1995a) *Share-Net: Case studies in a risk society*. Foundation for Research and Development (FRD) research report. Share-Net, Howick.

Taylor, J. (1995b) *Share-Net: A case study of environmental education resource materials development in South Africa.* Doctoral research proposal, Department of Education, Rhodes University, Grahamstown.

Taylor, J. (1995c) *The Zanzibar Rhodes/Gold Fields course: External tutor report*. Share-Net, Howick.

Taylor, J. (1995d) Share-Net: Progress or paradox. *Southern African Journal of Environmental Education,* 15, 91-96.

Taylor, J. (1995e) *ABSA/WWF-SA/Wildlife Society: Environmental projects in 1995.* Final report. The Wildlife and Environment Society of South Africa, Howick.

Taylor, J. (1996a) *Project extension ZA 465 - ABSA/Wildlife Society environmental education project.* Unpublished funding application to WWF-SA. Wildlife Society, Howick.

Taylor, J (1996b) *Curriculum development and environmental education: An overview and some experiences from South Africa.* A paper presented at the National planning workshop on environmental education. 22-24 April, Kampala, Uganda. Share-Net, Howick.

Taylor, J. (Ed.) (1996c) *Review and strategic planning meeting.* Proceedings, Wildlife and Environment Society of South Africa, Howick.

Taylor, J. and Mkize, K. (1985) *Work scheme for ACE/Bureau of Natural Resources at Umgeni Valley.* Umgeni Valley Project, Howick.

Taylor, J., O'Donoghue, R and Soutter, R. (Eds.) (1988) *Proceedings of a workshop for co-operation in the development and implementation of environmental education resource materials.* Umgeni Valley Project, Howick.

Taylor, J. and O'Donoghue, R.B. (1989) *New Germany nature reserve: Teachers environmental education workshops.* Umgeni Valley Project, Howick.

Taylor, J. and O'Donoghue, R.B. (1990) Towards a co-operative network for environmental education. *Environmental Education Bulletin,* Number 2, 2-5. Environmental Education Association of Southern Africa, Howick.

Taylor, J., O'Donoghue, R.B. and Clacherty, A. (1993) A critique of the proposed Council for the Environment national core syllabus for environmental education in South Africa. *Southern African Journal of Environmental Education,* 13, 39-44.

Taylor, J. and Paxton, L. (1994) The environment and environment crisis. In: Feedback from the Gold Fields / Rhodes participatory environmental education course. *Environmental Education Bulletin,* 8, 7-9. Environmental Education Association of Southern Africa, Howick.

Taylor, L. (1991) *Some common trees of the Okavango.* Share-Net, Howick.

Umgeni Valley Project, (Undated) *Reference booklet for water study.* Umgeni Valley Project, Howick.

Umgeni Valley Project (1990) *Wildlife clubs news.* Umgeni Valley Project, Howick.

Uzzell, D. L. (Ed.) (1989) *Heritage interpretation* (Vol.1 and 2). Belhaven Press, London.

Uzzell, D. L. (1995) *The getting of wisdom or the losing of innocence: Interpretation comes of age.* Keynote paper to the Fourth Annual Conference of the Interpretation Australia Conference, Canberra, 13-15 November, 1995.

Van den Berg, I. (Ed.) (1991) *Hands-On: Stream and pond life.* Share-Net, Howick.

Vare, P. (1996) Wrapping up ECOSA. In: *Communicating conservation: Educating for sustainable development*. International Centre for Conservation Education, Guiting Power, England, 5, 10-12.

Vartikova, E. (Undated) *Greenway: Central and East European network of environmental NGO's*. P.O.Box 163, Bratislava, Slovak Republic.

Waller, I. (1994) *The administration, management, production and marketing of Share-Net environmental education resources*. Share-Net, Howick.

Whyte, A.V. (Ed.) (1995) *Building a new South Africa: Environment, reconstruction, and development*. A report from the International Mission on Environmental Policy. International Development Research Centre, Johannesburg.

Wicker, A.W. (1969) Attitudes vs actions: The relationship of verbal and overt behavioural responses to attitude objects. *Journal of Social Issues*, 24(4), 41-78.

Wildemeersch, D. (1985) *The principle meaning of dialogue for the construction and transformation of reality*. Unpublished, Leuven.

Wildlife Clubs (undated) *Guidelines on starting and running a wildlife club*. Volume 1 handbook. Wildlife Society of Southern Africa, Marshalltown.

Wildlife Society (undated) *Policy document of the Wildlife Society of Southern Africa*. Wildlife Society, Durban.

Wildlife Society of Southern Africa (1977) *Report to education committee on: (a) Joint venture activities, (b) African conservation education programme*. Confidential report to the Wildlife Society, Linden.

Wildlife Society (1976) *In-service training course in ecology and nature conservation*. Natal Branch, Durban.

Wildlife Society (1979) *Memorandum of association. Articles of association. Branch rules. Centre rules. The Wildlife Society of Southern Africa* (Amended 1987 and 1992). Linden, Johannesburg.

Wildlife Society (1980) *A national strategy for environmental conservation in South Africa*. Linden, Johannesburg.

Wildlife Society (1986) *Memorandum of association of the Wildlife Society of Southern Africa* (Amended 1987). Linden, Johannesburg.

Wildlife Society (1992a) *The mission of the Wildlife Society of Southern Africa*. Wildlife Society, Linden, Johannesburg.

Wildlife Society (1992b) *Background papers for the Wildlife Society's quo vadis workshop*. Wildlife Society, Linden, Johannesburg.

Wildlife Society (1994) *Environmental education policy guidelines for the Wildlife Society of Southern Africa.* Share-Net, Howick.

Williams, R., Williams, T. and Dalais, R. (Eds.) (1993) *Hands-On: East Coast dune plants.* Share-Net, Howick.

Wright, T. (Undated) *Creative encounters: A collection of hands-on activities.* Share-Net, Howick.

Wright, T. (1988) Pep-up: A review of the Umgeni Valley Project evaluation process. *Southern African Journal of Environmental Education,* 7, 15-18.

Wright, T. (1989) Solitaire: The Umgeni Valley approach. *Environmental Education Bulletin*, 1, 10-12. Environmental Education Association of Southern Africa, Howick.

Wynberg, R. (1993) *Exploring the earth summit: Findings of the Rio United Nations conference on environment and development: Implications for South Africa.* Department of Environmental and Geographical Science, University of Cape Town.

Wynne, B. (1994) Scientific knowledge and the global environment. In Redclift, M. and Benton, T. (Eds.) *Social theory and the global environment.* London, Routledge, pp169-189.

Ziegler, W. (1989) *Proceedings of the conference environmental education - an holistic approach.* Science Education Centre, Soweto.

PERSONAL COMMUNICATIONS

Boulton, M. (1995) The Director, International Centre for Conservation Education, Guiting Power, England.

Brummer, S. (1996) The Manager, ABSA Foundation, Johannesburg.

Cooper, K. (1985 and 1996) Director of Conservation, Wildlife and Environment Society, 100 Brand Road, Durban.

Gcumisa, S. (1996) Senior Publisher: Shuter & Shooters, Pietermaritzburg.

Gifford, W. (1996) Murray and Roberts, Social Responsibility Division, Johannesburg.

Gumede, P. (1995) Education officer, Umgeni Water, Burger Street, Pietermaritzburg.

Hawkins, R. (1996) Personal facsimile communication. USAID/South Africa 25 June 1996.

Hatton, D. (1996) The President of the Wildlife and Environment Society. Kloof, Durban.

Henchoz, T. (1996) Previous Share-Net manager, 5 York Road, Howick.

Heylings, P. (1995) Project leader, African Wildlife Foundation, Zanzibar.

Hurry, L. (1986) Environmental author, Nottingham Road, Natal. Now director of environmental education; Mpumalanga region.

Irwin, P.R. (1996) Previous management committee member Umgeni Valley Project and previous executive Director of the Wildlife Society. Rhodes University, Grahamstown.

Janse van Rensburg, E. (1995) Senior researcher, Rhodes Chair of Environmental Education, Grahamstown.

Jones, R. (1982) Senior Field officer at the Umgeni Valley Project during the early 1980's, Howick.

Kelly, A. (1996) Senior education officer, Wildlife and Environment Society of South Africa, Tokai, Cape Town.

Keogh, M. (1994) SCISA. University of Durban Westville, Durban.

Laws, G. (1997) The Coordinator, *Green Trust*, WWF-SA, Stellenbosch.

MacDonald, I. (1996) Letter to Victor Nosi, General Manager, ABSA. Copied to the Wildlife and Environment Society of South Africa. Conservation Director: WWF-SA, Stellenbosch.

McEwan, L. (1995) Senior education officer, Northern Areas Branch, Wildlife and

Environment Society of South Africa, Johannesburg.

Murray, S. (1993) *Action magazine* Coordinator. *Action magazine*, Box 4696, Harare, Zimbabwe.

Ngcobo, H. (1991) Teacher, Sibongimbomvu school, P.O. Cedara.

Nel, B. (1996) Consultant researcher, Pennington, KwaZulu-Natal.

O'Donoghue, R.B. (1987) Specialist environmental educationist, Natal Parks Board, Pietermaritzburg.

Parris, R. (1995) Director, National Parks Board, Pretoria.

Tennille, N. (1996) The Director, Southern African Environment Project (SAEP), Cape Town.

Wright, T.R. (1996) The Principal, Environmental Education Projects. KwaZulu-Natal Branch, Umgeni Valley Project, Howick.

Zaloumis, N. (1981 and 1996) Previous Natal Branch Chairman and Wildlife Society President. 208 Musgrave Park, Musgrave Road, Berea, Durban.

APPENDICES

A. Record of workshops
B. Share-Net sales 1991-1995
C. *Curriculum Development and Environmental Education: An overview and some experiences from South Africa* - paper presented in Kampala, Uganda in April 1996

D. COURSES
   (i) Environmental Educators course (flyer)
   (ii) Natal Parks Board/Share-Net course outline
   (iii) B.Ed. Module Outline

E. RESOURCES
   (i) Louis' eulogy
   (ii) A year planner
   (iii) Example of colour printing
   (iv) Map of sales of water kits
   (v) Latest Share-Net Resources Guide and Order Form

F. NETWORKING
   (i) *Second SADC Workshop on Environmental Education* - Gretner, *SPLASH*, Vol. 12, 1996
   (ii) *IRDC Workshop on Research Issues in EE in Eastern & Southern Africa* - Taylor & Schreuder, EEASA Bulletin No. 10, May 1995
   (iii) Mozambique resource materials development proposal, Taylor & Beswick, 1994
   (iv) Response to European EE Survey, letter to Zena Murphy from Jim Taylor, January 1995

APPENDIX A

Record of workshops
January 1990 - December 1995

APPENDIX A

RESOURCE MATERIALS WORKSHOPS:
A SUMMARY OF PERSONAL DIARY RECORDS

Please note: The tables that follow provide a simplified summary of personal diary records for the period 1990 to 1995. Workshops that contributed significantly to a greater understanding of materials development and indeed the workshopping process itself, are indicated in bold and shaded in grey.

The tables include columns that list the date the workshop was conducted, the place, the number of people involved and very brief comment on the event. The construction of these tables was done to support the research process and to provide a manageable overview of large amounts of data. The summaries are not comprehensive but are intended to provide a chronology of events.

Abbreviations:

B.Ed *Bachelor of Education*
Balgwn. *Balgowan*
Bloem *Bloemfontein*
Bop. *Bophuthatswana*
C-A kit *Catchment Action Starter Kit*
CASME *Centre for Advancement of Science & Mathematics Education*
CBO *Community Based Organisation*
CLEO *Continuous Low-Level Environmental Observation*
CONNEPP *Consultative National Environmental Policy Process*
CORD *Community Organisation for Research and Development*
CT *Cape Town*
DET *Department of Education & Training*
Durban (Toti.) *Amanzimtoti*
ECOSA *Education and Communication for Sustainability in Africa*
EDCOM *Education Committee of Wildlife & Environment Society*
Edgewood *Edgewood Teachers Training College*
EEASA *Environmental Education Association of Southern Africa*
EEPI *Environmental Education Policy Initiative* (Now EE Curriculum Initiative)
EWT *Endangered Wildlife Trust*
Grahams. *Grahamstown*
HSRC *Human Sciences Research Council*
HLH *A large commercial timber company*
ICCE *International Centre for Conservation Development*
IDRC *International Development Research Centre*
JHB *Johannesburg*
Kangwn. *Kangwane (now Mpumalanga)*
Madlusuthe's Farm *Enviro-Picture Building game*
M/house *Michaelhouse School*
Natal U *University of Natal*
NBI *National Botanical Institute*
NED *Natal Education Department*
NPB *Natal Parks Board*
ODA *Overseas Development Agency*
ORI *Oceanographic Research Institute*
PE *Port Elizabeth*
PMB *Pietermaritzburg*
PSP *Primary Science Programme*
S. Coast *South Coast*
SADC *Southern African Developing Communities*
SANF *Southern African Nature Foundation* (now WWF-SA)
SAWC *Southern African Wildlife College*
SCISA *Science Curriculum Initiative in SA*
SEP *Science Education Project*
SWAP *Stellenbosch Water Analysis Programme (now Schools Water Action Project)*
T.B *Treasure Beach* (Wildlife Society Project)
TV *Television*
UCT *University of Cape Town*
UDW *University of Durban-Westville*
UF *Urban Foundation*
Umgeni *Umgeni Valley Project*
USAID *United States Agency for International Development*
WWF-I *Worldwide Fund for Nature - International*
WWF-SA *Worldwide Fund for Nature - South Africa*

WORKSHOPS IN 1990

Date	Place	No.	Comment
	January		
10	Durban	12	Met health workers; planned workshop. Discussed needs/problems in fieldwork. Considered ecology pads as solutions
15-17	**M/house**	**48**	**Primary Science Project teachers. Discussed needs/problems in fieldwork. Did fieldwork exercise with ecology pads and Hands-On booklets. Teachers enthusiastically discovered the names and ecological functions of the organisms they had found in the booklet.**
25-26	Eshowe	5	Planned workshop considered which resources to use.
30	Durban	8	Discussed evaluation criteria for materials.
	February		
8-10	**Umgeni**[1]	**17**	**Regional staff training workshop. Reviewed EE resource materials.**
13-15	**Eshowe**	**34**	**Discussed needs/problems in fieldwork. Considered ecology pads and Hands-On Soils in the field. During the workshop one adult who struggled to read English remarked enthusiastically to a friend 'This is called an earthworm, it helps make the soil fertile, and I found it in *my* book'. Symbolic Interactionism a helpful shaping orientation.**
20	Lamont-ville	28	Discussed needs/problems in fieldwork. Considered ecology pads and 'Hands-On' booklets as solutions.
22	Umgeni	16	SEP Howick Zone; Shared ideas for EE resource materials. Offered Share-Net facilities to teachers. Some teachers went on to use facilities e.g. photo-copier, computers.
24	**Mandini**	**35**	**Objective: to set up teacher support structure in partnership with local industry. Focus on resource materials support for the region. The plan for a local 'resourcing centre' fell away because of social unrest in the region.**
27	Durban	6	Evaluation meeting including discussions on relevant materials for the Primary Science Project.
	March		
8	Durban	9	Planned teachers workshop and resource materials.
10	Durban	95	Talk to health officials, stressing the supportive capacity of fieldwork investigations.

[1] Umgeni - An abbreviation for the Umgeni Valley Project. Refer Chapter 2.4.3.

Date	Place	No.	Comment
14-15	**Spioen-kop**	**38**	**EE Forum established. Talk on EE theory to conservation and other officials - challenged structural functionalist 'us' and 'them' approaches.**
21	M/house	4	Plan Teachers workshop. Discussed needs/problems in fieldwork. Tried out ecology pads as solutions
27	M/house	42	Launched evaluation with PSP teachers. Discussed needs/problems in fieldwork. Considered low-cost resources. Pseudo participation evident in the evaluation strategy - a pretence at teachers doing the write-ups independently.
30	Natal U. PMB	18	Language and language problems. English as medium for materials.
31	Durban	11	Discussed available Society publications.
	April		
3	Umgeni	60	Std 7's, talk on environmental problems. Offered Enviro-Fact sheets.
17	Umgeni	21	Urban Foundation Teachers. Discussed needs/problems in fieldwork. Low-cost resources as alternatives.
21	Tongaat	62	Talk on environmental education in a changing SA. Again stressing 'working together' rather than 'message transfer'.
26	M/house	44	Discussed needs/problems in fieldwork with teachers. Field tested ecology pads, Hands-On materials and *Our Tree World* as solutions
	May		
7	**M/house**	**5**	**Working with teachers on notes with portable computer. Disks shared through 'minibus taxi networks' in the Natal midlands. Teachers treated the computer like a typewriter and were not in awe of the technology.**
8	Durban	12	Evaluation meeting - considered eco-puzzles as low-cost resources.
14	M/house	38	Teachers workshop. Discussed needs/problems in fieldwork. Considered ecology pads as solutions
16	M/house	3	Planning fieldwork - avoiding collect (kill) and classify. Rather study live organisms with reference booklets.
18-19	**Bloem**	**54**	**EE workshop; Problems with education. Fieldwork example: Soil study for all delegates with 'Hands-On' soil organisms booklet. Delegates enthusiastically discovered facts about soil organisms. Teachers guide to soils in development.**
20-23	**Durban**	**44**	**Outdoor Classroom Workshop. Enthusiastic fieldwork overcame a growing dis-ease about manipulative 'values education' orientations.**
	June		
11	Durban	14	PSP evaluation meeting. Focus on teachers presenting and sharing.

Date	Place	No.	Comment
15	Durban	115	Pop. Dev. Conference. Displays of materials - little meaningful interaction.
19	T.B.	16	SEP Teachers meeting, planning excursions and materials support.
20	Durban	7	PSP eval. planning meeting.
22	Durban	28	PSP teachers day. Teachers articulating perspectives on materials
27	M/house	6	Discuss Biology field-work and field guides
	July		
2-4	**Umgeni**	**16**	**PSP teachers. Self conducted - considering teaching techniques. Teachers showing greater confidence to conduct own studies.**
3	PMB	38	Biology teachers - Rotary function. Considering resource materials for teaching.
4	Umgeni	13	SEP teachers - walk discussion and fieldwork.
9-13	M/house	34	Sessions on evaluation- participant observation - and environment.
19-20	JHB	14	PSP evaluation meetings - naturalistic research design etc...
25	Durban	28	Environment, a talk with practical examples of soil investigations
	August		
3	Durban	18	Project Forum on evaluation. Talk: Action Research; Participatory method.
6	**Balgwn.**	**11**	**Using computer to support resource materials development. Sharing materials...**
7	**JHB.**	**17**	**PSP evaluation JHB. Meeting with other consultants to discuss national evaluation co-ordination. Highly critical of 'empowerment' as pseudo participation.**
9	JHB	28	Ecology from a Geographers point of view. Prep. and planning fieldwork
31-2	Umgeni	37	UDW student teachers at Umgeni Valley. Discussed EE and fieldwork.
	Sept		
4	Durban	9	Workshop on Action research. Masters in group.
6-7	Durban	8	Evaluation: PSP committee meeting.
7-	Durban	-	Expo Durban materials displayed and numerous teacher interactions. Many resources sold.
17-19	**Jonkers-hoek**	**210**	**EEASA AGM and Workshop. Major Share-Net market place of various resources. 5 min per resource. e.g. Comic, Hands-On, We-Care, etc. First major 'market-place' of resources.**

Date	Place	No.	Comment
19	UCT	17	Botany students and lecturers. Discussion on resource materials development.
20	UCT	12	(Repeat session) Botany students and lecturers. Discussion on resource materials development.
27-28	Spioenkp	34	Working with NPB staff. Talk challenges communication strategies.
October			
3	Durban	19	PSP evaluation discussions with Peter Moodie and national evaluators, little clarity, and much politically correct terminology.
4-5	**Glencoe**	**56**	**Teachers workshop in Glencoe township. Problems with fieldwork. Visit dam for outing and work in field - 'Hands-On' Grasses, Water organisms and soils effectively used by teachers to make meaning of the environment around them.**
18	Balgwn.	6	Water-study. Using water-slide and 'Hands-On' water life booklet. Pupils discovered 'amazing facts' about water life.
19-21	Durban	34	Teachers workshop. Fieldwork. Problems and solutions in the field. Eco-pads plus 'Hands-On' booklets helped solve lack of knowledge about organisms.
27	Durban	24	Urban Foundation lunch. Informal discussions on materials.
November			
1-2	JHB	25	PSP workshop on evaluation at Wits. Threat to structural functionalism.
7	**Umgeni**	**16**	**Workshop to discuss Postal Facts File (later to become Enviro-Facts), compost col., Shell charts, *River of our Dreams* Comic.**
8	Durban, (Toti.)	47	Teachers workshop. Resources for use in a natural area in a 'self-conducted' way. Teachers developing confidence and independence with the use of the Hands-On materials.
14-16	**Howick**	**100**	**Share-Net network workshop - (Share-Net, 1991; Banach, 1991 and 2.17). Informal, cooperative structures developed.**
December			
10	Durban	19	PSP evaluation. End of year discussion and planning for 1991.

RESOURCE MATERIAL WORKSHOPS
1991

Date	Place	No.	Comments
	January		
3-6	**Umgeni**	**28**	**EE Educators course, some teachers. Used EE resource materials. Good feedback.**
12	Umgeni	8	Met teachers to discuss resources. Very enthusiastic about resource materials.
15	Oakford	46	PSP teachers. Charts, Puzzles, Water and Soil. Feedback: Presenter too much like a salesman!
	February		
3-7	Umgeni/ TB	16	Staff Training. Application of resources in fieldwork.
8	**Umgeni**	**-**	**Met Jim Connor. Set up Project Outreach in SA. This project is similar to Enviro-Facts - basic material for local adaptation.**
13-14	Umgeni	5	College pupils at Umgeni. Used resources in field.
28	Umgeni	72	HDE students. One day - water-study. V. successful.
	March		
1	Vryheid	66	NED. Biology inspector did workshop on materials. 'Hands-On' Soil and Water popular.
4			*River of our Dreams* comics arrive. Nationwide distribution starts.
7	**C.T. Hewat**	**24**	**Spoke to lecturers at college. Very enthusiastic about low-cost materials and adaptability to local context.**
8	UCT	12	Addressed Botany students - shared comic and water slide.
8-10	**DeHoop**	**38**	**Share-Net Cape workshop (Refer Chapter 5.10).**
15-16	M/house	48	Natal EE forum meeting. S-Net display. Various talks on resources. Good sales.
20	**Kangwn.**	**40**	**Song, compelling talk. Failed to do applied study. Umgeni weak. Teachers disillusioned (Refer Chapter 3.8.1).**
22	Durban	12	PSP evaluation. Discussed merits of Comic.
	April		
14-15	Umgeni	9	Geog students at Umgeni. Fieldwork - V. Popular.
18	Umgeni	13	Met SEP teachers. Discussed local situation and adaptation of resources
19	Durban (Toti.)	28	Resources in local settings. Very popular workshop and enthusiasm to 'find out' using 'Hands-On' materials.

Date	Place	No.	Comments
22-24	Umgeni	16	Geog students at Umgeni. Successful fieldwork enquiry.
25	Durban	30	Discussions about networking. Importance of a resource material focus.
	May		
9-10	Umgeni	48	Students from SOWETO college. Very successful outing. Resources popular especially comic and water slide.
16-17	Umgeni	13	Enviro-Facts workshop. Discussed material so far.
22	Durban	21	Shared evaluation experiences with masters group. Discussed experiences with resources. Critique of 'outside expert' approach (Refer Chap. 2.7.3).
23	Edgewd.	28	Students. Problems with fieldwork - practical on soils to solve these.
	June		
18	**Umgeni**	**13**	**Workshop on the World Conservation strategy - feedback compiled on document. Structural functionalism, technicism evident (Refer Chapter 3.2).**
19	TV		Siyaphi screened. Young Zulu children on serialised catchment adventure.
20	**Durban**	**34**	**Umbogovango workshop. Teachers in local area. Talk plus fieldwork - using resources to find out about nature.**
21-23	Umgeni	38	UDW student teachers. Fieldwork and lectures.
26-28	Grahams.	32	Evaluation workshop. Critical of outside expert approaches. See proceedings EEASA Monograph No. 1. (Refer Chap. 2.7.3).
	July		
3	S. Coast	21	EE in illiterate communities... The crayfish propblem. Some exposure for coastal materials.
7	Kimberley	9	Discussed plans for EE in the Northern Cape. Cooperation with Museum important. Need for local resources.
10-12	**Wind-hoek**	**200**	**EEASA AGM. Market place of materials. Very popular. Exposing different types of materials for selection and re-development.**
	August		
1-2	Louis Trichardt	13	Discuss Society EE at Ben Lavin. Farmers support and adapted booklets for that region. Tree booklet produced.
3-4	**JHB**	**6**	**EDCOM. Meeting to co-ordinate the Society's EE activity. The concept of a regional resource centre with display for teachers developed.**
9	Bulwer	12	Discuss Project Water with Bulwer teachers and pupils. Pupils quite keen.

Date	Place	No.	Comments
13	**Pretoria**	**7**	**Discuss networking in EE in SA. Report compiled for Department of Env. Affairs stressing the need for support for existing 'networks' (Refer Chap. 5.13.1; Taylor, 1991).**
16-18	Kimberley	52	Teachers workshop- soil study, song, Action Ecology pads. Very popular.
19-22	**Geelbeck**	**27**	**Gold Fields course for all EE staff in Gold Fields Centres. Community development significant. The need for a distance learning course established (Refer Chap. 3.12.2).**
September			
4-6	Umgeni	9	MHS pupils at Umgeni on Geog/Bio course. Developing low-cost tools for fieldwork becomes significant.
7	**Umtata**	**39**	**Workshop on Share-Net materials for Transkei region. Organised by local committee by Tami Sokhutu. Again market place and especially literacy materials and water quality resources popular.**
10	Greytown	21	Quiz and Share-Net display - materials helpful for supporting quiz.
11	National		New Share-Net address book produced (Refer Chap. 5.6 and Share-Net, 1991).
12	**Pinetown**	**29**	**Rotary talk. Inappropriate presentation on water kit. Dinner entertainment was required! (Refer Chap. 3.8.3).**
18	Grahams.	12	Chair of EE meeting. Importance of cooperative resource materials support for EE stressed.
19	Durban	32	Workshop on constructivism. Weaknesses of constructivism becoming evident through reading Popkewitz (1991) evident.
October			
1	**PMB**	**14**	**Umgeni Water MANCO[2]. Addressed on the need for co-operation. Successful in defusing developing institutional tensions between institutions 5.5. The importance of discussions to alleviate concerns before these become entrenched problems was evident here.**
4	PMB	24	College for further Education. Teachers addressed on low-cost resource materials - teachers enthusiastic when trialing resources.
23	Umgeni	37	Shell/UDW students course. Demonstrated resources and technologies e.g. solar oven.
November			
1	**Umgeni**	**53**	**Share-Net printing infrastructure opening at Umgeni. Resource organising pamphlet popular. Printed proceedings of the day as a demonstration (Refer Chap. 4.4).**

[2] MANCO - Umgeni Water senior management committee: Pietermaritzburg.

Date	Place	No.	Comments
4-6	Umgeni	6	Bop. field-officers to visit and learn from Umgeni. Little interest in resource materials - compelling lectures preferred.
7	Stellen-bosch.	9	SANF[3] com. meeting. Defining EE strategy hesitation w.r.t. resource materials but evidence of increasing interest.
9-10	**JHB**	**23**	**EEASA Quo Vadis meeting. Defined need to influence policy nationally - concepts such as empowerment becoming popular.**
18-19	JHB	46	Developing environments workshop (HSRC). EE and Development merging - concepts such as empowerment, capacity building, facilitation very evident.
25-30	Umgeni	-	*We Care Primary* redeveloped by Heila Lotz. Simple structure of interlinking themes.
26	Umgeni	18	*Project Water* Workshop. Demonstration of materials.
28	PMB	-	Radio interview on Share-Net materials broad-cast.
December			
2-4	**Umgeni**	**8**	**Umgeni meeting to develop re-vegetation guide which was to becoming the precursor to the Catchment Action Series. Small editorial meeting of specialists to adapt an honours thesis (refer Chap. 4.5.8).**
4	Durban	24	Talk on EE at ORI. Stressed need for field-guides to share resources 'tools' with public and schools to support ongoing learning/discovery.

[3] South African Nature Foundation now World Wide Fund for Nature (WWF-SA).

RESOURCE MATERIALS WORKSHOPS
1992

Date	Place	No.	Comments
	January		
16-17	**Umgeni**	**22**	**EE course teachers and fieldworkers. In field using materials. This course developed into the environmental educators course (refer Chap. 3.11.1).**
17	Umgeni	6	Discussion on Resource materials development in Bop. Low-cost, Participatory.
29	Ridge	5	Teachers and student teachers in school grounds
31	Durban	5	Discussions with funders. Printer and capital expenditure... Investment in equipment important....
	February		
3-5	**Umgeni**	**16**	**EDCOM meeting. Discuss national co-ordination of Society EE. Regional resource materials support concept developed.**
11-13	T.B.	26	ORI field guides. Need for similar simple materials....
19	**PMB**	**14**	**Discussed *Madlusuthe's Farm* with HLH. First look; racist, structural functionalist, naive, patronising but great potential... (refer Chap. 4.5.10).**
28	Umgeni	35	Student teachers - discussed materials in support of teachers. Water study with wide range of materials.
	March		
5	C.T.	32	Addressed Juta's on BEE (Better Eduation for Everyone). Low-cost co-operative publishing stressed. Big interest in participatory development from Juta's who later took over *We Care*.
6-7	**Hewat**	**350**	**EE expo. In Cape Town. Wide range of materials displayed for a diversity of attending people - An orientating tour of materials was conducted by Rob O'Donoghue and myself. The importance of describing materials and sharing opportunities for wider adaptation and use very evident (refer Chap. 3.8).**
17	Durban	23	Teachers discussion group PSP: shared materials.
18	**JHB**	**34**	**Presentation to teachers in JHB at Redhill school who hosted the workshop. Activities included water study, soils etc. Important development because: it was hosted by the school, attended and supported by the Society staff in JHB and joint support groups between schools were established (refer Chap. 3.8.3).**
20	M/house	5	5 teachers plus 75 pupils. Water investigation. Pupils continued research with apparatus and development thereof.

Date	Place	No.	Comments
26-27	Umgeni	19	Valley Trust teachers on F/W course. Reticent at first, but gradually more enthusiastic. Teachers cautious about an 'interaction' perspective for teaching that includes: dialogue, encounter reflection.
31	Umgeni	15	Met librarians for discussion on low-cost publishing. Tour of facilities at Share-Net. Libraries enthusiastic about ordering materials.
April			
1	Umgeni	4	TV footage filmed of soils booklet in use, later screened on 50/50.
10	**East London**	**-**	**Computer to East London in support of resource materials development. Translations into Xhosa done but not widely used. A better approach to translations is needed rather than an 'entire' booklet translation.**
13-16	Umgeni	32	EE Educators Course. Fieldwork and ed. resource materials. Wide diversity of participants. Enjoyable and constructive.
16	-	-	Lisa Clarke. UK student arrives to work on the project.
*23-25	-	-	David Uzzell arrives from UK. Look at research and co-operation.
May			
1-3	**JHB**	**48**	**Society Quo Vadis meeting after widespread consultation. Orientation: People centred conservation and new mission developed to "... promote public participation in caring for the Earth" (refer 5.12).**
5	**Umgeni**	**7**	**Meeting with Umgeni Water and Wilderness Leadership School (WLS) to discuss a possible Catchment Project. This project never really got going and was perhaps inhibited by the an 'experiential spirits' (2.7.3.1) orientation evident in the WLS that did not see fieldwork as particularly helpful in arousing emotions.**
8-9	**Nairobi**	**65**	**East African Network Conference. Spoke on Share-Net. Market Place very popular. The need for a focus e.g. resources evident to build a network that 'works'. Much structural functionalist language, social engineering and modern participatory rhetoric evident.**
10	Elsamere	6	Visit EE centre, looked at some of the programmes run there. Conventional nature study. Few resources evident.
13	Nairobi	13	Addressed IUCN Com. on ed. and communications. Shared experiences from S.A. and was critical of 'target' group strategies.
22-24	JHB	19	EEASA Quo Vadis meeting - selected council members. Important outcome: need to more strongly influence policy. Rhetoric of 'empowerment' and 'facilitation' becoming more prevalent.

Date	Place	No.	Comments
27-28	Hilton	42	Natal EE Forum. 2nd meeting. Forums becoming popular to promote co-operation. Mainly teachers.... Cross-section of talks from Phungulutu toilet to educational materials.
	June		
4	PMB	28	Literacy work-shop. Role of Share-Net. Simple tips and tricks in low cost publishing.
10	PMB	9	Looked at *Madlusuthe's Farm* with HLH. At a farm school near Greytown. Great potential evident.
29	**Ulundi**	**12**	**Discussed proposal for EE centre at NDumu. A "resourcing" centre rather then a traditional EE centre was proposed. A focal point to gather at and receive servicing rather then simple nature courses.**
30	JHB	3	Workshop with Glynis Clacherty on magazine production.
	July		
3	PMB	35	Teachers workshop on materials with College for further Ed. Market place focus on Ecology. Materials popular.
7	Umgeni	16	Hosted librarians; showed Share-Net and technology.
8	Umgeni	3	Met Alan Dock and Michael Kahn. Discussed Science and mathematics investigation for ODA and ANC. The potential of local, low-cost production stressed (Kahn, 1993).
8	Umgeni	65	Opened Gold Fields Centre officially. Now accommodation with electricity (for computers) available for resource development workshops.
14	Pretoria	11	Conservation Action Committee. Met to begin planning African Wildlife College.
15	Umgeni	6	Meeting with Society staff to discuss co-operation. Stressed the important contribution other organisations are making to Share-Net as well as the help Share-Net receives from field-staff at Umgeni.
16-18	**Howick**	**310**	**EEASA AGM and Workshop. Many different and diverse sessions. Michelle Strong presented on Share-Net - *Madlusuthe's Farm* and others. Origin of the EEPI (now EECI) at this workshop (EEASA, 1992).**
20-21	**Umgeni**	**58**	**First workshop, Gold Fields Distance learning course. Theory of EE... Great confusion on how to present EE. Traditional (Tbilisi, historical evolution...) and EE as a re-focussing orientation. Eventually steps to 'better education' developed. Step 1 Environment crisis, Step 2 EE as a response, Step 3 trends and patterns in EE and Step 4 resource materials development.**
23	Durban	12	Met with CORD to discuss co-operation with field-workers. The concept of a printing infrastructure for Maphutaland so as to help develop local income had appeal.

Date	Place	No.	Comments
27-30	Umgeni	29	EE educators course. Fieldwork plus comprehensive overview of resources.
	August		
4	Durban	18	Undergrad workshop, Geog students. Looked at resources like *Madlusuthe's Farm* and Enviro-facts.
*8-13	Switzer-land	24	WWF meeting on EE. Structural functionalism dominant (2.9.1) Little interaction between different orientations evident - but some interest in resources. Enviro-facts later translated for Malaysia.
21	Surrey	7	WWF-UK meeting. Discussed stategies and low-cost resource materials. Puppets and drama and EE becoming popular.
21	**Surrey**	**3**	**Met scientists from the Robens Institute. Compared Oxfam-Delegua (expensive) water kit with the SA "tupperware" version. The latter much more adaptable. Very interesting meeting - discussed power relationships e.g. expert with kit serves communities who don't have expertise or kits to investigate their own water problems.**
24	Stellen-bosch.	9	SANF advisory committee meeting. Discussed merge of conservation, development and EE.
	September		
3	Durban	12	PSP steering committee meeting for evaluation. Eco-puzzle resources for Zulu children learning science discussed.
10	Durban	18	SCISA Board meeting. Financial issues becoming pressing as no 'internal economy' of sales for products or services developing.
11-13	Umgeni	45	Student teachers from UDW. Fieldwork... Discussions... Students planned field-trip in a democratic manner but had difficulty deciding what to do 'from the bottom-up' as they had little experience of Umgeni.
14-17	PMB	80?	Earthlife Africa Conference PMB. (see report by Hallowes, 1993). Strong social justice position. Many 'community groups' evident at the conference.
18	Durban	-	Wildlife Expo. Manned Share-Net displays for the public. Comprehensive Umgeni Water display of water kits. The importance of verbal interaction with teachers about resources evident.
	October		
5-6	Umgeni	23	Water Course. To teach people to test water and take action. Some reservation evident in participants after the workshop. Was this due to the 'messages to them' orientation?
6	Stellen-bosch.	10	SANF steering Com.. Concerns about long-term funding of EE evident.

Date	Place	No.	Comments
7	C.T.	3	Met WordPerfect SA re: sponsoring site licences for Share-Net. Showed Husmukh Kajaar (the director) the *Beginners guide to WordPerfect 5.1.*
15	UDW	12	SCISA meeting. Much discussion about strategies.... Funding issue regarded as a failure to raise enough funds from 'donors'.
16	Durban	12	PSP Evaluaiotn meeting. Considering 4th Generation evaluation. Making naturalistic evaluation constructivist. A bit dubious?
22	Bloem	-	Various meetings on community development projects including launch of EE Centre at Manguang. Co-operation with the Society, READ and U.F. Share-Net materials even being used in this remote township library.
25	TV	-	50/50 on Share-Net. Footage of soil study.
November			
2	Grahams.	11	Rhodes EE steering com.. meeting. Looked at masters course. The idea of a network of local supportive education projects developed. 'Local stools to support the Chair'.
3	C.T.	15	NBI EE Co-ordinating committee meeting to discuss strategies. Greening townships and affirmative action significant.
4	**JHB**	**9**	**EE Policy meeting to plan national strategy. Major tensions between structural functionalist (if we let other people help us run consultative workshops, how will we know that they are properly run?) orientations and other more open orientations which sought to involve others despite the risk of EE being projected poorly.**
6	JHB	7	EDCOM (Education Committee of the Society) national planning meeting. Regional staff resource 'centres' or local displays discussed.
8	TV	-	50/50 on Share-Net. Again low-cost resources in use.
16-19	Umgeni	34	EE Educators course. Resources and fieldwork and 'take home' purchases.
20	Umgeni	12	Gold fields course workshop. Local Natal group with tutor.
23	Ulundi	24	Meeting on Ndumu EE centre. Conflict between management (control people or keep them out) and communications (teach people about conservation and develop benefits and opportunities; bring people in).
25	PMB	27	Addressed literacy group on Share-Net. EE market place. Materials popular.
December			

Date	Place	No.	Comments
2	Pretoria	38	Developing Environments workshop. HSRC. Strong social justice and community development orientation. Considerable politically correct language like: 'community based', 'ownership' and 'buy in'.
7	M/house	5	Discussion with Geography teachers on fieldwork. Env. auditing stressed.
9	UDW	12	SCISA meeting. How to get an internal economy going that is not only reliant on fundraising.
11	UDW	28	Conservation Carreers Course. Exposing young people who are keen on conservation to what a career could mean. Enviro-facts a useful supporting document for this course.

5

RESOURCE MATERIAL WORKSHOPS
1993

Date	Place	No.	Comments
	January		
15	**Pretoria**	**9**	**DEA Policy Meeting - Aim to influence national policy from an EE point of view. Again tensions evident in the desire to manage and control the learning processes and curriculum outcomes.**
16-17	Bop.	44	Gold Fields course. National workshop, theory in practice.
25-28	**Harare**	**17**	**Action Magazine evaluation. Problems with 'Outside expert' evaluation (Chap. 2) and the problem of outside funder dependency evident (Chap. 7).**
	February		
1	Edgewood	18	New PSP evaluation launched. 4th generation orientation.
8-12	**Umgeni**	**14**	**EDCOM planning meeting. Planned 1993, met with 'conservation' staff to promote cooperation.**
15	Edgewood	7	Planning teachers workshop with Natal Education Department (NED: Geography).
18-19	Umgeni	21	Project Water course - Course to teach people about low-cost water quality monitoring.
18	CT	15	NBI Steering Committee meeting. How important is the policy document?
22-23	M/house	5	Independent Schools conference, display of material.
26	Durban	39	Public Society workshop at Paradise Valley. Materials popular.
	March		
2	Durban	12	Gold Fields workshop, local Natal group.
5	**JHB**	**29**	**Water Workshop, Redhill. Small attendance but popular workshop. Again useful link with Society EE staff in Johannesburg.**
7	**-**	**-**	**TV (50/50) Launch of Catchment Action Kit (C-A). Huge response (Appendix B.)**
9	Umgeni	9	Water Workshop, demonstrated water materials.
11	PMB	15	Talk at Tembalethu. Interest in how easily 'Hands-On' materials used by Zulu children.
11	PMB	5	Met KwaZulu Biology inspector. Planned workshop on C-A water kits.
15	**Harding**	**32**	**Teachers workshop. Very successful. Enviro Pict. Building; Soils, Grasses. C-A. Very popular materials.**

Date	Place	No.	Comments
18	PMB	45	Gert Maritz workshop. Geography orientation - (as above)
19	Durban	44	Addington (as above)
22-24	M/house	46	Geog group visits Umgeni, Very popular on S-N materials.
23	Edgewood	48	Teachers workshop. Soils, C-A, Grasses. Materials popular.
29	Umgeni		KwaZulu workshop teachers didn't arrive. Poor planning.
30	Umgeni	32	Pretoria Tech students. Conservation course; enthusiastic, strong Structural functionalist expectations.
April			
7	Umgeni	3	Met Mr. Naidoo from Dbn teachers centre. Offered S-N display. Apparent interest.
13-16	Transvaal	3	Visit E. Tvl (now Mpumalanga) to look at prospective sites for African Wildlife College.
20	Umgeni	5	Teachers discussion on materials and E-Facts committee meeting.
21	Umgeni	4	Began planning St. Lucia pack.
23-30	Kenya & Tanzania	8	Share-Net workshop in Nairobi and trip to Mweka, Tanzania to plan for AWC. Concern about SA competition for Mweka College.
May			
4-6	Umgeni	20	AWC workshop on curriculum. Some interest in materials.
7	UDW	34	Attended meeting on Action Research - fairly stereotypical like Carr and Kemmis (1986).
13-15	**Natal**	**5**	**Hosted T. Popkewitz. Interesting discussions especially with regard to socially critical perspectives in EE.**
19	Mooi River	56	Display at Open Day - Sunter talk - interest in idea of small local economy around Share-Net.
24	PMB	23	Rob O'Donoghue's talk at PMB U. Challenging ideas...
27	**Umgeni**	**5**	**KwaZulu Monuments Council staff visit S-N to learn simple DTP. They have good technology but lack vision of what materials to produce.**
28	**Umgeni**	**34**	**Edu-Train visit to Share-Net. Active Workshop, Enviro-Picture building and many other materials purchased.**
June			
3	JHB		50/50 filmed map of people who've purchased C-A kits. To be broadcast later.
3	PTA	16	AWC meeting at NPB. Planning routines focussing on structures...
15-16	CT	12	NBI Com. Meeting.

Date	Place	No.	Comments
16	CT	9	Small Share-Net meeting to discuss presentation for EEASA in Bloemfontein.
19-20	Mkuzi	12	Gold Fields workshop - consider resource materials.
21-22	**Carlton-ville**	**13**	**EDCOM meeting. Jim Taylor to play the role of National Co-ordinator for EE for Society. Objective: national fundraising and general coordination and regional support.**
23	Edgewood	34	Student teachers workshop. Env. Pic. Etc. Very popular materials.
25-26	Umgeni	17	Natal EEASA forum. Small enthusiastic attendance. Political orientation evident.
28	Umgeni	21	Workshop with NBI re co-operative publications. Greening guides discussed.
29	M/house	43	CASME meeting. Env.Pic. Building workshop didn't appear appropriate. Presenter unable to respond to the teachers' mood.
30	ITALA	12	Meeting with sponsors on Share-Net. Discussed current resources.
		July	
5	JHB		Launch of African Wildlife College in Johannesburg.
7	Bloem	45	Gold Fields course final day - materials displayed.
8-10	**Bloem**	**240**	**EEASA workshop. Many varied workshops. Env. Pic. Workshop very successful. Provided useful links to other materials.**
12-13	**Umgeni**	**3**	**W.Cape Society creates Hands-On Schoolyard Life at Umgeni. Good example of resources being adapted.**
		August	
2-4	JHB	72	EEASA policy meeting. Useful clarifying discussions although politically correct rhetoric very evident.
6	Stellen	12	SANF Education Advisory Committee meeting.
8	**Umgeni**		**Peter Martin (WWF-UK) visits Umgeni.**
10	**Durban**	**32**	**EEASA report back - hosted John Fien who visited Umgeni and looked around Share-Net. Interest in low-cost resource materials.**
11	PMB	14	Fien workshop at Institute of Natural Resources. General overview of EE.
12-13	**Umgeni**	**16**	**Valley Trust teachers to Umgeni. Popular course, materials orientated, Enviro-Picture Building provides introduction and orientating framework.**
16	PMB	4	Met publishers to discuss E-Facts book. Dictionary/glossary decided upon.
20	Durban	36	Action Research meeting at UDW. Little mention of materials.

Date	Place	No.	Comments
23-26	Umgeni	44	EE educators course at Umgeni, Two staff members from Botswana attend to learn about EE for their centre at Gaberone.
28-29	Umgeni	15	CONCOM (Society Conservation Committee) meeting. Met with committee to discuss joint projects e.g. forest guide.
30	Umgeni	5	SAPPI meeting to discuss their commitment to EE.
September			
2	**Durban**	**28**	**Talk on EE at Museum. Very popular on resources. E-Pic. Building etc. Also launch of cardboard libraries.**
7-9	PMB	76	Educational resources workshop. Presentation on Share-Net.
13	PMB	12	Presentation to Natal Library Service book selection committee. Resulted in large orders.
16	**Underberg**	**13**	**Farm school teachers. Enviro-Picture Building and grasses studies. Discussed teachers needs. Shared other materials.**
16	Underberg	21	Teachers workshop. Well received materials. Shell stand, libraries.
20-24	Durban		Wildlife Expo. Displays on Share-Net, radio and TV slots on 50/30.
22	Durban	11	Met with Community Based Organisations (CBO) at NECC offices. Discussed possibilities of greater cooperation.
26	Durban	19	Society Council meetings. Demonstration of cardboard libraries.
27	Durban	27	EE policy initiative meeting at UDW. Developing momentum for he Natal region.
October			
1	Umgeni	44	Talk to Lions Club. Promoting cooperation with neighbouring service club. Sponsorship from 'ladies lionesses' received for Share-Net.
2	Durban	17	Talk on Share-Net. Critique on Networking offered.
3	TV		50/50 does follow-up on C-A project.
6	JHB	9	Environmental Education Policy Initiative (EEPI) committee meeting. Promoting localised workshop processes.
11	Umgeni	15	NBI workshop Umgeni re Greening Guides.
26	**Knysna**	**28**	**Teachers workshop. Env-Pic. and other materials. Cooperative networking as a result of the C-A newsflash listing all addresses of purchasers of the kits.**
27	PE	32	Talk on EE to Port Elizabeth Centre. Resources popular.
28	Grahams.	38	Talk to Society centre on resources - considerable interest from pupils.
29	Grahams.	11	M + R Chair of EE meeting. Discussing past year and future plans.

Date	Place	No.	Comments
29	**East London**	**4**	**Society Committee meeting. Discussed needs of E. London area. Committee felt education officer essential.**
November			
5	**Umgeni**	**12**	**Research Forum meeting at Umgeni - Society staff. Discussed Env. Crisis - Beck (1992). Risk Society and reflexive modernisation.**
18	**Umgeni**	**14**	**Research Forum meeting on Opie and national curriculum. Criticism of values orientations.**
29	**Umgeni**	**12**	**Research Forum meeting. Evaluation. Difficult to contextualise.**
30	JHB	6	Met ABSA to discuss support for Society regional projects and spread of Share-Net.
December			
2-3	**Umgeni**	**4**	**SADC at Umgeni investigating networking in SA.**
6	Umgeni	11	Conservation Careers Course. Talk on EE and tools for investigating problems e.g. C-A water kit.
8-9	**Umgeni**	**6**	**Discussions with Alistair Clacherty re Broadening Participation Initiative, a Society initiative designed to promote EE in townships.**
13	Durban	17	Qualitative research design workshop. Very useful for theory, addressed by Prof. Smaling from the Netherlands.

RESOURCE MATERIALS WORKSHOPS
1994

Date	Place	No.	Comments
	January		
17-20	Umgeni	42	Primary Science Programme Implementers. Planning meeting. Talk on Share-net materials - well received little ongoing action, however.
24-28	**Umgeni**	**23**	**Wildlife Society Staff. Annual planning meeting. Workshop on materials. Materials displayed in clusters.**
	February		
1	**Cathed-ral Peak**	**32**	**N.E.D. planning workshop. Strategic meeting defining focus on teacher support and EE materials in post-apartheid SA.**
4	Umgeni	55	Edu-Train. Teachers Workshop at Umgeni. Again materials in clusters. Many buy after browsing through clusters of materials.
15	Fulton School	26	Teachers from Fulton. Considered Share-Net materials - well received presentation. School buys various selections.
22-23	**UDW**	**12**	**Workshop on Earth Love Education. Tensions between Council For the Environment and EEASA/EEPI (Taylor, *et al.*, 1993; O'Donoghue, 1994).**
26-27	**Umgeni**	**55**	**Gold Fields Distance Learning Course begins for 1994. Environment Crisis, EE as a response, learning theories and resource materials all covered briefly.**
	March		
2	Umgeni	4	Senior officials of NED meet to look at materials in support of In-Service teacher workshops. Various materials selected.
3-4	SANF	14	SANF EE committee meets. EE strategy for SA considered - brief review of some projects.
8-9	Umgeni	42	Mangosuthu Tech. Conservation Diploma Students. Course on water quality monitoring. Adapted kits - studied Umgeni Catchment.
13-19	**Wind-hoek**	**38**	**SADC workshop. Challenge to structural functionalist orientations. Resource materials arouse interest. The concept of wider networking developed.**
23	Lady-smith	42	Workshop on Share-Net resource materials. Considerable interest.
26	Umgeni	6	Meet Eco-Vision. Consider TV coverage linked to materials.
31	Umgeni	19	Gold Fields course workshop.
	April		
7	Durban	11	Environmental Communicators Forum meeting addressed on Share-Net. Materials shared - particular interest in Enviro-Facts.

Date	Place	No.	Comments
8	Umgeni	3	Discuss resource materials development with Dept. of Pop. Development. Problems of transmission-centred media.
11	Under-berg	12	Discuss EE Centre in the 'Berg. Materials for fieldwork in the area considered, eg. *Hands-On* field-guides (4.5.1).
15	**JHB**	**34**	**ANC Education policy workshop. Workshop session on resource materials attended. Tensions between participatory approaches and centralised curriculum planning units evident. Verbal empowerment rhetoric very evident (7.4.4).**
18	Umgeni	4	Meeting with sponsor (Shell). Discuss computer and printing technology needs.
21	Durban	9	PSP Evaluation meeting. "Evaluator" encouraged to participate actively in resource materials development and usage with teachers.
23-24	Umgeni	9	College 'workshop series' begins - themes established for the year (O'Donoghue, 1994).
	May		
5	**Knysna**	**25**	**Spoke to teachers about opportunities for resource materials and environment clubs. Cooperation between schools healthy.**
20	Umgeni	14	Gold Fields course workshop (3.12.2). Assignments about students work situation encouraged.
25	Umgeni	12	Natal Newspapers and education foundation. Meeting to consider print media exposure for Share-Net and cooperative resource materials development. Resources guide helpful (3.8.5).
27	Umgeni	6	Short workshop on Project Water resource materials. How to use kits (4.5.6).
31	Umgeni	3	Meeting with Danie Schreuder (SWAP) to discuss co-operation (4.5.6).
	June		
1	Umgeni	5	Discussions with NPB officials re: Share-Net support. Enthusiastic response but hesitation about lack of "awareness" potential (3.11.2).
2	Umgeni	18	University of Durban Westville student teachers. Curriculum, materials and fieldwork - enthusiastic group - resources guide important (3.8.5).
3	**Tala Valley**	**29**	**Teachers' Workshop on Share-Net materials for NED. Very well received. *Enviro-Picture Building* (4.5.10) used as an organising framework. Resources guide useful (3.8.5).**
7	Pretoria	21	Southern African Wildlife College meeting. Discussions on potential and opportunities. The need for materials development stressed.
8	Hilton	5	Meeting with HLH to round off successful *Madlusuthe's Farm* venture (4.5.10).

Date	Place	No.	Comments
9	Umgeni	2	Meeting to develop community education facility at Ndumu. Infrastructure for resource materials clarified.
23	Durban	16	Addressed meeting on Science and Technology. Considered How-To[4] guides as examples of technology addressing local environmental problems.
27	Durban	8	SCISA Board meeting. Political economy issues discussed. Serious financial problems becoming evident.
27-1st	**Umgeni**	**7**	**Interacted with Cape Town staff of Society re: resource materials development (5.10). Western Cape produced two Share-Net booklets. Developed concept of Share-Net support infrastructure for the Western Cape.**
	July		
3	Umgeni	18	EDCOM meeting. Considered Society EE strategy and planning.
6-9	**Graaf-Reniet**	**250**	**Various presentations made on Share-Net. Resource guide launched with materials framework on centre-spread (3.8.5).**
9-10	Graaf Reniet	45	Gold Fields second national workshop. Learning theories.
15	Durban	36	CASME in-service teachers workshop. Full display of Share-Net materials.
20	**Umgeni**	**6**	**Workshop on Share-Net administration. Clarified strengths and weaknesses. Record keeping and marketing (other than through teachers' workshops) particularly problematic.**
26	Durban	12	Meeting to discuss potential of funding for EE excursions from Joint Services Board. Appeared successful.
27	**Umgeni**	**23**	**B.Ed. Programme begins at Umgeni Valley. Environment Crisis - socio, political, economic and bio-physical factors (3.12.1).**
30	Durban	9	Board meeting. Discussed regional projects of Society. Emphasised potential of materials development.
	August		
3	PMB	23	B.Ed. Ongoing course (3.12.1).
3-5	**Umgeni**	**4**	**Charles Norman and two colleagues at Umgeni to consider potential of initiating environment and development projects in the Southern Cape. Consideration for funding and income discussed.**
5	Umgeni	50	Edu-Train teachers at Umgeni. Most enthusiastic about resources. Particular focus on materials development given.

[4] The How-To guides are simple pamphlets that explain how to address various environmental problems e.g. *How-to do solar cooking* and *How to build a 'chicken tractor'*.

Date	Place	No.	Comments
8	Edge-wood	48	Teacher lecturers. 3 hour workshop on materials. Included *Enviro-picture building* (4.5.10), overview of clusters of materials (3.8.5) and some fieldwork. Excellent response.
10	Umgeni	12	Science and technology workshop by Birmingham students. conservative reaction to liberal education with strong jobs training orientation and trivial activities.
11	**Umgeni**	**12**	**Met with Wildermeersch. EE and public participation. Earlier work hampered by funding demands of attitude surveys etc. (Wildemeersch, 1985 and 5.13.3.1).**
12	Umgeni	18	EEPI - Policy workshop. Decision to dissolve EEPI mooted. Various tensions in orientation (2.9).
16	Umgeni	5	Investigating and trialing new printing technology - Rhiso. This membrane printer is inexpensive to run and easy to operate (4.4).
17	PMB	23	B.Ed. - ongoing course. Students present posters of their work (3.12.1).
19-21	**Maputo-land**	**18**	**Gold Fields course. Regional support for materials, training and usage (3.12.2). Most enthusiastic participants. Nature reserve forms an institution around which development can grow (4.5.10).**
23	**OFS**	**2**	**Set up computer - regional node of Share-Net type development based at Willem Pretorious Game Reserve. Opportunity lost when Garth Johnson left the Game Reserve.**
24	**N.Cape**	**39**	**Teachers' workshop at Galeshewe township near Kimberly. Co-operatively presented with Shell Education Service - *Enviro-Picture Building* (4.5.10). Need for frameworks and educational underpinnings apparent (3.8.5).**
29-2	**Kenya**	**49**	**IDRC workshop on research priorities in EE in Africa. 17 countries represented. SA delegation challenged the conventional wisdom of target group structural functionalism (2.9.1 and Appendix Fii).**
September			
8-9	Umgeni	9	Dept. of Environment Affairs Communication section visits Share-Net to compare notes and plan joint strategies.
14	PMB	32	Teachers and pupils workshop on EE. Talk on Share-Net. Very active around Arbor Day (Eii - a year planner useful).
16	Umgeni	5	TV crew film Project Water (4.5.6).
19-23	Durban	+500	Wildlife Expo - various manned displays and educational materials - good response. Framework useful for displays (3.8.5).
21	Umgeni	4	Lecturers from Vista University visit Share-Net to plan supplies for fieldwork in 1996. Water theme applied. Many water kits later sold as a result of this meeting (4.5.6).

Date	Place	No.	Comments
23-25	Grahams .	14	EEPI planning workshop. Two groups - one theory, one resource materials. Four categories of materials: papers, kits and tools, planning frameworks.
28	PMB	23	B.Ed. group. Summarised course (3.12.1).
	October		
4-5	**Umgeni**	**2**	**EWT (Don Beswick) resource materials strategy for Mozambique developed. Based on Share-Net type adaptation of materials through joint workshops (Appendix Fiii).**
7	Lady-smith	54	Teachers' fieldwork day. Water study (4.5.6) and resources guide (3.8.5). NPB have awareness orientation.
10-13	Umgeni	19	EE Educators workshop. Strong applied fieldwork with resource materials support (3.12.2).
13-14	Eden-dale	23	Environmental Champions Workshop. Part of 20/20 programme. Empowerment rhetoric, planning frameworks and facilitation challenged (7.4.4).
18	Valley Trust	12	Sub-committee on ecology meeting re: research and materials. Cardboard libraries for 'disadvantaged' schools.
20	Durban	2	Meeting with Mike Graham-Jolly to discuss Phd. proposal. 'Fourth Generation' Evaluation criticised.
25	Cape Town	14	NBI meetings to discuss EE and policy on materials. (Development from earlier work 5.10).
26	Stellen-bosch	7	Discuss funding linkages with SANF.
28	Umgeni	10	CBO (Thuthuka Africa) from Umlazi to see Share-Net. Shown around especially "How to?" chicken tractor and resources guide (3.8.5).
31	UDW	7	SCISA board meeting - financial crisis (6.3.2)
	November		
10	Gold Fields	17	Workshop with KwaZulu-Natal group (3.12.2).
16	**East London**	**17**	**Workshop re: Share-Net support in that region. Very enthusiastic about Society support. Cooperation with Museum.**
17	Rhodes	9	Chair of EE steering committee meeting. Discussions on relevance of EE and protected areas.
22	Umgeni	8	NPB Share-Net steering committee meeting on co-operation. *Reserves and Neighbours* (*Enviro-Picture Building)* a very popular resource (3.11.2 and 4.5.10).
	December		

Date	Place	No.	Comments
1	Umgeni	23	Teachers' workshop with Bheki Nene's group. Very keen.
10	Imphendle	9	Discussion with game guards re: EE and community development.

RESOURCE MATERIALS WORKSHOPS
1995

Date	Place	No.	Comments
	January		
20-22	Bloem	35	Final workshop for Gold Fields course (3.12.2). Final resource/poster presented by students. Comprehensive 'framework' of Share-Net materials displayed (3.8.5).
23-27	**Abe Bailey**	**22**	**EDCOM meeting. Annual Society staff training/planning meeting. Various resource material initiatives developed. National ABSA project launched (6.5.1).**
30	**Umgeni Valley**	**14**	**Share-Net, staff training workshop. Considered range of all materials (3.8.5).**
	February		
2	Durban CASME	30	Teachers' Higher Diploma. Resources workshop. Used music and displayed material. Teachers tried out various resources - some made purchases.
3	TB	40	Field Trip for teachers. Beach ecology. Used Action Ecology Pads to collect data and *Hands-On* booklets to complete investigation (4.5.1).
7	East London	2	Discuss EE projects for Border Region. Local adaptation of materials addressed (4.6.3).
7	Rhodes	12	Presented research seminar on Share-Net to lecturers at Education faculty.
15-17	**Midmar**	**18**	**First workshop NPB-Gold Fields course. Course adapted for NPB staff (3.12.2).**
17	PMB	40	Resources workshop for Edu-train. Full range of Share-Net materials displayed. Each cluster of resources was then described including how/why they had been developed. Teachers were then invited to look and try out resources - this was done with great enthusiasm (3.8.5).
22	New-castle	21	Teachers' workshop in co-operation with Society centre in Newcastle. Similar format to above - again a well received workshop.
27-28	**Pretoria**	**34**	**FRD Research meeting. Share-Net research findings presented - much discussion on research design issues.**
	March		
4	**Umgeni**	**16**	**Clubs meeting for KwaZulu/Natal members. Planned the year using Clubs Action Kit (4.5.11) and year planner (Appendix Eii).**
9	New-castle	34	Teachers' workshop organised by local DET inspecter. *Madlusuthe's Farm* used as an orientating framework (4.5.10). Described different clusters of materials, as well as how developed (3.8.5). Teachers then given an opportunity to try out materials.

Date	Place	No.	Comments
14	Stellen-bosch	12	WWF-SA committee meeting. Discussed various projects. Grave disquiet w.r.t. the development of *Faith and Earthkeeping* project. Especially the expectations created.
15	Montagu	4	Discussed plans for that project as well as resource development initiatives there.
20-21	Midmar	18	NPB Gold Fields course continued (3.12.2).
22-24	**Umgeni**	**29**	**Lecturers met from most universities that present EE courses for teachers to discuss and compare notes. B.Ed. Course discussed (3.12.1).**
29	New-castle	80+	Eco-Wild and Art Expo. Presentations made to large groups of teachers. *Madlusuthe's Farm* (4.5.10) used as well as a display stand for personal discussions around Share-Net resources.
April			
7	Durban PSP	9	Evaluation report back to PSP by external evaluator. No consideration given to resource materials.
19	Durban	16	Advanced WordPerfect course. Attended to develop skills in materials development (4.6.1).
23-27	Midmar	48	Indigenous Knowledge Systems (IKS) workshop. IKS pamphlets, which relate simple 'indigenous knowledge' stories from Share-Net discussed and displayed.
May			
2-3	Hluhluwe	18	Gold Fields course continued. Weekend tutorial for KwaZulu-Natal group (3.12.2).
17	Under-berg	34	Sani Centre AGM. Talk and materials display on EE (3.8.5).
22-23	Durban	70	'People and Parks' conference. Share-Net "Reserves and Neighbours" resource displayed (4.5.10).
31	Umgeni	4	Meeting with Derek Potgieter to discuss greater Share-Net co-operation with Shell. Possibility of Shell publishing *Madlusuthe's Farm* (4.5.10) in colour.
June			
1	JHB	5	Training sub-committee for Southern African Wildlife College (SAWC) meeting. Discussed resource materials development.
17	Durban	2	Meeting to complete booklet *WordPerfect 6.1 for beginners* (4.6.1).
20	Umgeni	4	Discussed Share-Net course modules for the Natal Parks Board (3.11.12).
28-29	Umgeni	9	Honours students hosted on field-trip. *Madlusuthe's Farm* for orientation and then a range of materials were shared (4.5.10).

Date	Place	No.	Comments
	July		
4	Pretoria	12	SAWC Management Committee Meeting. Anxiety about running costs (refer Chap. 6). Much attention given to physical features much less to educational training needs.
10	**Umgeni**	**3**	**Meeting with Southern African Developing Community (SADC) to discuss a resource materials networking 'node' for Southern Africa (5.13.6).**
13	Durban	12	Discussions w.r.t. resource materials for marine EE. The CLEO concept was discussed as having adaptable potential within Share-Net.
14-16	**Kearsney**	**24**	**ECOSA meeting for many African countries to discuss questionnaire survey outcomes. Organised by the UK based ICCE (Mark Boulton and Paul Vare) (5.13.3.1).**
17-21	**Kearsney**	**440**	**EEASA '95. Annual meeting/workshop of EEASA. Various workshops were presented on Share-Net materials. Many examples of educational materials were displayed. International 'networking'.**
	August		
2	PMB	23	1995 B.Ed programme for teachers begins (3.12.1).
11	Howick	3	Discussion with Don Khotze re: wetland educational resources.
17-18	JHB	300 +	CONNEPP. Environmental policy development workshop. Empowerment rhetoric problematic (7.4.4).
21	JHB	12	Discussion with Gold Fields about EE for the Gold Fields organisation. Suggested staff do Gold Fields course (3.12.2). Stressed that educational outcomes are unpredictable.
24-2	**Zanzibar**	**23**	**Trip to Zanzibar to support students on the Gold Fields course (refer Chap. 3.12.2; Taylor, 1995c).**
	September		
6	Pretoria	13	SAWC Management Meeting. Again much attention given to structures - less to course content and virtually nothing to how people learn.
11-12	**Mananga**	**7**	**SAWC training sub-committee meeting. Visit to Mananga Management Training College in Swaziland. Expensive courses sustained by major donor funding of bursaries (6.3.3).**
13	PMB	23	B.Ed continued (3.12.1).
19-20	**Umgeni**	**8**	**Share-Net/NPB curriculum course. Equipping fieldstaff to conduct groups in Nature Reserves (3.11.2).**
25	Durban		Wildlife Expo, Durban. Various manned Share-Net displays. Teachers particularly interested.

Date	Place	No.	Comments
29-1	JHB	30	Society Board and Council meeting. Encouraged participants to become involved in Share-Net activities countrywide.
	October		
2	Umgeni	24	EE Educators course at Umgeni. Session on Share-Net materials presented and sessions were conducted on how to use the materials (3.11.1).
4	PMB	23	B.Ed. course on resource materials presented. This enables students to adapt and use materials in their teaching (3.12.1).
6	Umgeni	3	Meeting with clubs organisers from the Eastern Transvaal (now Mpumalanga region). Discussed methods of supporting clubs in that region (year planner Eii).
9-11	**Eastern Cape**	**5**	**Discussions on developing EE programmes for the Border region. Also meeting for Murray and Roberts Chair of EE. The issue of financial sustainability is topical here (refer Chapter 6).**
11-13	Umgeni	38	Teachers visit to Umgeni Valley. Field-work and resource materials development was the focus for this programme.
18	PMB	23	Sum-up of B.Ed programme (3.12.1).
27	Umgeni	5	Meeting with contracting engineers to discuss joint project with them w.r.t. community projects.
	November		
1-29	**Umgeni**	**15**	**WWF-I course at Umgeni Valley. Second month focus on resource materials development and adaptation of materials for country of origin of students (6.3.4).**
6	Treverton	4	Discussion with Treverton std. 5 teachers about how to approach EE and how to raise funding.
8	**P.E.**	**9**	**Meeting to set up admin and project development procedures for Society/USAID Project (6.5.2).**
28-29	Stellen-bosch	16	WWF-SA steering committee meeting. Again concern about economic sustainability issues as well as expectations of funders.
30	Cape Town	3	Meetings with Alison Kelly and Toktokkie editor to discuss the Cape Town Society resources centre as well as educational materials for children.
	December		
5	JHB	16	Meeting with "Little Library" to discuss the concept of a council for EE resource materials. An informal advisory group concept was decided upon. Various discussions were held w.r.t. mother tongue literacy, ages and stages etc...
6-7	Mpuma-langa	5	SAWC Training Sub Committee meeting. Discussions on courses, resources and strategies.

Date	Place	No.	Comments
11-22	Grahams.	-	Working with Eureta Janse van Rensburg and others in Grahamstown. Writing-up end of year reports and synthesizing Share-Net research. Research write up of this study begins in earnest.

APPENDIX B

Share-Net sales 1991-1995

SHARE-NET SALES 1991-1995

The following graphs illustrate trends in sales of Share-Net resources from 1991 to 1995. The graphs depict trends in numbers and types of resources purchased as well as giving an indication of who buys the various resources.

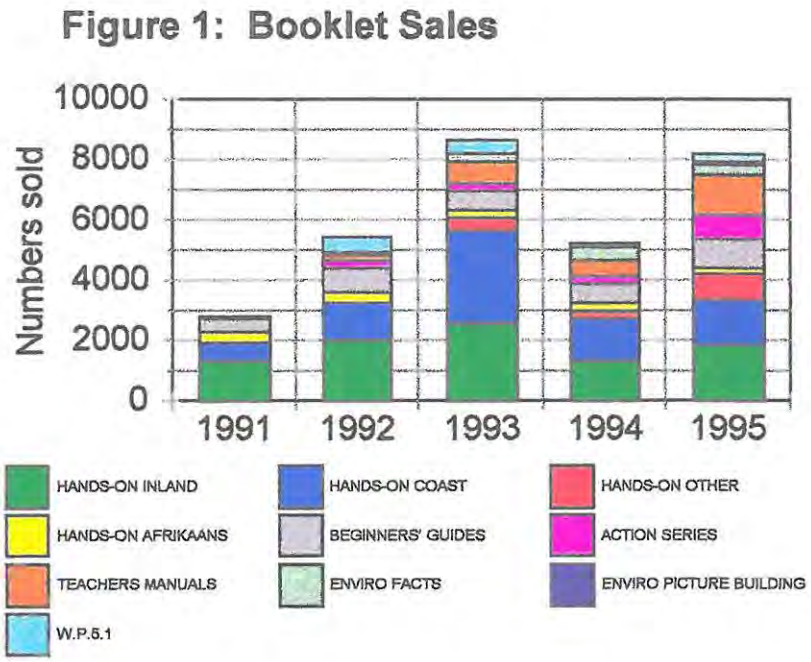


Figure 1: Book Sales
Numbers of booklets sold have increased dramatically from a total of almost 3000 in 1991 when Share-Net began, to over 8000 in 1995. Numbers peaked in 1993 to almost 9000 booklets sold, with a substantial drop in 1994 which can be attributed to political uncertainties due to the general election in South Africa during that year.

The Hands-On booklets have sold consistently well, particularly the Hands-On Inland Library with the Coastal Library a close second. Translations of Hand-On booklets into Afrikaans have not sold well. Beginners' Guides have been very popular with an average of 1000 of these booklets sold each year. The number of booklets sold in the Action series has more than doubled from 1994 to 1995. This is due to the popularity of the original booklets on removing alien invader plants and revegetating stream banks, as well as the production of new booklets in 1995 on incema grass and muthi plants. These latter two booklets have been particularly popular in that they appeal to a wide range of cultural orientations. Feedback on the use of the resources include young black and white children discussing what they have learnt from the booklets with elderly black people. Teachers' Handbooks have also become increasingly popular with well over 1000 sold in 1995. Consistently popular since their production in 1993 are the Enviro Facts. The Enviro Facts were initially made available free through *Pick 'n Pay* outlets. This was done against the advice of the steering committee and was contrary to research that was being done at the time (Paxton, 1994 & Gowar, 1992). Free materials at the supermarkets were mostly taken as "freebees" and wasted or ignored by customers (Gowar, 1992). Of special note is the *Easy Reference Guide to Wordperfect 5.1* - this booklet has been sought after for developing skills in word processing and for supporting computer users.

Figure 2: Who buys Share-Net resources?

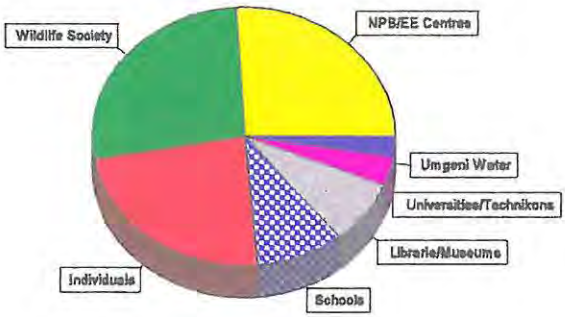


Figure 2: Who buys booklets?

As is the case with all Share-Net resources, individuals make up a large percentage of the buyers. Schools, universities and technikons are a further category of buyers that has been established. Many resources are bought by Wildlife & Environment Society branches across the country to support Society staff; booklets are also sold to the public from the various branches. Society staff in the different regions of South Africa display material and promote resources through workshops as well as through local newsletters. By selling the material, regions are able to receive a small but significant financial income to their projects (McEwan, 1995, pers. com.) Environmental Education centres and the Natal Parks Board (NPB) are often involved in the development of resources and frequently purchase materials.

Figure 3: Water Kit Sales

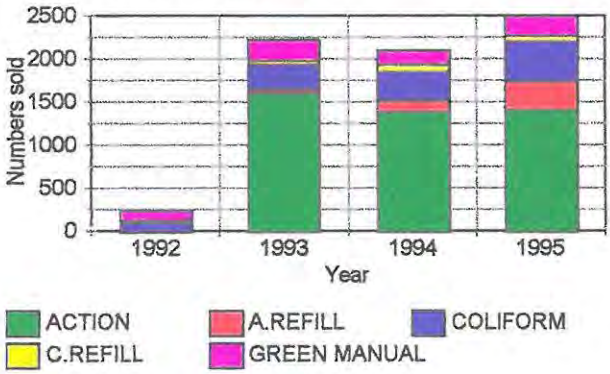


Figure 4: Who Buys Water Kits?

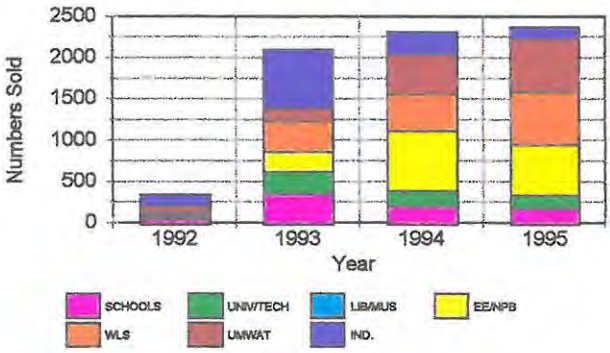


Figure 3: Sales of Water Testing Kits

In the first year of their production over 1500 of the Catchment Action Starter Kits were sold! Over 4000 of these kits have been sold between 1993 and 1995. Refills for the kits have become predictably more popular as more people acquire kits. The Coliform Kit, which is designed for older pupils, is also popular.

Figure 4: Who buys the water kits?

Water testing kits are purchased by individuals, schools, Society regions, Environmental Education centres and the NPB. The large percentage of kits bought by Umgeni Water is an indication of the good working relationship between the Society and this large corporation. Umgeni Water assists with the provision of many of the kit components and frequently places large orders for kits.

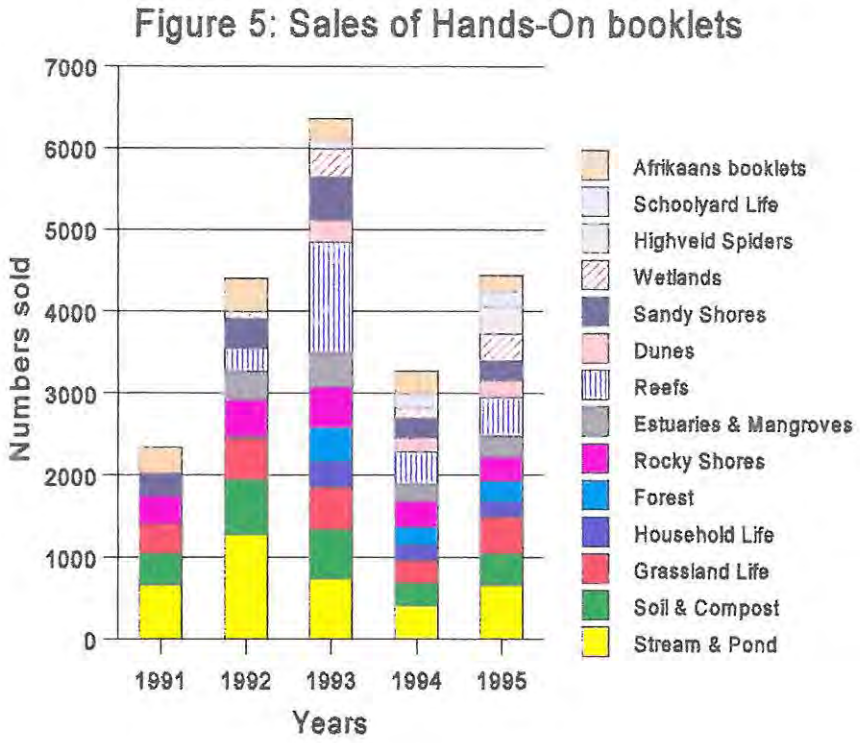
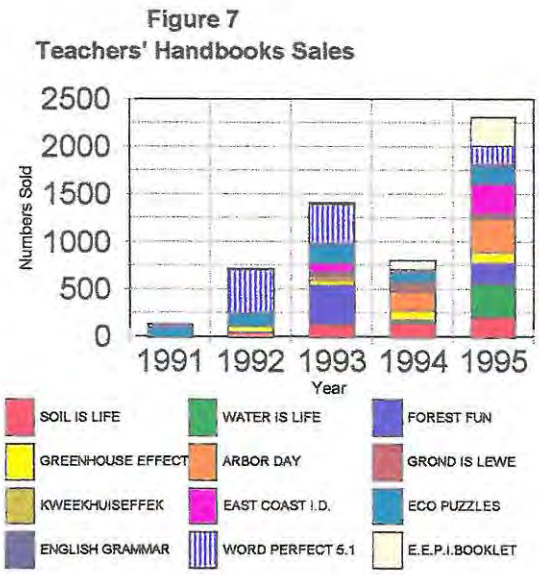


Figure 5: Sales of Hand-On series

The Inland Library (*Stream & Pond Life, Soil & Compost Life, Grassland Life, A Forest Community, and Household Life*) is consistently a high seller in this series, closely followed by the Coastal Library *(Rocky Shores, Reefs, Estuaries, Dunes, Sandy Shores)*. Particularly popular is Hands-On *Stream & Pond Life*, closely followed by *Soil & Compost Life* and *Grassland Life*. The *Forest* booklet was predictably very popular in the first year of its production during which time the writer of the booklet was actively promoting its use. Hands-On *East Coast Reefs* was especially popular in 1993 for the same reason.

Figure 6: Teachers' Handbooks

Besides the five handbooks designed specifically for teachers, a number of other resources are popular amongst teachers such as the Eco Puzzles and the *Easy Reference Guide to Wordperfect 5.1*. During 1995 over 2250 teachers' handbooks were sold (this means over 200 per month!)



APPENDIX C

Curriculum Development and Environmental Education: An overview and some experiences from South Africa

paper presented by Jim Taylor
in Kampala, Uganda, April 1996

NATIONAL PLANNING WORKSHOP ON ENVIRONMENTAL EDUCATION
IN THE FORMAL EDUCATION SECTOR: UGANDA
22-24 April, Kampala, Uganda

CURRICULUM DEVELOPMENT AND ENVIRONMENTAL EDUCATION: AN OVERVIEW AND SOME EXPERIENCES FROM SOUTH AFRICA

Jim Taylor
Wildlife Society of South Africa
P.O. Box 394, Howick, South Africa

"Environmental concerns can unite South Africa, going beyond racial, political, and economic barriers" (Nelson Mandela, 1993).

Overview

This paper provides an overview of, and some experiences in, curriculum development in environmental education in South Africa. Two national strategies, both of which were established with the objective of influencing the formal education system in South Africa, are considered. The paper discusses some lessons learned and considers ideas for the development of a national strategy.

A number of theoretical models or frameworks for active learning which have helped 'come-to-grips' with environmental education in South Africa are then considered. These frameworks are illustrated with practical examples. Throughout our experience with curriculum development we have come to realise that there is no right or wrong way of doing things. Neither is there a grand strategic solution. Rather, our experience has been one of successive 'learning struggles' as we attempt to develop policy, curriculum frameworks and resource material through consultation processes and partnerships with teachers. Without the educational resources (or tools for the job) supported by enthusiastic 'resource people' as well as the places where support can be found even very good policies will come to little.

History

In 1989 South Africa produced a White Paper on Environmental Education (Department of Environment Affairs, 1989). A key concern in this paper was the development of a national environmental education curriculum. Ironically two such initiatives were launched. One instigated by the Council for the Environment and the other initiated by the Department of Environment Affairs in collaboration with the Environmental Education Association of Southern Africa (EEASA).

Expert Curriculum Development

The Council for the Environment, a government appointed advisory body, released a 'core syllabus' for environmental education in 1993 (Council for the Environment, 1993). This initiative was based on the values clarification work of Frank Opie (1990) and included a 'core syllabus' linked to a series of national text-books. The initiative, with a carefully pre-structured curriculum plan, was criticised for having little consultation, being essentially of a

top down nature as well as lacking in appropriate participatory support structures (Taylor, O'Donoghue and Clacherty, 1993). Inconsistencies in the theoretical orientation to the work were later pointed out (O'Donoghue, 1994).

A Consultative Process

In 1992 a cooperative policy initiative was also launched by the Department of Environment Affairs in association with EEASA. A loosely coordinated committee was established and the initiative became known as the Environmental Education Policy Initiative (or EEPI). The EEPI involved wide spread workshopping of environmental education ideas and policy options across South Africa (Clacherty, 1993). These ideas were then tabled at a national curriculum workshop which was held at Dikololo (near Johannesburg). This workshop involved a large cross section of role players in education from state bodies, NGO's, universities, teachers unions as well as broad representation from the so-called 'Progressive Education Movement' (a loose term for organisations involved in education reform that were strongly opposing the apartheid state system at the time). Following on from the national workshop further regional workshops were held and out of these processes two publications were produced. These were the so-called *'Natal Document'* (O'Donoghue, 1993) the *'Pretoria Document'* titled "The Integration of Environmental Education into Formal Education (Department of Environment Affairs, 1995) as well as a national source document titled Environmental Education Policy Options for Formal Education in South Africa (Clacherty, 1995). The EEPI, although broadly consultative, resulted in few tangible frameworks and resource materials which were suitable for use by teachers and pupils.

Although members of both curriculum processes were sitting on joint committees there was considerable tension between the 'expert developed' and 'consultatory' approaches. National curriculum development was, however, taken a step further when the national Heads of Education Departments Committee (HEDCOM), approved a national curriculum development project in environmental education in June 1995. Through this initiative four contract researchers will be appointed whose tasks will involve further curriculum development, consultation and the development of specific guidelines and educational resource materials in South Africa.

Comments on the South African initiatives

Unfortunately, the development of adequate policy, even when developed according to the politically correct, process orientations of the South African EEPI, does not mean that successful practice will result. Both SA initiatives produced products in the form of coherent reports and supporting materials. These products were well received by funders and supporting agencies alike, but this does not mean that effective environmental education will take place in the classrooms. Unless teachers and pupils are supported to develop their skills and commitment the policy development will remain a series of useful ideas largely unrelated to practice in schools, a very common phenomenon indeed (Stenhouse, 1975).

Complementary support for, and the participation of teachers, is very important as policy is shaped. Otherwise the policy initiative will simply develop products in the form policy guidelines and supportive texts (both of which are likely to be well received and encouraged by the supporting funder) but neglect the often uncertain, and usually 'muddy', human support processes. It would be unfortunate if African countries simply re-shape themselves according

to the bureaucratic principles of foreign support agencies with imported models of curriculum that conform to conventional, top-down, models of curriculum intervention or 'politically correct' facilitatory and networking processes.

Enabling processes, which could take the form of support structures focussing on teacher enrichment workshops and participation in the adaptation of resource materials are essential. More simply, what is needed is work in schools with projects and activities that teachers and pupils can actually do! In this regard it is important that schools build on what they already have no matter how little or poor it may seem. Action in schools within an enabling policy and supported by inservice teacher training (INSET) as well as resources that are available for adaptation to local needs and contexts is clearly needed.

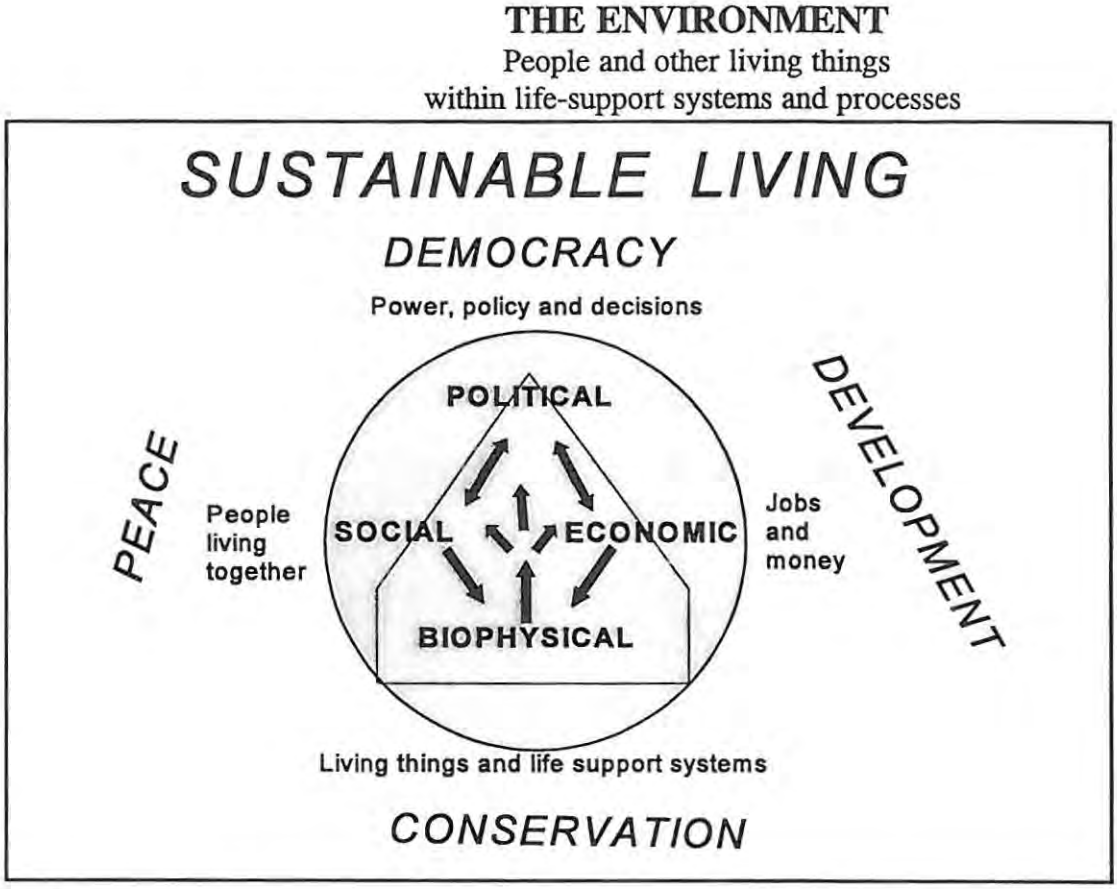
In South Africa there has been considerable support for environmental education both from government and non-government agencies. Organisations such as the Primary Science Project, the Science Education Project, the Wildlife Society, Eco-Link, the Delta Environment Centre, the Natal Parks Board, various other government and quasi government organisations including the Department of Environment Affairs, the Parks Boards, the National Botanical Institute, and the various Gold Fields/WWF-SA Environmental Education centres have all provided support for environmental education in one form or other.

This support has included 'resource people', local resource materials, as well as the places where people can take excursions and meet to address the problems they encounter. A number of courses are also available, these range from short one day workshops, to longer four day courses and even a year long distance learning course which is funded by Gold Fields and WWF-SA.

Developing perspectives on environmental education

Two frameworks or models of environmental education have proved useful in guiding environmental education in South Africa. The first clarifies a broad view of the environment as inclusive of political, social, economic as well as biophysical processes (figure 1 overleaf)

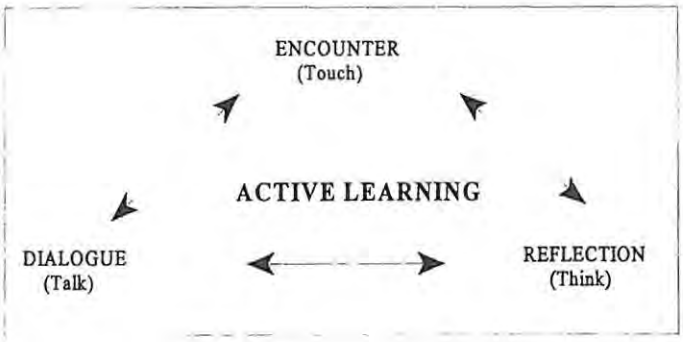
Figure 1.



From, O'Donoghue (1993).

The second is an image of 'active learning' and has proved very useful in guiding environmental education. Its methods involve learners in encounter (hands-on), dialogue (discussion) and reflection (thinking).

Figure 2. **An emerging picture of Active Learning**
(From O'Donoghue and Van Rensberg, 1995).



With the broad view of environment (figure 1) coupled with the image of active learning (figure 2) a fuller orientation to environmental education becomes possible. When based on a platform of historical issues a useful framework for developing enabling policy frameworks and programmes becomes possible (O'Donoghue and Van Rensberg, 1995).

Key orientations of the past

Figure 3 (overleaf) represents a number of key ideas and orientations that have dominated environmental education in South Africa. Although they are loosely grouped into three apparent stages these are not mutually exclusive, neither do they have distinct borders, and in reality overlap and interlink. Brief comments on the dominating orientations are provided. One should be cautious, however, of condemning a particular orientation without being conscious of the particular social context in which the initiative is located. It is not so much the orientation that is to be faulted as the underlying assumptions that are made. In many instances our underlying assumptions are not apparent and it is these that place our strategies and efforts at risk.

Concluding comments

Experience in South Africa suggests that large scale, strategic policy plans in environmental education are unlikely to be successful without complementary resources for the job. Furthermore, unless such tools are developed in cooperation with support structures for teachers they are unlikely to be optimally successful (Taylor and O'Donoghue, 1989). A useful outcome of a participatory process involving teacher groups was a simple field guide to soil organisms that could be used in and around classrooms for practical studies (Londt, 1991). This booklet was taken further by Clacherty (1992) who used some of the 'copyright free, teacher developed' material in a commercially produced text-book.

In South Africa a national 'action plan' is being developed. This plan is also being supported by complementary regional plans (e.g. Muller, 1996). Exemplars, or case studies of good environmental education practice, are also being reported and a survey of available resources is to be conducted.

Guiding frameworks for environmental education such as the active learning example of dialogue, encounter, reflection described above (Figure 2.) are important for providing teachers with a better way of developing good practice. Such strategies, linked to sound administration in schools by governing bodies and teachers alike, will contribute to the growth of appropriate environmental education in South Africa.

It is important that we do not spend our time looking for the right recipe or grand plan for successful policy. Rather, we should attempt to promote better policy development within the struggle for better learning without losing the important consultation and participatory development processes.

Figure 3. DEVELOPING ORIENTATIONS TO ENVIRONMENTAL EDUCATION

	DOMINANT ORIENTATION
The Past (1960's and '70's)	1. Identify target group 2. Compile message 3. Select media and send message 4. Evaluate result
	Comment: 1. Excessively 'Top - down' 2. Perpetuates an 'Us' and 'Them' divide 3. Significant social change does not come about from well communicated messages alone.
The Present	1. Identify partnership community 2. Survey / establish needs 3. Organise forums / meetings / workshops / networks to 'facilitate' change and 'empower communities'. 4. Evaluate effectiveness
	Comment 1. Politically correct 'empowerment' 2. But just like 'The Past' as described above 3. Social engineering usually alienates people eventually.
The Future	Unfortunately we must be prepared to accept less intervention centred approaches. We, and our funders, must recognise that social change does not come about through a neat and rational process (Papagianus, Et. al, 1982). 1. Work **with** people (teachers) not **on** them 2. Focus on local, relevant issues and opportunities 3. Action research and community problem solving 4. Evaluation throughout
	Comment 1. For real change to come about **'community'** is more significant than **communication** 2. Involve teachers / pupils in finding out about issues and working to solve them 3. The capacity to **respond** to local needs, issues and opportunities is crucial 4. **Enthusiasm and encouragement** is key!!

REFERENCES

Clacherty, A. (1993) The Environmental Education Policy Initiative: Reflections on the Process. In *Southern African Journal of Environmental Education,* No. 13, EEASA, Howick.

Clacherty, A. (1995) *Environmental education policy options for formal education in South Africa.* Share-Net, Howick.

Clacherty, G. (1992) *Gardening for Children: Standard Three.* Centaur, Pietermaritzburg.

Council for the Environment, (1993). *National Core Syllabus for Environmental Education.* Council for the Environment, Pretoria.

Department of Environment Affairs, (1989) *White Paper on Environmental Education.* P.Bag x447, Pretoria.

Department of Environment Affairs (1995) *The integration of environmental education into formal education.* Discussion document, second draft, May 1995, Pretoria.

Londt, J. (Ed.) (1991) *Hands-On: Soil and compost life.* Share-Net, Howick.

Mandela, N. (1993) In *"Building a New South Africa: Environment, Reconstruction, and Development".* A report from the International Mission on Environmental Policy. International Development Research Centre, Johannesburg, 1995.

Muller, C.S. (1996) *Environmental education framework in KwaZulu-Natal.* Draft EE proposal, Department of Education and Culture, Province of KwaZulu-Natal.

O'Donoghue, R. (Ed.) (1993) *The Environment, Development and Environmental Education.* Environmental Education Policy Initiative, Share-Net, Howick.

O'Donoghue, R. (1994) A grand plan for Earth Love Education in southern Africa: The dream becomes a nightmare. So, what went wrong? In *Southern African Journal of Environmental Education,* No. 14, EEASA, Howick.

O'Donoghue, R. and Taylor, J. (1988) Towards participant-centred resource development in environmental education. *Southern African Journal of Environmental Education.* Number 7, April.

O'Donoghue, R and Van Rensberg, E. (1995) *Environments and Methods.* First draft, Share-Net, Howick.

Opie, F.W. (1990) *Factors associated with the development of positive student attitudes and aesthetic response towards a South African natural environment.* Unpublished Ph.D. thesis, Dept. of Environmental and Geographical Sciences, University of Cape Town, Cape Town.

Papagiannis, G.J., Klees, S.J. and Bickel, R.N. (1982) Toward a Political Economy of Educational Innovation. In *Review of Educational Research*, Summer, 1982, Vol. 52, No.2, Pp. 245-290.

Stenhouse, L. (1975) *An Introduction to Curriculum Research and Development.* Heinemann, London.

Taylor, J. and O'Donoghue, R. (1989) Towards a co-operative network for environmental education. Southern African Journal of Environmental Education. *Environmental Education Bulletin,* EEASA, Howick.

APPENDIX D

COURSES

(i) Environmental Educators course (flyer)
(ii) Natal Parks Board/Share-Net course outline
(iii) B.Ed. Module Outline

Arrangements

Participants to meet at the Umgeni Valley Project or Treasure Beach at 09h00 on the first day of the course (Please 'phone to confirm where your course will begin!).

Please note: two days will be spent at Umgeni Valley and the remainder at Treasure Beach.

Kit List

1 sleeping bag/blanket roll
1 warm tracksuit or jersey and jeans
2 pairs of shorts
2 shirts (preferably in brown or green colour)
hand towel
1 pair walking shoes
1 pair tackies for rocky shore
1 hat
swimming costume and towel
1 small notebook and pencil
torch
1 waterproof garment
toiletries
1 water bottle
suntan lotion
Optional: Bird books, Binoculars

SHELL

"HANDS ON" ENVIRONMENTAL EDUCATORS TRAINING COURSES

UMGENI VALLEY PROJECT

TREASURE BEACH PROJECT

NATAL PARKS BOARD / SHARE-NET COURSE

18-19 September 1995 : Gold Fields Centre, Umgeni Valley

Overall objectives: To equip participants to host visits to NPB Reserves from schools of the primary phase (Class 1 - Std. 5). Participants will learn to conduct four key activities. These are "Reserves and Neighbours", Animals and skulls, a Water study and a Soil study. Participants will also practice carrying out these activities and be equipped with the resources to conduct them.

MONDAY 18TH

9.30 E.T.A. Arrival and Welcome:

10.00am Reserves and Neighbours

How to use this resourse and customise it for each local area. This resource will be used as an opening activity for all visiting groups.

Apparatus: Enviro-Picture Building: "Reserves and Neighbours"

11.30am JUNIOR PRIMARY PHASE: Wild Animals and mammals (Skulls etc...) And Water Cycle and Trees (Uses).

Apparatus: Skulls
Water Poster

Follow-up: "Forest Fun"
"Water is Life"

LUNCH

PM STANDARD 4 AND 5

Soils (Compost study)

Apparatus: Henry Ncgobo's booklet "Soils and Compost Life"
Compost
Spool containers
White paper

Follow-up: "Soil is Life"
Selected Enviro-Facts

Evening: Braai and consolidation

TUESDAY

8 AM: Tips on how to host a school visit. NB: Welcome the group properly, refreshments, toilets, Involve teacher in pre-course planning as well as during the visit!

9 AM STANDARDS FOUR AND FIVE Water Study.

Apparatus: Bheki Nene's booklet "Stream and Pond Life"
Water Slide
Turbidity measure
Possible extra: "Catchment Action Starter Kit"

Follow-up: "Water is Life"
Selected Enviro-Facts

LUNCH

Sum-up.

COURSE OUTLINE : 1996
B.Ed. Module in Environmental Education (Pmb.)

THEME	SESSION TOPIC		ACTIVITY/ RESOURCE	READING
Environment and Environment Crisis	5/8	Course overview Global Environment Crisis	Env. Picture Building. Enviro-Facts (1-60) EEPI (pp17-18)	EEPI Enviro-Facts Ramphele "Restoring the land" Hallowes "Hidden Faces" Cock + Koch "Going Green..." Yeld "Caring for the Earth SA"
	12/8	Environment Crisis in southern Africa	EEPI (pp15-16)	
	19/8	(SA crisis cont.)	Field-trip : UVP (***Assignment 1 due in***)	Umgeni Prospectus/Map Tbilisi Principles
Envioronmental Education as a response	26/8	International Landmarks in environmental education.	International and Local Developments in environmental education.	EEPI (pp11-12) Paxton (Some key issues in EE) Extract from Education White Pap. '95 Irwin "Modern trends...."
Trends and patterns in Environmental Education. Changing perspectives to learning and Evaluation.	2/9	Behaviourism / Action Competence	Goal directed (Education by objectives) Emerging alternative / responsive orientations.	EEPI (pp19-22) Kinyanjui (1995) Hungerford "Changing learner behaviour..." Taylor "Giving away the tools" Uzzell "Action Competence"
	9/9	Learning theory. (Dialogue-Reflection-Encounter)	Learning theory in practice. Field-work A local ecology example within the classroom to illustrate a broadening methodology.	Wals "What you can't measure" O'Donoghue "CLEAR Principles"
Curriculum and Resource Development	16/9	Curriculum theory/change	Changing perspectives. The EEPI story. (***Assignment 2 due in***).	"EECI Update Graham-Jolly "Course hand-out"
	30/9	Resource materials (development and use)	Considering resource development case studies. Looking at and trying out different resources. (Prepare poster presentations)	Lotz "Resource materials development in EE" Share-Net (Taylor)
Presentations	7/10	Student presentations	***Presentations and questions***	
Summary	14/10	Overview	Summary of course as a whole	

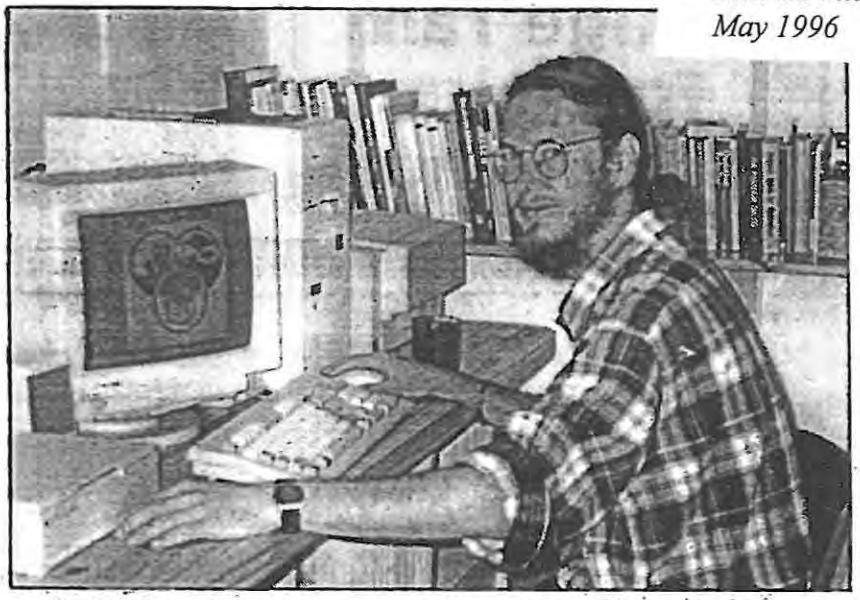
APPENDIX E

RESOURCES

(i) Louis' eulogy
(ii) A year planner
(iii) Example of colour printing
(iv) Map of sales of water kits
(v) Share-Net Resources Guide & Order Form

Computer expert killed

Howick Village Talk newspaper
May 1996



Louis Aukema pictured where he loved to be most : exploring the world through the computer at Share-Net.

Local environmental computer expert, Louis Aukema, was killed in a head-on collision whilst travelling to Johannesburg last Sunday.

At twenty six years old, Mr. Aukema was a keen conservationist who worked closely with Share-Net, the extension services of the Wildlife Society, producing low cost environmental resources.

Having offered his services to the Wildlife Society as a voluntary supporter for three years, he joined the Umgeni Valley team in the latter part of 1995.

Staff at the Umgeni Valley spoke highly of their late colleague this week, describing him as a man of "ideas, hopes and dreams... He seemed to see potential everywhere and was full of exciting and ambitious plans ", they said.

Although having only worked with the Share Net project for a short period, Mr. Aukema was successful in single-handedly obtaining a grant from the British Council for the installation of the latest computer technology, and was responsible for passing on his skills to others.

"Louis was always willing to share his expertise ... his skills won't be lost " said one co-worker.

He also developed a support process for Share-Net environmental education resources on the Internet that was not only a first for the Wildlife Society, but quite possibly for environmental education everywhere.

Through this support process, described by colleagues as "simply brilliant", environmental material that is compiled and written in this country is available worldwide on the Internet.

In a tribute to Mr. Aukema this week, Share-Net colleague Kim Le Roux said " He really had a vision for Share-Net, which, throughout the time he spent with us, he worked hard to turn into a reality. And a lot of what he dreamed, he made come true".

Envirofacts is expected to be on the Internet shortly.

LOUIS DEVILLIERS AUKEMA
28.6.1970 - 6.5.1996

TOO EARLY IN HIS LIFE LOUIS UNDERSTOOD TOO WELL THE INTRICATE CEREBRAL RYTHMS OF OUR UNIVERSE. AT TIMES HE SHOULDERED THIS BURDEN WITH GREAT DIFFICULTY.

EERS IN DIE HERFS VAN SY KORT VERBLYF OP HIERDIE AARDE HET HY KLAARHEID GEVIND IN DIE KOMPLEKSE PROSES VAN INTERAFHANKLIKE BESTAAN.

LOUIS MADE IT HIS MISSION TO ADDRESS HUMANITY'S IGNORANCE ABOUT OUR CORNER OF INFINITY. HIS FINAL EFFORTS HAD A PROFOUND EFFECT ON THOSE OF US WHO KNEW HIM.

HAMBA KAHLE RAINBOW WARRIOR
DIE AUKEMA FAMILIE AND FRIENDS

Plaque on "Louis' Bench" at Umgeni Valley

IN MEMORY OF LOUIS

These words have been written in an attempt to record some of what was said at the memorial service of Loius DeVilliers Aukema. Louis died tragically on Sunday the 5th of May somewhere near Grootvlei (Villiers) on the N3 road between Howick and Johannesburg.

It is a privilege to be invited to say a few words in Louis' memory on behalf of the Wildlife Society and his many friends. Louis was lucky to have the family and friends he had. He spoke of you all often although many of you only became known to us by name. He loved his parents and visiting Mr and Mrs Aukema with him and experiencing their warm hospitality was a special event for me. Of course we are sad today, but that is fitting - like all emotions the sadness is only temporary. Perhaps it will help if we remember that we are here to honour Louis' life - not mourn his passing.

I am not sure where or when I first met Louis but it was about three years ago. I didn't realise then how much impact he was to have on the work we were involved in. Louis contacted us because he had heard of a project called Share-Net and he felt we could be doing things differently and better and he knew he could do something to help.

Share-Net is a joint project of the Wildlife Society, the Natal Parks Board, the Environmental Education Association of SA and WWF-SA. The idea is to provide low-cost educational resource materials, through participatory processes, to pupils and public alike. The emphasis of the project is on involving people in the process of resource materials development rather than through trying to change people by sending them messages. Louis had many ideas for Share-Net. Many of them, like all our ideas, were impractical and ideologically flawed. Some, however, had much potential. We met with Louis as often as we could to discuss the ideas and the future of the project and our meetings steadily became more focussed and practical. I remember an early meeting between Rob O'Donoghue (who more then anyone had been behind the early Share-Net development), Louis and myself. We met at a hotel somewhere near Pretoria and I think it was either late at night or very early in the morning - we were fitting things in. Louis had a grand scheme for an interactive computer-based learning process. Rob and I were unimpressed, to say the least, and we commented after the meeting that if we ever heard from Louis again it would be a miracle! Unfortunately, you can't manage or change people in a meaningful way with teaching machines no matter how fast, colourful, interactive and responsive the computers may get! But Rob and I also knew that much of what Louis had to say about computers, printing technology and environmental education was of great value.

If any of you have used a computer you will understand how we felt. We use computers like typewriters although we know they are capable of much, much more. People like Louis come along and tell us what we could be doing with them! We explained that we did not have the skills or money to do what he had in mind and he offered to pursue these ideas on our behalf.

An energetic period followed as Louis began to take up the challenge. Our current supporters, Gold Fields and Shell, were happy for us to supplement their funding from other sources and so Louis began to look further afield. Our meetings with Louis continued and he explored various contacts - we needed better equipment if his ideas were to be realised. He wrote proposals, visited prospective donors and read around the concepts of education and environmental education. He was always optimistic and tireless in his efforts - with his enthusiasm and

dedication he had to be successful eventually. Finally the British consulate agreed to donate the required equipment and by then Louis knew exactly what we needed. And so one day Louis arrived at Umgeni Valley with a pentium computer, a scanner, a post-script laser printer, compact disks and all the necessary software - it even had separate speakers! We peered over his shoulders in a mixture of awe and apprehension. This set-up cost R20 000 - a big donation for a small place like Umgeni Valley. Of course we learnt a great deal about computers, but in particular we learnt that it is *people* that make things work - people and their special abilities and talents, the way people interact with, and serve each other, and what is possible when people allow their light to shine!

Louis was always ready to share everything he knew. But we learnt slowly, we were always too busy and although Louis was very patient we often became frustrated. Fortunately we are now over the threshold with this technology and it is beginning to work for us. Some of our work is even starting to look like the things that Louis could do. The special qualities that Louis had, his willingness, enthusiasm, and hard working disposition helped make things happen. Thankfully, these qualities are not lost with his passing. One seldom comes across such a talented and committed person.

Mr and Mrs Aukema have been very generous in their thanks for what we did for Louis. But it must be stressed that we did very little, if anything at all, for him and yet he did a great deal for us. This is not false modesty now that he has passed on. Almost all the work Louis did for us was in a voluntary capacity and it is we who received the equipment that he organised, it is our skills that were developed, and we learnt from his example.

Louis did not want to become just another computer expert knowing more and more about what computers are capable of, and doing less and less work with them that is meaningful. I asked him why he was prepared to work with us, where there is little financial reward and little chance of a future career. He said he dreamed of East Africa and wanted to learn a lot about environmental education so that one day he could go and work in the famous parks of Tanzania[1].

It is very hard when a son or daughter passes on. *'I dreamed of Africa'* is a book that was written by Kuki Gallmann (1991), who lost her husband and then her son, while living in East Africa. My wife Liz had enjoyed the book enormously and so when Kuki came to Durban, Liz went to hear her speak. In her talk Kuki said that there had been an overwhelming response to her book from parents who had lost children. She added that many of them had found her book to be of great comfort through the period of their grief. Kuki read this poem at her sons funeral. He, like Louis, had loved nature and passed on when it seemed that he had so much more to give.

> *"Only yesterday morning*
> *we were laughing together;*
> *today I am here with your friends*
> *to bury you, Emanuele.*

---

[1] Louis always loved nature and wildlife. I only heard recently that his father has been an honorary ranger for the National Parks Board for over 30 years - and that his mother is a highly respected archeologist!

To bury a husband was hard,
to bury my only son is against nature
and a pain which words cannot tell.

You were but seventeen,
yet you were a man already
and you could play with life
with a grown man's confidence.

You died knowing you were dying
but you were not afraid.

you were brave and you were handsome,
you were intelligent, and you were generous,
you gave love and you gave friendship,
and you had love, and friends.

You shared with all your smile,

your charm, your help, your enthusiasm....

I am asking: where are you really
as this is but your body?
are you now the hot sun of Africa?
are you the clouds and the rain?
are you this wind, Emanuele,
or are you the sky overhead?

I will look for you always
and I will see you in every flower,
in every bird, in every red sunset.

We have received many messages of condolence to the Aukema family and these have come from all over South Africa and even elsewhere. Last year Louis and Rehana helped provide computer support for a two month environmental education course for people from all over southern Africa. Condolences from those involved in this course are already coming in from Jim and Eureta (in Australia), Mabongi, Tembeka, Rob, May, Fred ..... and many more messages are on the way.

Louis achieved a great deal in his work. Amongst other things he helped:

- Advise the Southern African Wildlife College (currently being built in the Kruger Park) on the type of computer and printing technology that the College should invest in.
- Develop the South African Enviro-Facts series for Internet (Rob Smorfitt is trying to get through to Microsoft to help us get around Louis' password so that we can continue with this project).
- Produce many new resource materials and pamphlets.
- Repair and service the Wildlife Society's computers at the Drakensberg Wetlands Project, Treasure Beach and Umgeni Valley.
- Redesign the Wildlife Society's new logo.

Everyone he worked with sends their love and best wishes to you all. Kim, Clare, Ina, Jeannete and Owen who helped sort out Louis things and prepare this file of his work. Few of us realised the extent of his ability. The pencil sketches he did of birds (the bee-eater) and many others are full of natural talent - and no computers were used here!

Yesterday Malcolm Powell helped organise a tea in memory of Louis and told a few stories of the working relationship he and Louis had. Their overall objectives may have been similar but their natures were very different! Fortunately, both believe in a vision of better environmental education in South Africa. Simon, Mzo, Nathi, Pius, Mike, Joseph and Cynthia helped prepare, and sing, a song in memory of Louis. We recorded what they sang so that I could play the song to you here, today. The song tells of the Creator, who is always giving and always taking, and that is true. Although the song is sung in Zulu and English the meaning is the same. One of Louis' special qualities was that language, culture and race were never an issue. We are all one with him here today.

Inkosi phile
Inkosi thathile (x3)
Mfo Louis lala ngoxolo

The Lord is giving
The Lord is taking (x3)
Brother Louis, rest in peace.

Of course the song makes us sad, but it is right to be sad now. The enthusiasm, willingness and commitment Louis stood for is still with us and we can rekindle that, and honour his memory, by encouraging these qualities in others.

Many others have asked me to convey their regards to you. They include; Tim, Estelle, Chan, Dion, Wayne, Allyson, Heather, Linda, Wendy, Norton, Joe and Tris, Rob Smorfitt (who, with Rehana has offered to help complete, and where appropriate, continue with the projects Louis was involved in[2]), Joe Venter, Gaye Grenfell (always efficient and cheerful when sorting out our finances) and many others whose names I forget but have written alongside this photograph which was taken at Louis' memorial tea so that we could share with you, more fully, today.

If you should ever be travelling in the KwaZulu-Natal Midlands do remember that there is always a hot cup of tea waiting for you and we would be delighted to show you the work that Louis' efforts are helping us achieve.

Baie dankie,

Jim Taylor Nederduitsch Hervormde Kerk, Elardus Park
11 May 1996

---

2 Jakkie Fourie has subsequently also offered his help in this regard.

ENVIRONMENTAL CLUBS 1996 YEAR PLANNER

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues
JAN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
FEB				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29					
MAR					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22 World Water Day & River Day	23 Met. Day	26	27	28	29	30	31				
APR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
MAY			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
JUN						1	2	3	4 5 World Enviro Day			7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
JUL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
AUG				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
SEPT							1	2	3	4 6 Arbor Day		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
OCT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
NOV					1	2	3	4	5	6	7	1 National Marine Day		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
DEC							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

CATCHMENT ACTION KITS 50/50
AUGUST 1993

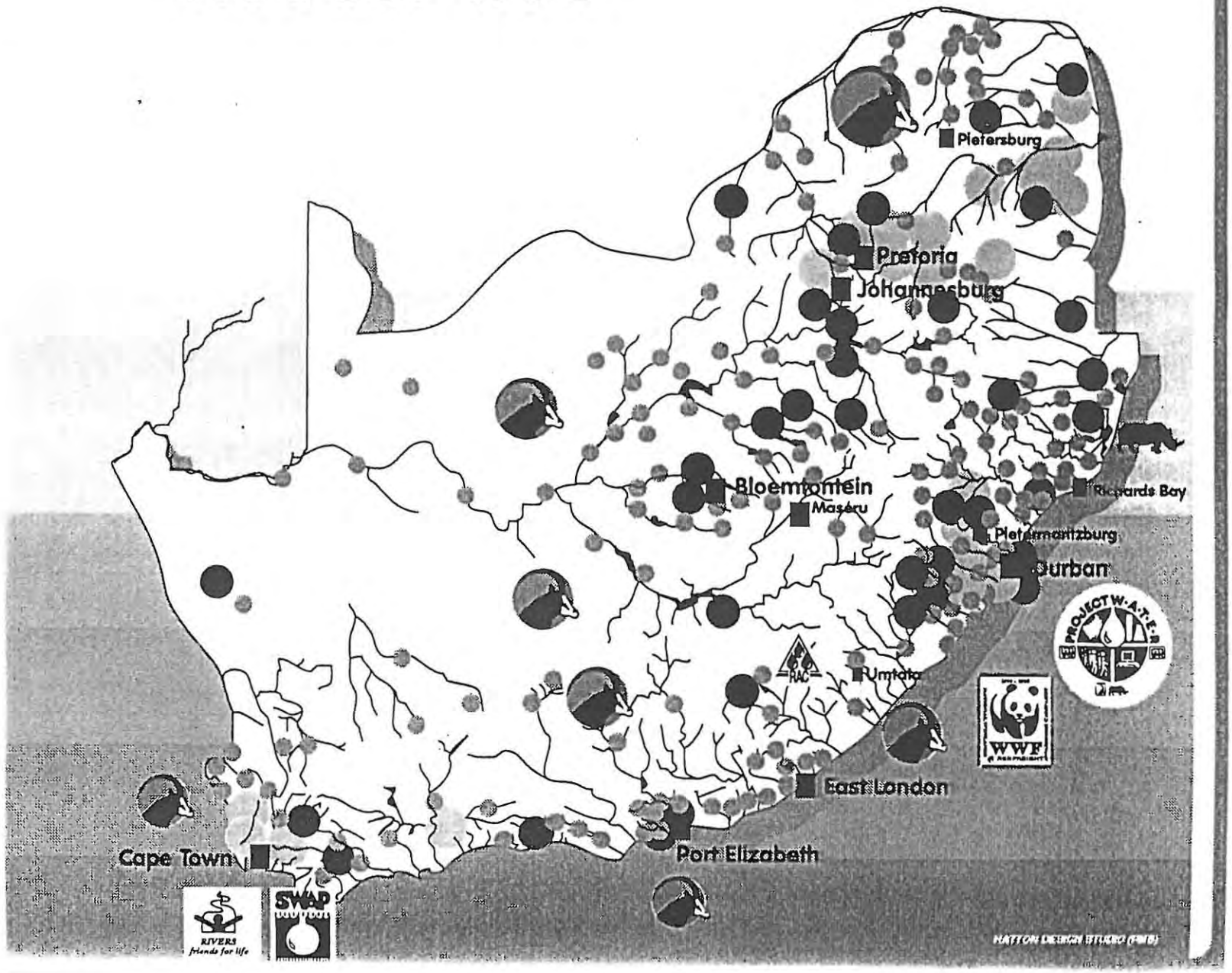
KEY
Action Kits purchased
● = 20 Kits
● = 5 Kits
● = 1 Kit

UMGENI WATER · AMANZI

WILDLIFE SOCIETY
PEOPLE CARING FOR THE EARTH

NATAL PARKS BOARD
NATALSE PARKERAAD

WWF



SHARE-NET RESOURCES

January 1997

Share-Net is an informal network of individuals and organisations collaborating to produce environmental education resource materials. Development of resources, printing and assembly, occurs mainly in Howick, KwaZulu Natal, but an increasing number of resources are produced in other regions.

P.O. Box 394, Howick, 3290
Tel (0332) 303 931 Fax (0332) 304 576

Share-Net is also supported by **SHELL** and **GOLD FIELDS**

HANDS-ON SERIES

Simple guides to ecosystems

These booklets are ideal for those with little environmental knowledge. They can be used both out in the field and in the classroom. The Hands-On booklets are best compiled into two sets: the Inland Library which covers 5 major inland ecosystems, and the Coastal Library which deals with coastal ecosystems.

BEGINNERS' GUIDE SERIES

Finding out about plants and animals

These field guides provide a simple introduction to a selected group of plants and animals such as seaweeds, spiders and butterflies.

WATER TEST KITS

Using the tools of science to explore water

The *Catchment Action Starter Kit* supports the investigation of water quality, including life in the water, water clarity, pH, nitrate levels and the presence of bacteria. The *Coliform Kit* is slightly more complex and enables the user to assess the amount of coliform bacteria in fresh water. Support kits are available to replenish the original kits. The *Green Manual* is a comprehensive guide to water quality monitoring. It provides background information to support the use of the kits, as well as information for users to develop their own water quality monitoring tools.

TOOLS FOR ACTIVE LEARNING IN THE ENVIRONMENT

TEACHERS' HANDBOOKS

Ideas for teachers

The Greenhouse Effect, Arbor Day, Soil is Life!, Water is Life! and *Forest Fun* take a cross-curricular approach and provide background information on each topic as well as suggestions for projects and activities.

ENVIRO FACTS

Information about our environment

The Enviro Facts are 60 fact sheets (also available on computer disc), which provide an overview on a variety of environmental issues eg. sustainable development, rhinos, raptors, war on waste... They are concise, up-to-date, easy-to-understand, South African in perspective and are ideal for project work. Each fact sheet includes a list of 'Further Reading', 'UsefulContacts and'Topics for Debate

ACTION SERIES

Taking action to solve environmental problems

These booklets focus on remedial action.... how to eradicate invader plants, re-vegetate river banks, propagate indigenous plants, grow muthi plants and incema grass.

	PRICE	NO	COST
OTHER RESOURCES			
A Year of Special Days 1997	7.00		
Eco Puzzles (six environmental board games)	5.00		
East Coast Identification Guide	1.50		
Cardboard Library Stand	6.00		
Easy Reference Guides			
English Grammar	3.00		
WordPerfect 5.1	7.00		
WordPerfect 6.1 (Windows)	8.00		
Environmental Education			
Environment and Methods (Trends in EE)	7.00		
The Environment, Development and EE - and EE Policy Initiative (EEPI) - working document	7.00		
Environmental Education Policy Options	8.00		
Making Meaning - A trail guide	7.00		
Creative Writing			
A Tale of our Tree World	6.00		
A Quiet Time	6.00		
Remnants	6.00		
TOTAL			

Please send this order PLUS payment (cheque or postal order) to:

Share-Net
P O Box 394
Howick
3290

Tel (0332) 303931
Fax (0332) 304576

Name .....

Address .....

.....

.....

Tel .....

Fax .....

Order No. (If applicable) .....

N.B. Organisations that will pay on invoice MUST supply an order number.

A cheque / postal order for R is enclosed

Additional Comments

.....

.....

.....

.....

.....

.....

ORDER FORM

April 1997

SHARE-NET

People, Places & Publications for Environmental Education

NATAL PARKS BOARD

WILDLIFE AND ENVIRONMENT SOCIETY OF SA

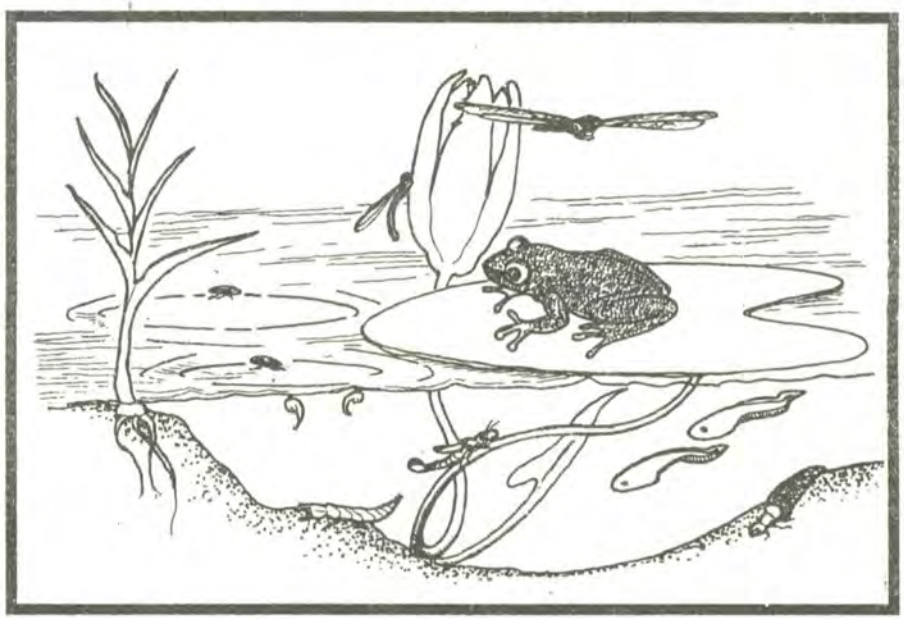
Mondi Paper

WWF-SA

Share-Net is also supported by **SHELL** and **GOLD FIELDS**

Dictionary	Isichazimazwi
adult	endala
body	umzimba
eat	idla
food	ukudla
head	ikhanda
leg	umlenze
plant	isitshalo
riverbank	usebe lomfula
swim	bhukuda
shell	igobongo
underwater	ngaphansi kwamanzi
wing	iphiko
water	amanzi
young	encane

HANDS-ON
STREAM AND POND LIFE



Impilo yasemanzini

TRANSLATED BY
MZO MAPHANGA, PIUS KHENA,
NATHI MAKHAYE, BHEKI NENE

Draft June 1996

WWF-SA

UMGENI WATER · AMANZI

NATALSE PARKERAAD

App E - 7

WATER ORGANISMS: PICTURE REFERENCE SHEET

(Note: Organisms are not to scale)

PLANTS AND VERY SMALL ORGANISMS:



Bank (p1), surface (p2) and underwater p3 izitshalo

iziIwanyane ezingabonakali (p4)

WORM-LIKE CREATURES:




(p26)

leeches (p7) planaria (p5) sludgeworm (p6) unoshobishobi

LARVAE:




mosquito larva and pupa (p16) midge larvae (p15) whirligig larva (p19)



cranefly larva (p17) caddisfly larvae (p23) rat-tailed maggot (p18)

BEETLE-LIKE ORGANISMS:

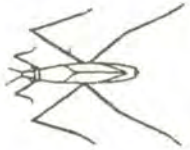
(p19)

imfundamakhwela

scavenger bug (p20)

predacious beetle (p20)





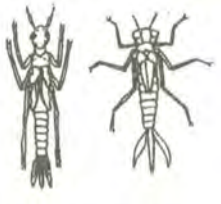

backswimmer (p12) water boatman (p11) water strider (p14)

(p13) ufezela wamanzi

NYMPHS:

p9

udungamanzi



damselflies (p10)

stonefly (p22)

mayfly (p21)

FLYING INSECTS:

caddisfly (p23)

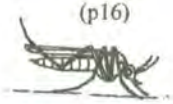
stonefly(p22)

mayfly (p21)

cranefly (p17)

midge (p15)

(p16)



umasikito

(p9)

udungamanzi

damselfly (p10)

CREATURES WITH SHELLS:

(p8)

umnenke

limpet (p8)

(p24)

inkalankala

OTHER WATER ANIMALS:

amaselesele (p26)

water terrapin (p27)

uxamu (p27)


inhlanzi

(p28) izinyoni

(p29)

umthini

water mongoose (p29)

APPENDIX F

NETWORKING

(i) SADC Workshops:
Workshop on Environmental Education for Youth - Windhoek - Hertzman, *SPLASH,* Vol. 10, 1994
Second SADC Workshop on Environmental Education - Gretner, *SPLASH*, Vol. 12, 1996

(ii) *IRDC Workshop on Research Issues in EE in Eastern & Southern Africa* - Taylor & Schreuder, EEASA Bulletin No. 10, May 1995

(iii) Mozambique resource materials development proposal, Taylor & Beswick, 1994

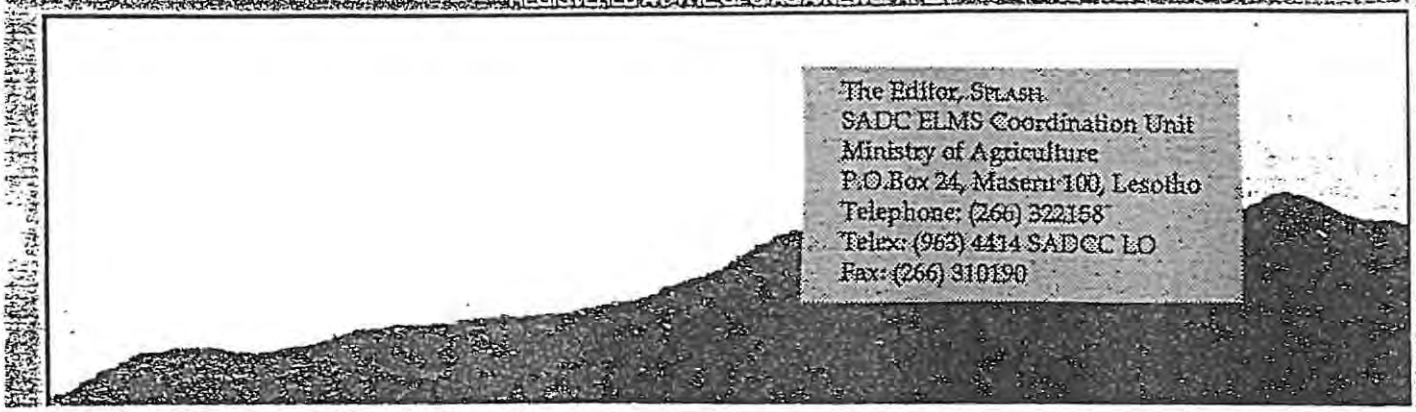
(iv) Response to European EE Survey, letter to Zena Murphy from Jim Taylor, January 1995

Vol. 10 No.1 January-April, 1994

SPLASH

Newsletter for the SADC Environment and Land Management Sector

REGISTERED AT THE GPO AS A NEWSPAPER



Workshop on Environmental Education for Youth

—Windhoek, Namibia

A SADC Environment and Land Management Sector (ELMS) Workshop on Environmental Education for Youth was held between 13-18 March, 1994 in Windhoek, Namibia. Entitled *Creating Awareness*, the workshop was attended by almost sixty participants representing government departments, NGOs and/or Universities in all SADC members States, South Africa and other countries outside the region.

THE PARTICIPANTS COMMENDED THIS initiative, which was characterised by long hours of good presentations from resource persons, intensive discussions and practicals and field trips. The programme included sessions on, for instance, 'Definition of Environmental Education (EE)', 'Trends in Curriculum Development', 'Educational Materials', 'Networking' and 'Community-Based Activities'.

Recognizing EE as a process of creating awareness of the environment, environmental problems and their possible solutions, the workshop noted that EE activities in the SADC region lacked coordination, which had led to constraints in resource allocation and the development of effective EE programmes. Papers and discussions underlined the basic inadequacy of teacher training programmes and learning materials. The obvious, important role that NGOs play in the creation of environmental awareness was also noted.

The workshop formulated a comprehensive set of recommendations, as summarised below.

The quality of policies—where they actually exist—varies considerably from country to country, and this was expressed as a major concern. It is fundamental that each country institute formal policies to enable, facilitate, guide and monitor EE activities. ELMS was requested to approach SADC governments within the following six months, in order to sensitize policy- and decision-makers to the need for developing such policies.

Networking was seen as one of the most urgent needs in the region. Because networking activities cannot start at the regional level (they must first be rooted in each country), all countries were urged to establish their own national EE networks. ELMS will then be responsible for assessing the national networks and assisting one of them to assume the responsibility for regional coordination. Care should be taken to include both governmental and non-governmental institutions in the networking activities.

The peoples of the region have a long history of sustainable utilisation of nature's resources. Traditional knowledge and cultural practices and beliefs must be seen as a resource that must be researched into and included in the educational programmes.

Very little has been done, to date, towards improving the capacity of

A PLATFORM FOR EE NETWORKING

This short report reflects on the SADC ELMS Environmental Education workshop in Windhoek, 14-18 March, 1994, whose overriding objective was to clarify and foster cooperative EE networking in Southern Africa.

The opening speech delivered by Namibia's Deputy Minister of Education set the pace for the workshop with the observation that, after more than twenty years of EE, the world still faces the same problems. "Has environmental education really failed, or does it have inherent weaknesses that have escaped us in our fervour to get the message across?"

He portrayed conventional approaches to EE as "solutions imposed by an informed and benevolent elite." This outlook, reinforced by a conventional wisdom steeped in the metaphors of *target groups*, *messages* and the *converted*, is not only arrogant but can be limiting in that it treats education as a simplistic process of getting messages across. Knowledge is accumulated and then communicated to the *target group*, through any means at the educators disposal, so as to *convert* them. For as long as such education processes endure it is not surprising that EE will fail—in some instances even alienating the very people it seeks to serve. Of course, one orientation of education does entail the sending of messages from a position of authority. This is, however, simply a small part of a greater education process that should also involve *dialogue* among teachers and learners, *encounters* with relevant, real-life experiences and *reflection* on the way we think and act and how we can do this better.

The language of *target groups* and *messages* does have a role in EE, especially where the problem is a straightforward, cause-and-effect circumstance and the solution is relatively simple. But it can be counter-productive when a responsive process is required that accommodates the learners' views, needs and social context. A WWF-UK presentation described this form of learning as a *promotional* approach, in contrast with a *process* model that respects the learners' perspectives. It developed a *Critical Action* orientation, where learners participate in action-research towards solving local environmental problems, and observed that much environmental education in the Southern Africa region is "cloaked in heavy rhetoric."

The stark, yet subtle contrast with other enhanced perspectives was articulated by the Deputy Minister, when he continued with "... build on strength already there." This less arrogant approach acknowledges the values learners may bring into EE and enables a learning engagement that could well lead to better practice.

While some presentations from participating countries re-emphasised international perspectives with little portrayal of local alternatives, others outlined a number of on-going practical, innovative approaches to EE in Southern Africa.

The ELMS workshop on EE provided a useful platform for networking. During a one-day session dedicated to the subject, some examples of on-going activities were provided, commitments renewed, and many simple, coherent outcomes agreed upon. It is now up to individuals or groups of participants to take up the challenge of developing networking capacities for themselves, rather than waiting optimistically for external agencies to do it for them.

JIM TAYLOR, *Wildlife Society of Southern Africa, P.O. Box 394, Howick, Natal, SOUTH AFRICA*

teachers to take on a greater environmental education responsibility. The need to build capacities is obvious. One idea put forward was that, during the next two years, ELMS lay the foundations for the establishment of a regional EE Centre.

Educational materials available to schools at present have little relevance to the region's environmental situation. The workshop recommended that material be developed which are adapted to local and regional needs; and participants were encouraged to actively share materials and experiences.

Funding is definitely one of the limiting factors in the development of environmental education programmes. ELMS was requested to establish a fund to support networking and capacity building activities and the production of educational materials.

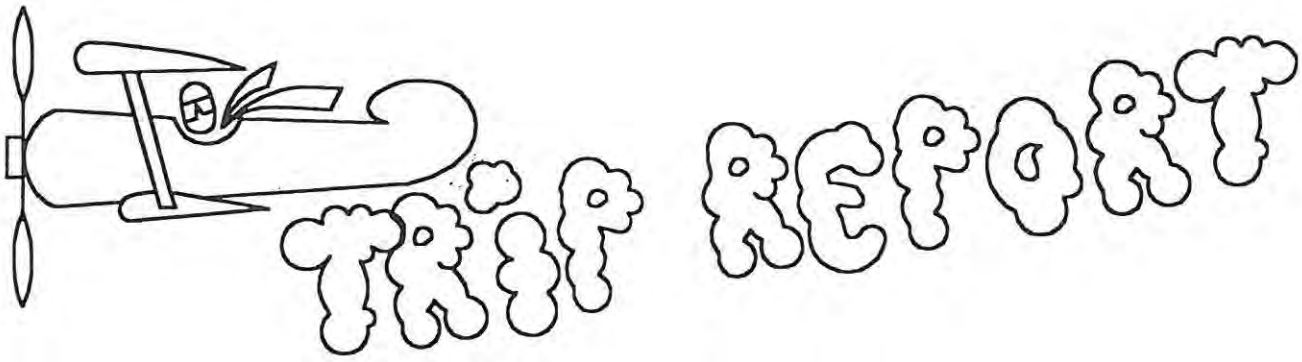
The importance of NGO efforts was repeatedly underlined. They were encouraged to continue to bring EE to all levels of society and trying to bridge the existing gap between governmental bodies and the grassroots.

Finally, participants strongly recommended that the workshop should not be a one-off event. A follow-up workshop should be organised within one year, and ELMS should maintain regular communication with the workshop participants.

The recommendations from the workshop are taken both as a challenge for SADC and as an appeal to member State governments to mount or upgrade environmental education programmes, in close cooperation with NGOs. Another very important outcome of the workshop was the establishment of solid contacts among people and institutions, which are sure to continue stimulating and assisting with their activities long after the workshop. Concrete cooperation agreements were also made, such as an exchange of students between two NGOs in two SADC countries.

The workshop proceedings are currently being edited and will be available from ELMS in due course.

TOMAS HERTZMAN, *Environmental Advisor, SADC ELMS Coordination Unit*



IRDC WORKSHOP ON RESEARCH ISSUES IN ENVIRONMENTAL EDUCATION IN EASTERN AND SOUTHERN AFRICA

Danie Schreuder and Jim Taylor

Following the developments at the Rio Summit, the International Development Research Centre (IDRC), an African based research organisation supported by the Canadian Government, organised a workshop to discuss research priorities for environmental education in Africa. The five day workshop was held in Nairobi, Kenya with 13 African countries represented, mainly from eastern and southern Africa. Four participants from South Africa were invited to attend the workshop. The first three days of the workshop were set aside for presentations by the countries represented. Delegates presented position papers on the state of EE in the various regions.

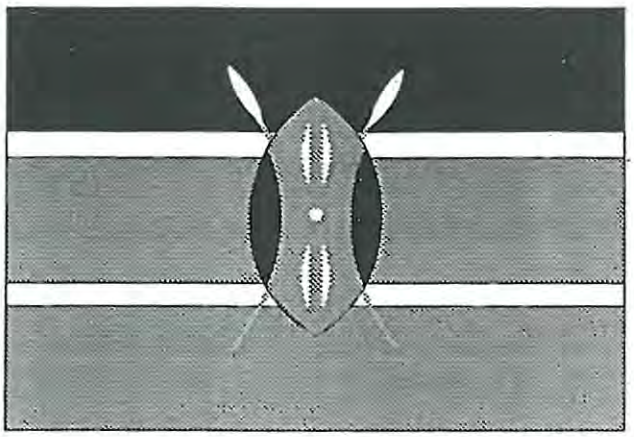
The common factors affecting the development of EE in most areas were the issues of poverty and the deterioration of life-support systems on the one hand, and the endeavour to attain more sustainable living conditions on the other. These issues are aggravated in some parts by political instability and the crippling effects of war. Also evident was a more critical approach to what was termed a "northern" influence in some aspects of EE, with particular reference to resources and curriculum content.

The South African representatives did not go to the workshop with a prepared presentation, as the representatives met at the airport for the first time. Our position paper emerged as a response to some of the other presentations, and took shape on a notebook computer at the workshop. It represents some of the developments in EE locally, and attempts to demonstrate how we have grappled with similar issues, and how this had led to a critique of modernist education ideologies and practices.

In his concluding session, the chairman of the workshop, Dr Kabiru Kinjanjui of Kenya summarised the proceedings before clarifying future research priorities. An interesting feature of his commentary included a synopsis of historical events in EE which have shaped and influenced the concept in Africa, including conferences such as Belgrade and Tbilisi. He proceded to contrast this with another new development "stream" which he described as being represented by the South African presentation at the workshop. This latter approach is challenging the conventional wisdom of EE which still has a strong interventionist orientation.

This emerging stream is characterised by responsive approaches and research which is close to practice and involves people working together as research partners, rather than doing research on people and then communicating the findings. Features of such research include Action Research and Community Problem Solving (ARCPS) and Participatory Rural Appraisal (PRA) approaches.

Emerging from the presentations and discussions were four broad priority areas for research. In South Africa, most of these areas have already seen remarkable developments (see examples below). There



can be little doubt, however, that these are really critical areas, and that future research should be directed at developing these areas further. These are:

1. Capacity building: focusing on skills development and training needs. Locally the Gold Fields Course, specialised Master of Education and Further Diploma in Education (EE) courses at Universities, and local teacher initiatives (Mitchell's Plain, Grassy Park, Bonteheuwel) are excellent examples of such initiatives.

2. Curriculum issues: including the need to apply EE as an essential mechanism in the reconstruction process in Africa. The Environmental Education Policy Initiative is a case in point.

3. Networking and coordination: This area of research is particularly important in promoting cooperation between the Government and Non-Governmental Organisations (NGOs). EEASA has fulfilled this role for many years and could serve as an example of effective networking and coordination that has developed independent of Government support.

4. Educational resource material development: This area of research should focus on participatory processes of resource development. Key areas include:

- materials that support the formal curriculum
- materials that include indigenous knowledge issues. Share-Net and the EEPUS are good examples of such developments locally.

The following presentation was compiled and submitted by the South African delegation at the workshop.

ENVIRONMENTAL EDUCATION - A BRIEF REPORT FROM SOUTH AFRICA

COMPILED BY: Alistair Clacherty (EEASA), Mpho Mogomane (Group for Environmental Monitoring (GEM)), Danie Schreuder (University of Stellenbosch), and Jim Taylor (Wildlife Society of Southern Africa).

This report summarises some perspectives on EE in South Africa:

1. National Policy

South Africa is undergoing a major process of reconstruction. The Environmental Education Policy Initiative (EEPI) was therefore developed to influence the processes of reconstruction from an EE point of view. This process is participatory in nature involving workshops countrywide.

Please see:

Clacherty, AJ (1994) *Perspective of environmental education in formal education and training.* EEPI, Johannesburg.

EEPI (1994) *Environment and Development Education: some policy options for South Africa.* Johannesburg.

Schreuder, DR (1994) *EE and educational reconstruction in southern Africa.* (circulated at the workshop)

2. Emerging philosophies of EE

In South Africa, many conventional approaches to EE are coming under question. Such approaches include:

- the development of messages to be transmitted to (at) target groups
- the development and dissemination of material by agencies
- attempts to coordinate activities by/for others
- awareness creation initiatives.

Such top-down approaches are arrogant in that they involve one group of people making decisions and acting as "experts" on behalf of others. While these approaches persist, environmental and development education will continue to fail. Fortunately, we do have alternatives and these early approaches are being replaced, or where they are appropriate, being complimented by approaches where

education becomes a partnership between people rather than a few, apparently knowledgeable people acting on others (the targets). Such approaches include ARCPS and PRA (see above).

3. Community development

South Africa is a land of contrasts. Unfortunately, many areas have been disadvantaged by political processes such as apartheid. NGOs like GEM are working, especially with disadvantaged communities, to address environmental problems such as waste management and the lack of resources and facilities in townships. In particular, institutional development and capacity building are top priorities. At the cutting edge of EE in South Africa are local, community-based environmental action groups. In such groups it is clear that learning takes place in or from action, rather than through knowledge (messages?) being provided in order for action to take place (i.e. a behaviour change strategy).

4. Research

Conventional approaches to research which often rely on positivist surveys and case studies from outside, are under scrutiny in South Africa. Alternative approaches such as ARCPS and Social Theory are proving more successful and are helping us all build our capacities. Instead of researchers doing research **on** people, research partnerships are evolving **with** people. Through such approaches, teachers and community workers become more confident as researchers themselves, rather than being victims of the research establishment.

6. EEASA and networking

In place of a coordinating organisation, EEASA has emerged as an informal association that holds regular meetings, and publishes bulletins, newsletters and journals. This year the national conference and workshop will focus on EE in Africa, with the title "Progress and Paradox". All are invited to attend EEASA '95 in Bothas Hill in KwaZulu/Natal.

Dr Danie Schreuder, EEPUS, Faculty of Education, University of Stellenbosch, Stellenbosch 7600. Tel: (021) 808-2293 Fax: (021) 883-2403

There was a parrot on the wall
And he said to me
Why are you so small.
I said I'm not small but you are on the wall
So that makes you tall.

Allison Bird (8)
From Toktokkie Volume 16, No.2

Draft proposal for the development and support of
ENVIRONMENTAL EDUCATION RESOURCE MATERIALS
in MOZAMBIQUE

Background

It is common knowledge that science, environment and technology education in Mozambique is grossly inadequate. Resource materials, particularly of an environmental nature, and facilities, are either inappropriate or non-existent (Popov, 1993). Where educational materials are available they tend to be expert developed and disseminated with little participation of users or adaptation to local needs.

In South Africa, however, various projects are exploring participatory approaches to the development of educational resource materials and a growing pool of materials are now available. In some instances these materials are copyright free and redevelopment for educational purposes is encouraged (Taylor, 1994). Share-Net materials currently available range from simple water testing kits to field guides and teacher hand-books (please refer to attached catalogue, Appendix A.). Recently the demand for Share-Net materials has exceeded expectations and materials are being purchased for use in countries such as Angola, Zambia, Botswana and even Tanzania. Although materials of a Share-Net nature have considerable potential for use in southern Africa their full potential will only be realised with the involvement (where possible) of local users, selective adaptation for local needs and training opportunities at a regional level.

The Opportunity and a proposed co-operative workshop

The Endangered Wildlife Trust (EWT) is a registered non-government organisation in Mozambique that is currently supporting various environmental projects in the region. As an organisation that has a strong commitment to environmental education the EWT is anxious to support the educational resource materials needs of Mozambique.

Essentially, this proposal is about these needs and opportunities. The needs are for good quality, low cost environmental education materials for use in Mozambique and the opportunity is to redevelop appropriate South African materials for this purpose. In order to achieve these objectives the EWT is proposing a joint venture with Share-Net, a project of the Wildlife Society, and interested officials and teachers from Mozambique who will meet together at a proposed workshop to consider available materials and identify those appropriate for use in Mozambique. The prime purpose of this workshop will be to develop a co-operative resource materials strategy for Mozambique.

It is further proposed that at this workshop the Share-Net materials, and other materials currently available, will be evaluated to establish their relevance for Mozambique conditions. If materials are thought to be appropriate, and preliminary contact with Mozambicans would appear to indicate that this is the case, the adaptation of materials for Mozambique will be possible.

Other essential needs of the Project

The following needs must be realised if this project is to take place:

1. Funding will be required to cover the costs of a workshop co-ordinator who will be responsible for the setting up and running of the workshop including:
   i. Inviting appropriate participants.

ii. Preparing and circulating background reading.
iii. Organising food and infrastructure requirements.
Estimated cost: R3 000.

2. To fund the costs of some delegates to attend the workshop.
Estimated cost: R8 000.

3. To fund the costs of running the workshop including accommodation, food and materials.
Estimated cost: R2 000.

4. To fund the redevelopment and printing costs of appropriate materials including possible translations into Portuguese. Please note these costs will depend on the materials identified for adaptation.
Estimated cost: R4 000 (Please note the printing of a simple 40 page A5 booklet will cost in the region of R3.50 per booklet if 500 are printed).
Estimated total cost: R13 000.

Phase Two: Possibilities for the future

Although the workshop described above will have the objective of clarifying future materials development some preliminary suggestions could include the following (Please note: budget requirements will be clarified according to specific objectives).

1. The setting up of small teams to re-work appropriate materials.
2. Support for the training needs of teachers and teacher trainers in Mozambique. This could involve attending courses in South Africa or Mozambique complemented by distance learning courses of a longer duration. Please see Appendix B.
3. Appointing and financially supporting a resource materials co-ordinator (developer/researcher) in Mozambique. Ideally this person would be a government employee who already has this portfolio but is failing through lack of training, funding and resource materials support.

This preliminary draft proposal was compiled by Don Beswick (EWT) and Jim Taylor (Wildlife Society) for wider critique and editing.

Share-Net, Howick, 5th October 1994.

References:

Popov, O. (1993) *Problems and Change in Science Education in Mozambique.* Unpublished research report, National Institute for the development of education, Maputo, Mozambique.

Taylor, J. (1994) *A Case Study of Share-Net.* Unpublished preliminary research report. Share-Net, Howick.

**** File Copy ****

Zena Murphy
Commonwealth Environmental Education Programme Officer
European Research Centre on EE and Development
University of Bradford
West Yorkshire
BD7 1DP
U.K.

6 January 1995

Dear Zena

RESEARCH ON ENVIRONMENTAL EDUCATION INITIATIVES IN SOUTH AFRICA

It was good to meet Chris Taylor in Namibia and I am pleased he passed our particulars on to you. I have done my best to complete the questionnaire and enclose it for your information. If I can be of further assistance please don't hesitate to contact me.

I have just commented on a similar questionnaire for the ECoSA programme of ICCE (based at Greenfield House; Guiting Power, Cheltenham GL54 5TZ). ICCE are also surveying environmental education initiatives and networks in this country and I thought it would be useful to point out various similar research initiatives to them. Some of this information is repeated below for your information.

There are a fair number of initiatives in southern Africa that aim to discover or reveal what is happening in EE. The most comprehensive I am aware of was commissioned by SADC (Southern African Developing Communities) and I am sure Chris will have given you copies of these reports from the Namibia workshop, but if not, you could get the information from David Ebbutt (Fengate House; Horse and gate Street; Fendrayton; Cambridge CB4 5SH. Tel: Swavesey 0954-30240). David helped edit the final report. This large scale survey involved local people providing information, it did not include South Africa, however.

Another similar initiative is a proposal by USAID who wish to conduct a survey of environmental education in South Africa in collaboration with the Environmental Education Association of Southern Africa (info. on EEASA attached). One wonders at the value of these surveys. Often the people who learn the most are those who do the survey! I know many local people are critical of surveys and will quote from a reaction to USAID in this regard:

> *"The need for an assessment of existing EE initiatives and programmes has been questioned in the light of the disempowering nature of surveys as 'academic exersizes' which ask people to complete questionnaires/attend workshops for the ultimate sole benefit of those experts who design, execute and interpret the assessment. The question about teaming up with USAID specifically relates to past experience, direct and indirect, which made people wary of the disempowering nature of small-fry engagements with a powerful, expert driven funding body with a technicist, behaviourist orientation to development and education. The dismal record of development projects in Africa also applies." (Eureta van Rensberg, EEASA.)*

We are hoping USAID will reconceptualise their research accordingly .....

EEASA itself does have a comprehensive list of individuals and projects involved in environmental education recorded in the Share-Net telephone directory (a running database of people, organisations and specific interest areas). A print-out of this database is available from Share-Net. The proceedings of the EEASA workshop that was held in Howick in 1991 also provides details of EE activity. These proceedings are available from EEASA (I can organise copies of both the above for you if you wish).

Two other surveys include EE within their rationale. It is interesting, and encouraging, to note

that EE is increasingly being conceptualised as part of other disciplines and not a separate entity. These surveys are "Projects Speak for themselves" (Levy, 1994; P.O. Box 1578, Houghton, 2041, South Africa) now in its second edition, and the Bridge survey (apparently also available in a booklet - but I haven't seen one). Both are South African examples with a science orientation. The ANC/World Bank/ODA did an interesting survey out here recently. A local person travelled around SA for two weeks with a foreign consultant. They looked critically at everything they possibly could and produced quite a good report on science and mathematics and they certainly learnt a great deal (Kahn, M., 1993; *Building the Base*, Kagiso Trust, Johannesburg). The research design of the "Projects Speak" survey was probably the most coherent and helpful of all the above, however. We have found that survey research works well when conducted around a focused problem. e.g. how should conservation agencies respond to requests for information? Linda Paxton, a colleague of mine, did a very useful masters thesis around this problem and it was very helpful indeed.

Of course we do have misgivings about survey based research and the unintended outcomes that are possible. These outcomes may serve to perpetuate the "victimlike" nature of the respondent as well as the inadvertant myths carried by the questioner. Once again we fill in a questionnaire for someone outside!

In your questionnaire (question number 5; *What are the target groups of the network*) I would like to make the following observation, if I may. The ideology underlying the question is steeped in a "target group" outlook. This is very limiting and potentially alienating. It assumes all sorts of things about education processes including the fact that knowledge is a process of transfer from us to them. The assumption that a network can have a target is nonsense. A network is just that - collaborative activity to benefit all participants. Not a social engineering activity by some to cause change in others. That networks are, or should be, developed for target groups is flawed. The more we learn about the processes of EE the more we realise how much we need to be educated, aswell as the people we work with, and become cautious of the arrogance of target groups etc. Them and Us is divisive and we need to build bridges through EE, especially now.

This question (no. 5. and some of the others) has a strong structural functionalist (target group, message across) disposition that could become harmful to more open approaches to EE.

I suppose surveys are a necessary evil. Lets make them short, sharp, painless and cheap; although unfortunately, necessarily dirty. Questionnaires have a habit of revealing the obvious and perpetuating the dispositions of the compilers. They also create their own social context that leads to particular responses to particular questions that have little validity outside this context. A questionnaire also tends to reveal basic or trivial information accurately e.g. my name and address; but falls short when revealing meaningful information e.g. "How we conduct a responsive EE strategy". Having said these harsh words I feel your questionnaire is OK other then the "target group" issue. It will reveal background information on which to base further study and consider possible support.

I hope the above is not too negative but it may be best to share misgivings at this stage! I am sure you are aware of most of this anyway!

You may be interested to know that next year, 18-21 July, we are holding quite a big conference/workshop in Natal that may be a forum to assess, confirm or evaluate/reconsider what your research is revealing, as a large number (and range) of EE people are likely to attend from all over southern Africa.
Thank you for your interest in EE in South Africa,

Yours sincerely,

Jim Taylor (Wildlife Society Extension Service and Share-Net)