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Values Education in a South African Geography Classroom

Stephen Sadie

A dissertation submitted to the Faculty of Education, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

This study involves researching the key factors in the development of value and attitudes on grade 11 geography learners at Sacred Heart College. This required the design and teaching of three units on the themes of

- Informal Settlement
- Water Access and Conservation
- Coal Mine at the Vaal River

The research methodology is based on action research and complemented by the constant comparative method. This research is a case study in which the teacher is a participant observer in the process. The research is designed to move beyond other studies on values education in geography, which continue to highlight the need for values education and justify its purpose. This study proceeds from the assumption that values education is necessary but instead seeks to understand the dynamics and factors involved in bringing about a change in the values and attitudes of the learners. In this sense, the study is a case study of a small group of learners to try and understand the intricate factors, which allow values education to occur.

The study also critiques the lack of South African examples of values education in local textbooks and proceeds to design and implement three units of South African value-laden lessons. This study gives impetus to OBE in South Africa, which has an important emphasis on values and attitudes. The study is also located in the context of Sacred Heart College, a school well known for its multicultural character and innovative curriculum programmes. The study investigates the factors which, either advance or inhibit values education such as teaching strategies, contextualisation, multiculturalism, the role of the teacher, politics, group work, action and learning support materials.

DECLARATION

I declare that this dissertation is my own unaided work. It is submitted for the degree of Master of Education in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.



Stephen Sadie

29 January 1999

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- The Sacred Heart College Grade 11 learners in 1997.
- Karen for her ongoing care and support.

ABBREVIATIONS

AGTA Australian Geography Teachers' Association
DET Department of Education and Training
DES Department of Education and Science
EIA Environmental Impact Assessment
EIC Education Information Centre
GDE Gauteng Department of Education
GICD Gauteng Institute for Curriculum Development
GYSL Geography for the Young School Leaver
HSS Human and Social Sciences
IEB Independent Examinations Board
IGU International Geographical Union
IS Integrated Studies
LO Life Orientation
NDE National Department of Education
NEPI National Education Policy Investigation
NETF National Education and Training Forum
NQF National Qualifications Framework
OBE Outcomes-Based Education
RDP Reconstruction and Development Programme
RWB Rand Water Board
SHC Sacred Heart College
SO Specific Outcome
TED Transvaal Education Department
YCS Young Christian Students

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CHAPTER 1

INTRODUCTION

1.1 Aim of the Study

This study is titled 'Values Education in a South African Geography Classroom'. The precise aim of this study is to investigate the factors which contribute to the development of values and attitudes of grade 11 geography learners at Sacred Heart College. In this sense, the research is a case study of one particular grade in one particular school. This research will attempt to answer a number of interrelated questions:

- What factors are responsible for the development of values and attitudes in learners?
- To what extent do the learners' values and attitudes change in the course of these lessons?
- What do the lessons as they were designed and taught reveal about values and attitudes?
- What insights does this study afford geography education with respect to:
    - The role of the teacher as a facilitator of values and attitudes?
    - Appropriate strategies for teaching values and attitudes?
    - The link between action and values and attitudes?

Much of the literature on values education in geography repeats itself on why values education is an important part of the educational process. There are very few studies, which provide direction on how values education should be done. Fien and Slater (1980, 47), for example, bemoan the fact that the majority of articles fail to go beyond the "repeated verification of the arguments to the provision of detailed advice". There

are even fewer which document a particular case study. This research study will attempt to even out the balance.

1.2 Rationale for the Investigation

There is a dearth of research in South Africa in the area of values and attitudes in geography. Nyikana (1988) is the only person to have undertaken research on values and attitudes in geography. Whereas Nyikana investigates values education with broad strokes, this study will be a more detailed study on a smaller scale.

Most syllabus documents, internationally and South African, refer to a threefold breakdown of geographical objectives i.e. content, skills, values and attitudes, (IEB, 1995), (IGU, 1995), (NDE, 1995), (TED, 1984). However, values and attitudes appear to be the poor cousin to content and skills. Informal discussions with teachers, as well as interaction at workshops and conferences have led me to the opinion that many teachers pay lip service to values and attitudes. My observations are also based on my participation in geography interest groups. I was an active member of the Gauteng IEB user group between 1993 to 1998, where we held discussion on numerous issues including values and education. Often values and attitudes are tacked onto the end of the lesson as an afterthought or, the teacher tackles them only when they arise spontaneously in the class. Very few teachers plan individual value-laden lessons in advance, let alone a whole unit. The geography syllabus is predominantly content-based; consequently teachers are driven towards completing the content, in preparation for the examination. According to Rawling (1986a, 63), "few, if any, topics in geography can be dealt with in a coherent way without reference to the influence of attitudes and values".

Most South African geography textbooks lack values exercises. Therefore teachers sometimes have to rely on foreign values exercises. South African values education still depends heavily on British examples. South African geography is dependent on British geography in both a positive and a negative sense. Positive in that major curriculum

developments originate there but also negative in that South African geography has yet to find its own feet (Crush, 1994), (Wesso, 1994). As Soni (1992, 87) notes, geography was primarily concerned with the "application and testing of Anglo-American and Eurocentric spatial models". Wesso and Parnell (1992), in a comprehensive historical overview of geography education, trace geography's development in South Africa through different contexts from colonialism, apartheid, and positivism to the new South Africa. They conclude by asserting that South African geography needs to be africanised and put more clearly into a third world context. In the South African context, it is argued that values and attitudes need to be contextualised in a non-racial post-apartheid society (Ramutsindela, 1997). Contextualisation is a major challenge facing South African geography. In another setting, Phiri (1987) has successfully demonstrated the contextualisation of value-laden geography units in relation to Zambian geography.

Values education has grown in stature in geography over the last two decades (Wiegand, 1986). However, the process is a very uneven one with many geography teachers paying no more than lip service to values education. Much of what passes for values education still stresses the cognitive domain (Quina, 1989). A lot of research has gone into the skills required in developing the cognitive domain while the affective domain remains poorly developed. While nearly all geography teachers would agree that values education is an important part of the discipline there remains much confusion over how it should be done (Fien and Slater, 1980).

For many teachers, values education is a controversial area. Some geography teachers would claim that this should not be dealt with in the geography classroom and is best left out. According to Wiegand (1986, 58), "not all geography teachers would accept the role of values as a natural part of the geography curriculum". I agree with Smith (1978) who asserts that "Whether we like it or not every part of teaching is based in some way upon values: the values of the students, the teachers, the subjects, the resources, the institution" (as cited in Fien and Slater, 1980, 47).

Geography has a role to play in educating students to be responsible citizens (Maye, 1984), (DEQ, 1989). Ramutsindela (1997) in particular demonstrates how citizenship was viewed as separateness in apartheid regional geography and calls for the development of a citizenship of the new South Africa. Particularly as South Africa has become a democracy, it is important that the curriculum should equip students to face critical and controversial decisions e.g. justice, concern for the environment, human rights, respect for other cultures.

This is in line with other curriculum frameworks, which strive for democratic values. The Queensland Department of Education (1989, 5), for example, lists ten core democratic values to develop affective learning i.e. "respect for reasoning, respect for truth, fairness, acceptance of diversity, co-operation, justice, freedom, equality, concern for the welfare of others, peaceful resolution of conflict". Given South Africa's appalling crime rate and the disintegration of the moral fibre in society, the stress on values is all the more important. Religious leaders convened a moral summit to sign a code of conduct, beginning a process of moral renewal (Nolan, 1998).

It appears to me that geography as a subject in the curriculum is well placed to develop the affective domain in learners. According to Conacher (1993, 32), geography is "perfectly positioned to make a significant contribution to education in South Africa - particularly the so called New South Africa". It is precisely the area of values education which provides "many opportunities for pupils to examine their values, to test values in simulated exercises... and to articulate, debate and discuss those values until they become internalised" (Conacher, 1993, 32).

1.3 Context of Curriculum Change

This research study occurs in the context of major restructuring of the curriculum. In this process, the need for values and attitudes has received significant prominence. This process of curriculum change received a kick-start with South Africa's first democratic elections. The new government promised to make sweeping changes to the old

curriculum. The NETF managed this process of modifying the curriculum. Far from making any broad changes, the process revolved around the limited brief of removing inaccuracies, outdated material, contentious content (e.g. racist or sexist), and consolidating the core syllabuses of the old segregated education departments (NDE, 1994).

In terms of the geography sub-committee, the process was limited and disappointing to those geographers who were expecting major changes. With respect to changes to the syllabus, a number of gender changes were made, particularly in relation to "man, mankind, man-land relationships" (NETF, 1995, 2). Keats (convenor of the subcommittee) added that new topics were brought in to "bring the syllabus into the 1990s like AIDS, refugees, Ozone, health, and women" (Sadie, 1995a). Furthermore, Keats argued that some of the "wrongs of the past needed to be rectified, for example in the primary school, agriculture was always formal, white, western agriculture so we brought in subsistence agriculture" (Sadie, 1995a). Racist sections, for example, in the lower standards where learners are required to study "an interesting tribe in Africa" were also looked at (NETF, 1995, 2).

At about the same time a number of geographers were clamouring for changes to the geography curriculum. Turner (1993, 38) called for curriculum change in terms of the changing demography of geography students: "In 1970, 70% of all the people writing geography were white candidates. In 1992, 70% of the candidates writing geography were black candidates". Earle, on the other hand, described the geography curriculum as outdated: "Schools are using the curriculum introduced in 1982 which was developed in the 1970s and thought of in the 1960s and is therefore out of date" (Hurry, 1994a, 4). Geography conferences such as *The Future of Geography in the South African School Curriculum: Reality, Relevance and Response* (Durban) and *A Future for Geography in Education* (Pretoria) assembled around the theme of curriculum change. Hurry (1994b, 19) compiled a collection of articles, which analysed the "role of school geography in the transformation of South Africa towards a just, democratic, stable and sustainable society". New syllabuses were even compiled in anticipation of major curriculum

renewal (Singleton, 1994). Some calls for the transformation of geography were limited to the changing of names as in Van Rooyen's (1993) call for *Aardrykskunde* to be changed to *Geografie* (as cited in Ramutsindela, 1997). In 1995, I proposed five criteria for a more relevant geography curriculum. These were that geography should be more critical, more multicultural, and more integrated; the subject should have new content and curriculum renewal should be more democratic (Sadie, 1995b).

Values education in geography came under scrutiny in this process. Conacher suggested that the values approach in the past had the wrong emphasis. He posed the question as to whether "schools have been too involved in values transmission and missed the opportunity to engage pupils in meaningful educational activities that enables them to articulate, clarify and be responsible for their own values?" (Conacher, 1993, 27-28).

In 1996, the NDE decided on a major new curriculum framework called Curriculum 2005, which would be driven by OBE. The adoption of the OBE framework entailed a paradigm shift from a transmission model to a more critical one. This was a change from the traditional inputs of a syllabus-driven education to an outcomes-based education. The approach was to start with the intended outcomes and then to design downwards all the required educational processes to produce the intended outcomes. Outcomes are divided into critical and specific outcomes. Critical outcomes are broad cross-curricular outcomes e.g. problem solving, while specific outcomes are "contextually demonstrated knowledge, skills and values, reflecting essential outcomes" (NDE, 1996a, 26). Syllabuses would be replaced by curriculum frameworks which would provide the ideas and approaches necessary for achieving the desired learning outcomes (Morris, 1996).

The inclusion of values and attitudes has risen to the fore with the introduction of OBE. Most policy documents on OBE give major prominence to the inclusion of values and attitudes:

> "Based on the philosophy that all learners can learn, Outcomes-Based Education clearly defines what learners are to learn:
>
> - Knowledge

- Their understanding
- Skills
- Attitudes and values" (NDE, 1997, 22).

Although there is unanimity on the need for values and attitudes there is surprisingly little attention given to the theoretical foundations of this decision or the processes by which values education should be implemented. In this regard, this research study hopes to fill some of this glaring gap. The policy documents of the National Department of Education and the Gauteng Department of Education stress values and attitudes but stop short of providing much direction on how they should be taught. With the exception of Gultig (1997), most of the secondary sources on OBE make only passing reference to values and attitudes (Musker, 1997), (Tiley, 1997a), (Tiley, 1997b). For example, Pahad (1997) in discussing assessment and the NQF, does not indicate how values and attitudes should be assessed.

The place of geography has changed dramatically under OBE: it is now placed together with history and civic education under the HSS learning area. The human and social sciences have three focuses: human and social processes and organisation; environment, resources and development; and participatory citizenship and civic education. All nine of the HSS specific outcomes have implications for values and attitudes. Furthermore, the NQF is based on clear principles, including relevance, which would highlight the need for values education.

The inclusion of geography into the HSS learning area will have major implications for the subject. One of the implications of this move will, in all probability, raise the profile of values and attitudes significantly. In this regard, this research study could plot out some ideas on the possibilities and pitfalls of handling values and attitudes in the HSS classroom.

1.4 Context of Sacred Heart College

This research took place at SHC, which is well known, for its multicultural character, its religious identity and its curriculum innovation. The research was conducted in 1996 and 1997. It is important to understand the dynamics at SHC during this period as this was the context in which the research was carried out.

The multicultural character of the college began in 1977 with the admission of black (including Indian and Coloured) learners. There were fewer in the early years and many more in later years so that the student body is now predominantly black. SHC was one of the first independent schools to open in significant numbers. In 1980 the doors of SHC were also opened to girls resulting in a range of other changes. The influx of black learners had direct repercussions on the curriculum. In fact, it gave birth to the IS programme which started off as a bridging programme for disadvantaged learners from the townships. It eventually became the mainstream curriculum for all because of the success of the programme. Christie (1993, 114) specifically locates the origin of integrated studies as a "response to school desegregation and the schools crisis".

The opening of Catholic schools occurred and was seen as part of the broader church - state conflict. Even though Christie points out that this struggle was limited given the fact that these schools still depended on state subsidisation: "What the open schools movement aimed for was the limited but sustained alternative to segregated education, achieving what they could within existing structures" (Christie, 1990, 37). There is no doubt that the open schools were a significant component in the struggle for a nonracial democratic education. SHC was centrally involved in and at the forefront of the open schools movement.

Generally a real non-racial community at SHC has developed partly because the college has had much longer than most other schools to develop this tradition. Most of the learners are from middle income families, which can afford the relatively high school fees. This allows

the college to have smaller classes, lower teacher-learner ratios, better-qualified staff and a wider choice of subjects.

A second important aspect of the SHC context is its religious identity. It was founded as a Catholic school. This gives the school a religious flavour even though it has shifted from an exclusively Catholic identity to more of a multi-faith approach. Not only is the school religious in general but its religious identity is more specifically "motivated by the gospel values of justice, reconciliation, and love" (SHC, 1994, 1). In the same vein, the mission statement of SHC (1994, 1) takes an option for the disadvantaged: "The college seeks to pay special attention to the affirmation of those who have been historically marginalised and oppressed".

The third aspect of the SHC context is its focus on curriculum development. SHC has come to be seen as a progressive school because of the significant number of high profile political leaders who have children there. However, the progressive nature is more pertinent to the curriculum changes that have occurred at SHC. SHC has been proactive in educational reform. It did not wait for a new government to make educational changes. Instead it began experimenting long before the advent of a democratic government with curriculum changes so that a number of educational officials particularly from the old education departments have visited the school to study these changes. The college is a shining example of schools-based curriculum development.

Most of the teachers are highly innovative in their particular disciplines. A number are involved in curriculum initiatives, for example, the IEB user groups. Generally they are experimenting with curriculum innovation in their subjects. In addition to the IS programme, mathematics, science and English in the lower secondary school have also embarked on major curriculum initiatives. The college has also attracted teachers who empathise with its non-racial progressive goals and aims. Not only does it attract teachers from the outside but the college has implemented a host of professional staff development measures to continue the multicultural character (Sadie, 1995c).

The school published eleven Integrated Approach Series textbooks, which have made their mark on the style of school textbooks. These textbooks were tried out and tested in the classroom in the process of writing. The textbooks were a team effort with all teachers in the IS department actively giving feedback on the textbooks. There was generally an air of curriculum development at the college. While not calling itself OBE at the time, the approach of IS was very similar to OBE with its emphasis on skills and values/attitudes. Group work was central to its thrust, as was continuous assessment.

The IS department plan (SHC, 1995, 1) listed the values and attitudes that it was aiming at:

> "To develop values and attitudes that are appropriate to an open and just society by:
>
> 1. educating for tolerance;
> 2. challenging all kinds of prejudice, particularly those that arise along lines of class, race, gender and age;
> 3. educating for democracy;
> 4. building a national culture;
> 5. developing an ecological awareness and a concern for the environment".

IS had an overt approach to values. It dealt with hidden bias on a regular basis. Learners were always encouraged to ask questions and to articulate their values as much as possible. According to Butler *et al.* (1992, 13) the recognition of values in a curriculum is an "important corrective to technicism, vocationalism and the traditional emphasis on content".

One has to take into account that the grade 11 learners in the present research would have been through IS. Different learners would have appropriated the above values and attitudes to varying degrees. The geography lessons at grade 11 level could then build upon this foundation. Certainly the learners would have participated in a number of lessons where values and attitudes would have been focused upon. In an evaluation report of IS, 65% of senior learners and 71% of junior learners found that integrated

studies was helpful in understanding the world (SHC, 1991). 48% agreed that integrated studies encouraged learners to question their values, a third were in between and 19% disagreed. One learner commented that "IS taught me a different way of looking at certain aspects of life and made me more tolerant of other people and how to respect them. This school will be well recommended by me to anybody and it teaches us great values and morals" (SHC, 1991, 25).

The IS programme at SHC has been the subject of a number of studies (Brooke, 1991), (Butler *et al.*, 1992), (Christie, 1993), (Ranby, 1994a). Christie (1993, 119) recognises that teaching values and controversial issues "has proved to be one of the most challenging dimensions of the IS programme". Fortunately I also taught IS to grade 8s and was head of the IS department. Therefore I was well aware of the difficulties and challenges of handling controversial issues in the classroom.

The present study therefore has to take into account the context at SHC. The grade 11 learners on whom the research was conducted were obviously affected to varying degrees by the multicultural, religious and curriculum context prevailing at SHC during the period under consideration in the study.

1.5 Limitations of this Study

The lessons were designed and implemented in 1996 until mid-1997. From mid-1997 to 1999, I wrote up the research. While I was writing up the study, OBE burst onto the curriculum scene. As my writing continued, there were all sorts of developments and changes within OBE in general and in the HSS in particular. Certain ideas only developed with time as schools began to implement OBE. I was involved in the training of teachers in OBE in a district and I was well aware of the initial confusion, which was prevalent. Some of the earlier texts on OBE were rather sketchy. As time progressed, a better understanding of OBE emerged. The changing nature of OBE obviously had an impact on the study.

From the outset let me state some of the shortcomings of the research report. When I left SHC college mid-1997 to take up a post in the GDE as an HSS facilitator, I had not completed all the research I had hoped to do. I had intended interviewing more learners which, I was not able to do. In the process, I did not have the time to administer a pre- and post-test on the second unit on water access and conservation. Notwithstanding these shortcomings, I believe I have accumulated sufficient research data to write up the research report satisfactorily.

I did a pilot study with the grade 11 classes of 1996. The main research involved the grade 11 classes of 1997. There were two geography classes in each year i.e. 9G1 and 9G2. The names of the learners have been changed. The class was a multicultural class. As much as possible, the pseudonyms reflect the original cultural background. Tables 4 and 5 in Appendix J give a breakdown of the learners in terms of gender and race.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The literature on values education in geography has been growing steadily. In the 1970s values education was picked up more in other subjects like development education, peace and world studies, and environmental education, leaving "geography a squeezed-out lemon of map skills, regional description, and over-simplified models" (Wiegand, 1986, 52). However, by the 1980s values education had become more widespread in geography itself. There was considerable debate on the need for values education throughout the 1980s. An analysis of recent literature in geography education reveals that in the 1990s, values education was accepted as an integral part of geography (Slater, 1995a). The importance of the topic is acknowledged by the IGU's convening of a special conference on *Values in Geography Education* in April 1997 (Naish, 1997a). The last section of *New Directions in Geographical Education* focuses entirely on values education (Boardman, 1985). Both the *Handbook for Geography Teachers* (Boardman, 1986) and *Geography Teachers Handbook* (Bailey and Fox, 1996) have sections on values education.

There are three essential aspects to understanding what a value is. Firstly, a value is a judgement. A value can have a positive or negative connotation:

> "Values are our standards and principles for judging worth. They are the criteria by which we judge 'things' (people, objects, ideas, actions, and situations) to be good, worthwhile, desirable; or, on the other hand, bad, worthless, despicable; or, of course, somewhere in between these extremes." (Shaver and Strong, 1982, 17)

Secondly, one's values have a bearing on one's actions and lifestyle:

> "Values are enduring personal beliefs about the morality of things. Values lie underneath attitudes we form to issues and the judgements we make about specific actions, ideas and goals. Values, in effect, are the ethical principles by which we live." (Fien and Slater, 1980, 48)

Thirdly, values and attitudes should not be confused with each other nor should they be used interchangeably. Slater (1982) provides a helpful distinction between values and attitudes:

> "Attitudes are defined as packages of beliefs which influence us in decisions. Attitudes are those beliefs which, when focused on a specific object or situation, predispose one to act in a preferential manner. It is the idea of revealed preferences in relation to an object or situation, which distinguishes attitudes from values. The first are more specific, the second more general in applicability. Attitudes are value expressive." (as cited in Hopkin and Morris, 1987, 3)

The key theorists on values education in geography are: (Bailey, 1983, 1986a, 1986b), (Dinkele, 1976, undated), (Fien, 1980, 1992, 1993a, 1993b, 1995), (Fien and Gerber, 1988), (Fien and Slater, 1980, 1981, 1985), (Gill, 1982, 1983a, 1983b), (Hicks, 1980, 1981, 1986), (Huckle, 1980, 1982, 1983a, 1983b, 1985, 1987, 1997), (Lam, 1988), (Maye, 1984), (Naish, 1997a, 1997b), (Phiri, 1987), (Rawling, 1986a, 1986b), (Slater, 1982, 1983, 1989, 1992, 1994, 1995a, 1995b, 1997), (Wiegand, 1986).

It should be noted that the bulk of the debate on values in geography education has occurred in Britain. South African contributions have been few and far between: (Clacherty, 1988), (Conacher, 1993), (GDE, 1999a, 1999b), (GDE/GICD, 1998, 1999), (NDE, 1996a, 1996b, 1997), (Nyikana, 1988), (Ramutsindela, 1997), (Ranby, 1994a, 1994b).

Values education in geography draws on the broader theory of values education. Some of the key theorists are: (Dewey, 1975), (Henerson, Morris, and Fitzgibbon, 1978), (Kratwohl *et al.*, 1964), (Peters, 1980), (Quina, 1989), (Shaw and Strey, 1982), (Shin, 1980), (Stradling *et al.*, 1984), and (Tomlinson and Quinton, 1986).

These contributions will be analysed under various categories.

2.2 Taxonomy of Values

Whilst most educational theory concentrates on the cognitive realm, attitudes and values fall predominantly (but not exclusively) into the affective domain. One way of describing this difference is to say that the cognitive domain covers the 'head' while the affective domain covers the 'heart'. Bloom (1956) divided objectives into three domains i.e.. cognitive, affective and psychomotor. Bloom's taxonomy is well known in describing the different levels of cognitive skills, i.e. knowledge, comprehension, application, analysis, synthesis (Quina, 1989). What is less well known is Bloom's work together with Krathwohl and Masia developing the affective domain which also has a number of levels i.e. receiving, responding, valuing, organisation, and characterisation by a value or a value complex (Krathwohl *et al.*, 1964). Kratwohl's taxonomy provides an understanding of the structure of the affective domain. Just as cognitive skills move from lower to higher order, there is a similar development of affective skills. The movement along this continuum is described as a process of "internalisation" (Senathirijah and Weiss, 1971, 18). In other words, the more a learner takes on particular values the more he/she internalises those values and begins to act from that value base. This gradual process of movement occurs from simple to complex and from concrete to abstract.

Similarly, Raths *et al.* (1966, 30) have also developed their own hierarchy which has a similar logic:

"Choosing:	1.	freely
	2.	from alternatives
	3.	after thoughtful consideration of the consequences of each alternative
Prizing:	4.	cherishing, being happy with the choice
	5.	willing to affirm the choice publicly
Acting:	6.	doing something with the choice
	7.	repeatedly in some pattern of life".

Geography has tended to display a preoccupation with the cognitive domain (as is demanded by syllabuses) and a downplaying of the affective domain. The question of balance between cognitive and affective domains is crucial. It is argued that unless the cognitive and affective domains are equally developed, we will not be educating the 'whole person' (Quina, 1989). Even the commendable development of activity-based learning has tended to focus on the cognitive domain. Peters (1974) ascribes greater importance to the cognitive aims of education and downplays the affective side (as cited in Slater, 1995a).

At the same time there needs to be a connection between the affective and cognitive domains. Schnack (1995, 28) describes this connection succinctly, "connecting emotions, values, knowledge and action is an important part of the educational process". It is common practice to separate the cognitive and affective domains; however, Quina (1989) argues that the use of affective objectives creates the possibility of developing higher level cognitive attainments.

It should be noted that Bloom's (1956) taxonomy is dated and the logic contained therein has come under considerable critique by later educationists. Bloom's taxonomy offers a linear and hierarchical scheme and follows in the tradition of the objectives model as espoused by Tyler (1949) and Bobbit (1918). Cornbleth (1987)

criticises Bobbitt's 'scientific management in education model' and Tyler's 'production model' as confusing skills in thinking with thinking skills. Not only does the objectives model exaggerate the difference between aims as long term and objectives as immediate but it may be better suited to instruction than education (Kelly, 1989). According to Kelly (1989, 64), the objectives model sees the "process of teaching merely as the transmission of predetermined knowledge-content chosen in pursuit of certain predetermined objectives".

Bloom's taxonomy is based on behaviourist psychology and was developed at a time when psychology had a stranglehold over curriculum, which was broken by the entry of sociology, by the likes of Young (1971), onto the curriculum scene. Kelly (1989) criticises the objectives model for being instrumentalist and leading to behaviour modification. Bloom's divisions into clear-cut domains are unworkable. It is impossible to have educational activities that concern themselves only with cognitive aims without also involving affective and psychomotor aims as well (Kelly, 1989).

Despite the above criticisms of the objectives model, it had a broad appeal because of its clear outcomes and the clear distinction between knowledge, skills and values which provided a "useful and supportive framework for geography courses, textbooks and syllabuses during the last twenty-five years" (Roberts, 1997, 42).

The objectives model of curriculum planning is not the only model. Out of the criticisms of the objectives model, a process model was developed (Peters, 1959), (Stenhouse, 1975), (Cornbleth, 1990). The Schools Council Humanities Project under Stenhouse as well as the Schools Council 16-19 Geography Project embraced the process model. The process model advocated that controversial areas should be more discussion oriented than instruction oriented. The use of questions in an enquiry approach as envisaged in the route to geographical enquiry falls squarely into the process model. This is the approach I have adopted in the design of the three modules of lessons. Roberts (1997, 45) contends that "the increase in the use of small group work, role play, simulations, different genres of writing, and learning diaries

are all evidence of the acknowledgement of the pupils' role in the construction of geographical knowledge". Knowledge is a social construct. Whereas positivism sees knowledge as "'objective', 'indisputable' or 'given'", constructivism sees knowledge as something that is "known to us through our everyday lived experience or 'constructed' by us according to the way we 'see' or understand a place" (Winter, 1997, 181).

The paradigm that I have used in developing the modules of lessons is constructivism. However, I agree with Roberts (1997) who argues that we may have to use both models possibly for different units of work although this will mean compromises.

2.3 Strategies

It is claimed that values can be classified as substantive, procedural and behavioural (Fenton, 1967). Substantive values are deeply held convictions of which there are few. Procedural values relate to ways of thinking in geography of which there are more. Behavioural values relate to the way in which classroom learning experiences occur of which there are very many. Put differently, one could say "we have few values, a number of beliefs, and many attitudes" (Fien and Slater, 1985, 181). In a similar vein, Raw (1989) provides a four-tier hierarchy, i.e., values, beliefs, attitudes and behaviour. However, it is highly debatable whether values can be so neatly categorised into different compartments. While Fenton's classification is somewhat useful, there could be considerable overlapping leading to confusion and misinterpretation (Slater, 1995a).

Fenton (1967) argues that teachers have no right to dabble with substantive values and furthermore, asserts that the teacher's role "in regard to substantive values is to keep within the cognitive domain" (as cited in Wiegand, 1986, 61), (Dinkele, undated). In contrast, some feel that it is exactly the area of substantive values that education should direct itself towards (Stradling, 1984). According to Blatchford (1972), all values are

ultimately derived from substantive values (as cited in Farmer, 1980). The debate on values education has developed considerably from Fenton's contribution.

While it is largely accepted that values education is important, the crux of the matter lies in how one goes about values education in geography. Generally, there are two broad approaches to dealing with value-laden issues i.e. product-based and process-based (Stradling, 1984). A product-based approach leans towards a content focus while a process-based approach is more concerned with the process than the content. I concur with Stradling (1984) that in general; a process-based approach is preferable to a product-based approach in that specific issues may pass with time while the skills developed will be useful for tackling new issues. However, product-based and process-based approaches are not necessarily mutually exclusive.

Four strategies seem to be commonly practised in geography i.e. values clarification, value analysis, moral reasoning, and values probing (Fien and Slater, 1985). Values clarification is based on the work of Raths *et al.* (1966), moral reasoning is based on Kohlberg's work, while value analysis stems from the work of Chadwick and Meux (1971) (as cited in Wiegand, 1986). Fien and Slater (1980) developed the strategy of values probing because they found the other strategies did not go far enough in developing values. For example, values analysis "rarely allows students to discover the values underlying the arguments or to clarify their own values" (Fien and Slater, 1980, 48).

Maye (1984) adds two more strategies to this list i.e. values inculcation and action learning. Values inculcation is teacher-centred whilst the other five approaches are more learner-centred. The more transferable skills are developed the better the approach.

A heavy inculcation of values by the teacher borders on indoctrination, which is generally frowned upon. Gayford (1987), an environmentalist, differentiates between indoctrination and education. He makes the point that, in trying to avoid indoctrination at all costs, teachers can bend so far backwards that they forfeit the

opportunity of pupils seeing strong commitment. In a similar vein, Stanley (1985), contends that the concern of environmental educationists should be with the "values and ends that we are seeking not with worrying whether an op committed approach to education is indoctrination or not" (as cited in Fien, 1995). While for Sterling (1996), environmental lessons need to move beyond exhortations for "environmental responsibility" to a "more difficult and slower, yet deeper and more permanent change" (as cited in Reid, 1996, 171). Gultig (1997, 150) posits that the essence of good values education lies in providing an environment that enables learners to "critically assess their values, to hold them tolerantly, and be open to changing them".

The secret is to select the strategy appropriate to the objectives of the lesson and units of work. According to Rawling (1986a), "teaching approaches to values education have been designed for different valuing objectives". Therefore teachers should choose the approach most appropriate to the objectives of the lesson. The Geography 16-19 Project (Rawling, 1986a, 66) has developed a useful model, "the route for geographical enquiry", for integrating a values enquiry together with a factual enquiry. The model proposes a seven-step approach with a factual and values enquiry at each step. Some have interpreted this diagram to indicate a separation of fact and value. It is better understood as an equal emphasis on both fact and value.

Simulation is a growing part of geography lessons and enhances the possibility for values education as well as making it fun and interesting. A clear distinction needs to be made between a simulation, an educational game, a role play and a simulation game which is a combination of the first three items (Fien *et al.*, 1984b). There are different categories of simulation such as role plays (A Fair Deal, The Trading Game, The Paper Bag Game); operational games (Consejo, Quarry, Caribbean Fisherman); individualised simulations (Simcity, Action Maze), mathematical simulations (Grasslands); and hardware simulations (A Fair Deal, Sand Harvest) (Walford, 1996). It is precisely because of such an abundance of simulations that the development of values education is so exciting and interesting.

Each of the above-mentioned strategies has its own values position. The very strategy that is employed has certain assumptions. However, the various strategies provide the teacher with a substantial choice on teaching values. It may be argued that although there is considerable difference between the strategies, there is nothing to prevent a teacher from using a variety of approaches in values education.

In concluding this section on strategies, it needs to be borne in mind that South Africa has produced its own home-grown versions of developing values and attitudes. One of the spin-offs of the struggle against apartheid is the tremendous amount of conscientisation or awareness raising that occurred in a host of organisations (student, youth, women, civic, trade union, professional and religious). Much of this awareness raising related directly to values and attitudes. These models do not always fit neatly into the strategies suggested above. I have drawn widely upon my own experience, particularly in the student and religious sectors, in developing models and strategies which relate to values and attitudes.

2.4 Which Values?

The types of values that geography teachers in South Africa could be guided by are to be found in the *South African Constitution* (South African Government, 1996, 3):

> "The Republic of South Africa is one, sovereign, democratic state founded on the following values:
>
> - Human dignity, the achievement of equality, and the advancement of human rights and freedoms.
> - Non-racialism and non-sexism.
> - Supremacy of the constitution and the rule of law".

Similarly, the *National Education Policy Act of 1996* has a section called "Values and Principles" which advocates that:

> "The realisation of democracy, liberty, equality, justice and peace are necessary conditions for the full pursuit and enjoyment of lifelong learning. This requires the active encouragement of mutual respect for our people's diverse religious, cultural and language traditions" (as cited in Gultig, 1997, 150).

The mission of the GDE (1995, 1) also has a set of values, which stresses the newly won democratic rights of South African citizens:

> "Empower learners by:
>
> - fostering attitudes and values
>
> - so that they will show respect for other people, their democratic rights and their religious, cultural and language traditions
>
> - so that they will have self-respect and make wise, healthy personal choices in their lives and
>
> - so that they will respect the environment;
> - giving access to life-long learning;
> - developing in people skills and broad competencies which will allow them to take part in the economic, political and social life of the country;
> - developing in people the ability to think for themselves; and
> - developing in people the ability to use and handle information confidently".

It needs to be acknowledged that when one talks about values education, different teachers are likely to emphasize quite different values. Table 1 demonstrates that there is a considerable amount of overlap of key values and attitudes from authors who have a reconstructionist perspective. Kagiso publishers (undated) refers to this list of values as OBE values while Ranby (1994b, vii) and Slater (1995a, 210) refer to the list as geography values.

Ranby	Slater	Kagiso
Developing active concern for the environment	Care for the environment. Responsibility towards the environment	An awareness and appreciation of the environment
Encouraging positive attitudes towards justice and human rights	Human rights	A culture of participative democracy
Promoting non-racist and non-sexist attitudes	Justice – social/political/economic	A culture of lifelong learning and development
Supporting tolerance for the views of others	Appropriateness to culture/society	A culture of peace and tolerance
Developing empathetic responses	Empathy for cultures and environments. Respect for other cultures	Diligence
Encouraging critical awareness of the media	Preserving landscape quality	Critical thinking and problem solving skills
Advancing opposition to prejudice	Use/misuse/sustainability	Responsible citizenship
Helping to create a positive self image	Absence of exploitation	Emotional, moral and social development

Table 1: Comparison of key values and attitudes

The most prolific writer on values education in geography is undoubtedly Frances Slater. According to Slater (1995a), particular values are associated with particular ideologies. Table 2 outlines how educational ideologies have different focuses with different values (Slater, 1995a, 218). Slater's classification is a useful one for uncovering the key values embedded in various educational ideologies. Every teacher fits more comfortably in one or other educational ideology. This will obviously guide their choice of work to be covered. It guides the type of learning support material they choose as well as what they focus on in their lessons.

My own perspective would be reconstructionist, which is society centred and values social change. I have chosen three modules of lessons for this research i.e. informal settlement, water access and conservation, and coal mine at the Vaal river. I could have chosen three entirely different modules for the purposes of this research. This choice reflects my values and what I consider to be important in geography. Slater (1995a) analyses the different curriculum orientations of three curriculum projects i.e. GYSL, Geography 16-19 and the Bristol Project and finds quite different content and methodological emphases.

Ideology	Focus	End
Progressive	Child centred	Valuing development of the whole person
Liberal	Subject centred	Valuing development of the mind
Utilitarian	Work centred	Valuing 'payoff'
Reconstructionist	Society centred	Valuing social change

Table 2: Values contained in different educational ideologies

Different values can be found in the different paradigms through which geography has progressed historically (Johnson, 1979). Early geographic writings were clearly serving the interests of the British Empire (Godlewska and Smith, 1994). With the weakening of the positivist paradigm, new paradigms have emerged (humanistic geography, welfare geography, radical geography) which have tried to bring out more explicitly the value assumptions on which they are based (Lambert, 1992), (Wiegand and Orrell, 1982). Positivism, empiricism and postmodernism are three different ideologies, each with their own outlook. Hernando (1997) analyses these prevailing ideologies and locates values education within each of these ideologies. Hernando (1997) argues for a postmodern approach, which uses a strategy of deconstruction to discover values inherent in national curricula, in textbooks, and in student appraisals.

The content of geography is related to values. As Slater (1997, 18) argues, there are a "range of value positions or ideological and conceptual frameworks which value and give priority to some concepts rather than others e.g. scientific objectivity or social justice". Furthermore, Slater (1997) argues that value positions act as "filters" both on the perspective and content of what is taught.

2.5 Group Work

The literature on group work reveals that group work allows for the clarification of values and attitudes (GDE, 1999b), (Gultig, 1998b), (HAP, undated). Groups provide a safe space for learners to articulate their values and attitudes. Group work is one of the methodological pillars of OBE. In fact, one of the eight critical outcomes is to "work effectively with others as a member of a team, group, organisation or community" (Tiley, 1997a). Group work enables learners to construct knowledge rather than simply receiving knowledge. It also helps learners to develop respect for the opinions of others (Potenza, 1997). Classroom organisation sends out a powerful message. If a classroom has a dominant teacher with rows of passive learners it may give the message that learners will acquire knowledge from the teacher. Whereas if a classroom is organised into groups, this may give the message that the learners can construct knowledge themselves (Gultig, 1998c).

The GDE (1999b) list some of the characteristics of group work: helping each other, learning from each other, sharing information, taking responsibilities in the group, developing values and attitudes, respecting individual differences. From my own experience as a teacher, I have seen the advantages of group work in allowing learners to express themselves freely and in a sustained way clarify their values and attitudes. I made extensive use of group work in the three modules of lessons. At times the group work was a space for clarifying values and attitudes at other times it was cooperative group work where the group collaborates to achieve a task.

2.6 Multiculturalism

An important part of values education is in the area of race, culture and gender. According to some authors, racist values are widespread in geography (Bunge, 1965), (Cook and Gill, 1983), (Gill, 1983a, 1983b). It should be noted that some of these texts are a bit dated. These geographers are part of a broader movement in education often described as anti-racists.

Gilborn (1990), a prominent commentator on multicultural education has analysed multiculturalism as moving through five stages i.e. assimilation (1950-1965), integration (1966-1970), multiculturalism (1970s), anti-racism (1980s) and education for all (1985 onwards).

A growing body of sentiment has come out against multicultural education (as it exists in the third stage) accusing it of being 'soft' on racism. Furthermore, they argue that the social, political and economic power relations that exploit minority groups are not properly addressed (Gilborn, 1990, 153). Klein (1993, 87) puts the same critique differently: "After all, just to learn about other people's cultures is not to learn about the racism of one's own." The anti-racist approach also argues that it is not good enough just to understand racism one has to actively oppose it. The aims of anti-racist education, according to Brandt, (1986, 125) must be, "by definition, oppositional".

Anti-racists attack multiculturalism for being a side issue added onto the mainstream curriculum. The anti-racists contend that multiculturalism provides "negative, stereotypical, and caricatured depictions of black ethnicities" (Carrim, 1995, 25). Gill (1989, 63) accuses multicultural education in geography of being "patronising and voyeuristic in that it fails to place other cultures in their political and economic context". Science is criticised for limiting third world science to making salt from banana skins (Gill, 1989, 63). Biology lessons on the human body have also come in for major criticisms with their emphasis on " 'blue eyes', 'pink skin', 'blue veins' and 'blonde

hair' " when teaching classes which have a majority of black students (Duncan, 1986, 71).

Gill (1982) has analysed the content of school geography textbooks and finds that "Geography teaching still promotes the kind of ignorance upon which racism is based". A number of other studies have been conducted, analysing racism, which have all come to similar conclusions (Cook and Gill, 1983), (Maxwell, 1989). There has however, been considerable progress in addressing issues of race and gender in the 1990s. The national curriculum of Britain has identified geography "as an important means to achieving the goal of 'tolerance'" within the context of race and gender (Gonzalez and Gonzalez, 1997, 119).

Multicultural education has accelerated in South Africa with the opening of ex-model C schools to all races. According to Lemmer and Squelch (1993, 79), it is not sufficient to just add on a lesson here and there but it is necessary to "reform the entire curriculum". The authors argue further that multicultural education should be purposeful and planned and not piecemeal (Lemmer and Squelch, 1993). The design of the 3 modules is an effort to move in this direction. The *Draft Assessment Policy Document* (GDE, 1999a, 22) captures this multicultural approach well:

> "Care should be taken be taken to use varying contexts and examples in order to familiarise learners, with for example, urban and rural situations, Xhosa and Tswana traditions, Christian, Hindu, and atheist beliefs, isiZulu and sePedi songs, Islamic and Venda arts and crafts".

There is a growing body of theory developing around anti-bias teaching (Derman-Sparks, 1989), (Hicks, 1980), (Koopman and Robb, 1997). Derman-Sparks (1989) defines anti-bias as an "active/activist approach to challenging prejudice, stereotyping, bias and the 'isms'" (as cited in Koopman and Robb, 1997, 7). The 'isms' refer to various forms of oppression such as sexism, racism, classism, anti-semitism, adultism, ageism, heterosexism, able-ism, linguicism. Anti-bias education goes further than multicultural education by also addressing differences other than race and culture such

as gender and physical ability (Derman-Sparks, 1989). Both anti-bias and multicultural education are essential for the development of values and attitudes in learners.

In an article titled "Sexism and Racism – Parallel Experiences: An Exploration", Slater (1983) finds similar issues at play between racism and sexism. A whole edition of *Contemporary Issues in Geography and Education* has been compiled on gender and geography (Whatmore and Little, 1989). Bowlby *et al.* (1989, 6) argue that "materials and methods used in teaching often work against women and girls". Language such as the use of "man", and "man and the environment" is clearly sexist, as are many of the pictures in geography textbooks (Wiegand, 1986, 65). Rose (1993) has analysed geography's paradigms, procedures and content and found "the feminist view and influence lacking or marginalised" (as cited in Slater, 1995a, 225).

2.7 Third World

When it comes to teaching about the third world, assumed values and attitudes may need to be thoroughly questioned. A significant number of authors allege that the treatment of third world countries is biased Binns (1995), Hicks (1980, 1981, 1986), (Hicks and Townley, 1982), and Stradling *et al.* (1984). Bailey (1983, 2) raises the question of other groups of people: "Are they shown as being just that little bit less human, less important, less dignified, less intelligent, less worthy of life, than we - collectively - believe we are?" In the same vein, Duncan (1986, 71) argues that multicultural geography reduces "third world countries to being recipients of aid without an understanding that the western world has benefited from the underdevelopment of third world countries".

South Africa is a third world country but pockets of wealth exist side by side with extreme poverty. Some of the dynamics between first and third world countries exist within South Africa itself. It is quite possible that people in rural areas and informal settlements are seen in a similar way to those in far off third world countries. In this vein, Pile and Potterton (1994) accuse South African geography of neglecting the rural periphery. They criticise geography textbooks "for condemning the rural poor for

destroying woodlands" without noting their limitations within the broader political economy.

Fisher and Hicks (1985) describe human dignity, curiosity, appreciation of other cultures, empathy, justice and fairness as the most important attitudes to be developed in world studies. It is very difficult to teach about other people and cultures without an awareness of values and attitudes (Gonzalez and Gonzalez, 1997). Waterman and Maitland (1984) recognise the need to step outside of one's own complex set of prejudices and value positions when discussing development issues. They pose a valid question:

> "How can we be realistically asked to judge development issues from non-European, non-capitalist, and non-Christian standpoints when, for most people, these traditions are by definition ingrained as part of our intellectual and social growth?" (Waterman and Maitland, 1984, 104).

2.8 Politics

Teaching controversial issues often implies issues which are politically sensitive (Stradling, 1984). Politics is inescapable in geography since "virtually all questions about the use of space are political in some sense" (Naish, 1997, 45). In any curriculum, politics is unavoidable. Steedman (1988, 135) captures the link between curriculum and politics clearly.

> "It is fitting that democratic people understand that both what their children learn and how they learn it must involve the most subtle and powerful questions of legitimation. To debate such issues is not to betray a heritage, but rather to act democratically."

Politically sensitive issues, for a range of reasons including parental concerns and polarisation in the classroom, are difficult to deal with. This leads some teachers to deal only with "socially validated 'controversial' issues; the impact of motorways, nuclear

power, London's Third Airport, issues with apparent neutrality and substantial technical content" (Machon, 1987, 39).

Any discussion on politics in geography would be incomplete without reference to Huckle. Huckle (1985), one of the early pioneers of values education, slates values education for not tackling the root causes of power relations in society. Huckle prefers a more direct political education. According to Huckle (1985), the logical and moral reasoning found in geography lessons does not match up to real world decisions which are more inclined to be based on the profit motive and political power considerations. Bailey (1986a) supports Huckle's contention, citing an example of the transport of coal. At one level it could be a fairly simple example of decision-making concerning environmental considerations and transport policy. However, Bailey argues at a "more complex level the issue is more about industrial relations and power politics" (Bailey, 1986a, 51). I concur with Huckle that values education needs to take into account the profit motive and power relations.

Huckle (1985, 190) locates values education in a liberal view of society in which values play a key role in "maintaining an essentially benevolent social order". This is contrasted with a radical view of society, which sees society more in terms of social conflict over material interests. Huckle (1985, 191) seems to hang onto a crude economic determinism by stating that "Values are not a primary cause of social change, for social change results from underlying economic change". Gramsci has strengthened the relative autonomy of ideology in social change. This can be seen in Gramsci's definition of ideology as a

> "battlefield, as a continuous struggle, since man's acquisition of consciousness through ideology will not come individually but always through the intermediary of ideological terrain where two hegemonic principles confront each other" (as cited in Mouffe, 1979, 226).

Huckle is highly critical of the consultative document *Geography 5-16* (DES, 1986) which infers that "pupils are not to study issues in terms of parties, politics, conflict, power, democracy and justice, but in terms of individuals, groups, attitudes and values, information, evidence and their own feelings" (as cited in Huckle, 1987, 263). Huckle is responding directly to the prescriptions of how to do values education by the education authorities in Britain. This attempt by the education authorities to limit the type of values education ties in with their broader strategy of limiting the amount of values education in the syllabus. The political motives of the DES are clearly demonstrated by Huckle. Values education can clearly be based on a conservative, liberal or a radical view. One has to bear in mind that learners are at a particular stage in their life. An introduction to social issues, is simply a beginning of a lifelong process where they may either end up with a conservative, liberal or radical ideology. Ideological positions can be important but I tend to agree with Slater (1995a, 210) who observes that:

> "a group of geography teachers when asked to list value positions in the subject did not think at the general geographical ideological level but raised environmental and development positions".

It is interesting to note that you don't find the same negative synopsis of values education by the other leading values education exponents such as Slater, Fien or Hicks, also regarded as reconstructionists, operating out of a radical paradigm.

Huckle (1985, 194) outlines his view of political education through geography:

> "Values are reflected in different political ideologies, parties and programs, and a relevant geographical education would allow students to evaluate competing conceptions of such values as social justice and environmental well-being and the political demands and the policies which stem from them".

Huckle (1985) asserts that geographers should acknowledge the idealism and political bias in values education and rediscover realistic approaches to political education. Huckle and Machon (1990, 53) maintain that the "lessons of the 'Programme for Political Education' have begun to influence curriculum developers and have slowly

eroded their earlier idealist commitment to values education". Huckle (1997), citing the conservative effects of the geography National Curriculum, suggests that teachers need to use critical theory to chart geography back onto a more radical course.

I would argue that the essence of Huckle's criticisms is valid but would differ with his overall synopsis. There are many different and competing types of values education. It is not possible to making sweeping statements about all types of values education in one breath. There may be some types of values education that fit in comfortably with a conservative or liberal ideology but there are many types of values education that fit in comfortably with a radical ideology. In fact values education is a contested terrain. My own perspective is also based on a radical view of society and politics whether we like it or not impinges on education.

2.9 Role of Teacher

The role of the teacher in values lessons is of paramount importance. The Humanities Curriculum Project (Rawling, 1986b) outlined three possible roles. Firstly, the school could develop a policy or 'line' for all teachers to follow. Secondly, teachers could give their own point of view. Thirdly, teachers could try to be neutral. The Humanities Curriculum Project favoured the third option which, seems to me to be unrealistic and naive. The Humanities Curriculum Project seemed to premise its stance on the choice between a neutral chairperson and an instructor. This choice is not validated by the broad range of "student-centred and resource-based methods of learning including projects, fieldwork, analysis of case studies and even role play and simulation" (Stradling, 1984, 8). Furthermore, at times it may even be necessary for the teacher to play the role of devil's advocate rather than neutral chairperson to broaden the scope of discussion.

The Geography 16-19 Project, on the other hand, proposed a better idea of procedural neutrality where the teachers' views are known but do not dominate the discussion (Rawling, 1986b). This same idea is taken up by another source. In a publication

called *The History and Social Sciences at Secondary level*, it is suggested that the teacher share his/her opinion with the class without giving it more weight:

> "What is essential... is that teachers carefully examine their own views on controversial issues, and make an honest appraisal of their personal bias. In fact, if the teacher is able to acknowledge his or her bias to the pupils, it can help make them conscious of bias in their own and others' opinions – and able to recognize its influence on thought and action. It can be very helpful for pupils to know their teacher's views, providing these are offered as one among many possible perspectives on an issue, with no more weight, or 'truth' than any other" (as cited in Hopkin and Morris, 1987).

The concepts of balance, neutrality and commitment are often used when teaching controversial issues. Some treat these as universal principles from which one never deviates. On the other hand, Stradling (1984, 11) is critical of applying them absolutely and see them more as teaching strategies "which may or may not be useful for teaching controversial issues". On the basis of considerable research, Stradling *et al.*, (1984, 112) propose an "eclectic and flexible" approach which takes into account:

- "the knowledge, values and experiences which the students bring with them into the classroom;
- the teaching methods which predominate in other lessons;
- the classroom climate (e.g. unquestioning consensus, apathy or polarisation of opinion);
- the age and ability of the students;
- the reactions of pupils both to the content of lessons and the teaching methods being employed".

Stradling *et al.* (1984) identify four common teaching strategies i.e. procedural neutrality, stated commitment, a balanced approach and devil's advocate. Each of these approaches have strengths and weaknesses. There simply are no hard and fast rules for teaching values and attitudes. What may work in one context may not work in another.

When teaching values and attitudes, some authors postulate that the role of the teacher should be more of a facilitator, manager or consultant rather than a director or supervisor (Fisher and Hicks, 1985), (Lobinger, undated). This is a difficult task to manage but at the same time teachers can develop the skills needed with time and practice.

My own style of teaching draws on my past experiences as an educator in the informal sector with both students and adults. I spent three years training students in YCS, which has a pedagogy of action-reflection, based on the theory of Paulo Freire (1972). I also worked for Lumko Institute for two years. Lumko Institute is an adult education centre, which trains leaders for the Catholic Church. In this type of participatory adult education, teachers were seen more as facilitators than lecturers. The main methodology at Lumko Institute consisted of using training kits which used codes e.g. posters (Lobinger, undated). These codes were designed to elicit information from participants and were then related to their own experiences. These experiences obviously shaped my teaching practice and I had gained considerable experience in this type of education.

2.10 Action

Some types of values education tackle the aspect of action. Fien and Slater (1980) acknowledge the importance of this dimension of values education in order to bridge the gap between school and society. According to Fien (1980, 6) only a strong belief will lead to action:

> "While we (or our students) may know all about the finite nature and delicacy of ecosystems or about the dangers of lead exhausts from cars, it will not be until we (or they) feel strongly enough about the issues that any change in personal behaviours or actions to offset environmental dangers will be effected".

The AGTA (1988, 10) recognises that geographical education involves taking "responsible social and environmental action". They outline four types of projects in

which this action could occur i.e. informative, stimulative, directive and operative. The AGTA asserts that the inclusion of controversial issues does not automatically ensure that values education will occur. However, the possibilities for real values education would be enhanced by action (AGTA, 1988).

Fien and Slater (1980, 52) believe strongly in allowing learners to follow through to action. "Without it, there is a danger that all previous work will be conceived as school work and the important links between school and society and thought and action not made in the minds of students."

This ties in well with Dewey's (1975, 43) beliefs on eradicating dualism's: "Only as we interpret school activities with reference to the larger circle of social activities to which they relate do we find any standard for judging their moral significance". Dewey (1975) believes that in order for students to come to grips with developing morality, it has to be practised.

In fact subjects themselves, Dewey argues, must facilitate moral responsibility. Dewey (1975, 31) states that "A study is to be considered as a means of bringing the child to realise the social scene of action". Morality should not only be taught in civic studies but in all subjects. Dewey (1975, 42-43) complains that not only has morality been "too narrow, too formal, and too pathological" but it has also been "conceived in too goody-goody a way". Morality, argues Dewey, needs to be found in all aspects of the school, including the life of the school as an institution, the methods of learning and in the subjects themselves.

This ties in well [illegible] the strategy of action learning, which asserts that major learning experiences come through the ability to take action.

2.11 Assessment

Assessment of values and attitudes is not without its difficulties. While many commentators happily espouse values education, they are "all reticent about how exactly values in geography might be assessed" (Wiegand, 1986, 59). Systematic assessment of values and attitudes was outside the scope of this research but could well form the basis of a separate study. In this area, the assessment of values and attitudes runs into similar problems that many teachers of religious education find themselves in. How exactly does one evaluate religious beliefs?

Wiegand (1986, 59) identifies the problem as "for one might wish pupils to have liberal or caring attitudes towards other cultures or the environment, it would surely not be feasible to withhold a certificate from student members of the National Front or pupils guilty of vandalism". Spady (1994) does not consider a value or attitude to be an outcome but rather a goal. Values and attitudes may have a direct bearing on successfully performing an outcome. Therefore, according to Spady (1994, 57), "specific values, attitudes or beliefs are not legitimate outcomes for which students should be held accountable".

Nevertheless, having stated the difficulties with assessment of values and attitudes, I do believe that it is possible to undertake assessment. Tucker (1992) provides an example of oral assessment on acid rain with clear-cut assessment objectives under knowledge, skills and values. Similarly, John (1991) while acknowledging difficulties proposes the exemplar method to assess pupils' writing about their understanding of living in a third world country. In terms of environment, traditional assessment may not work. Instead Tilbury (1997) proposes observation through keeping records of learner participation in conservation projects or using learner diaries.

Assessment is an integral component of OBE. The key characteristics of outcomes-based assessment are: criterion-referenced, continuous, recognises prior learning, learner paced and self-referenced (GDE, 1999a), (Gultig, 1998a). Continuous outcomes-based

assessment is built into learning activities and is not necessarily a separate activity (GDE, 1999a). OBE brings assessment to the fore and is much more part of the teaching and learning process. Whereas traditional assessment focused more on content outcomes-based assessment focuses on content, skills and values and attitudes.

2.12 Learning Support Materials

Some geography textbooks set out in tabular form, the exact values that they are trying to develop and in which particular exercises they can be found (Ranby, 1994b), (Barnard *et al.*, 1996). This is an important step forward for South African geography textbooks. Earle *et al.* (1985, 1988, 1989) have some useful values exercises (A Tale of Two Cities, Minister of Education, Zero Population Growth, Migrant Labour). Original South African values lessons and case studies are, however, few and far between.

Drummond and Paterson (1991) argue convincingly that South African textbooks by and large have referred to African farmers in an inferior way. Wesso and Parnell (1992) bemoan the lack of critical reflection on school geography textbooks. Textbooks are central to the question of values and attitudes and need to be thoroughly revised in order to keep up with the changes in geography. One has to only do a brief survey of British or Australian textbooks to see how far we are lagging behind. Naish and Warn (1994), in their textbook *16-19 Core Geography* have numerous values exercises in one form or another. Soni (1992, 92-93) argues for textbooks and syllabi which, will

> "consider the transformation of South African society - realities such as socio-political and material conditions, powerlessness, unemployment, conflict and violence, environmental deterioration, lack of proper shelter, facilities, and other vital services confront many people in South Africa on a daily basis".

In contrast two British geographers, Serf and Hoyte (1988, 10), have developed a teaching unit on human rights in South Africa which "offers the student the opportunity to develop an understanding of the nature of one multicultural society, and a sensitivity to cultural and racial prejudice and injustice". It is ironic that two British geographers

have to develop these types of human rights lessons in geography. This accentuates the relative paucity of material developed in South Africa with an explicit values dimension.

It needs to be emphasised that I am writing about learning support materials developed in the pre-OBE phase. With the new learning support materials developed for the implementation of Curriculum 2005, there is an important thrust on values and attitudes which is reflected in the content of these learning support materials. However, these are only being published with the corresponding implementation timetable of Curriculum 2005. At the time of this research (1996-1999), only learning support materials for certain grades i.e.1, 2, 3 and 7 were available on the market. The implementation dates were nowhere near grade 11, the target group of this research. Nevertheless, it would appear from this early stage that the Curriculum 2005 learning support materials have overcome the legacy of the lack of prominence given to values exercises in South African learning support materials.

2.13 Human and Social Sciences

With the introduction of OBE, values and attitudes have become more significant. In the old syllabuses, they were mentioned in the preamble and then often not used in lessons. Now that geography falls under the HSS learning area up to grade 9, there is likely to be less of a preoccupation with content and a corresponding increase in skills, values and attitudes. If one delves into the policy documents, values and attitudes are frequently mentioned. For example, specific outcome 6 of the HSS reads "Demonstrate an understanding of the interrelationships between society and the natural environment". The range statement states that:

> "Attitudes, values and perceptions regarding the environment are examined by:
>
> - identifying the attitude and perceptions
> - considering the factors that influence attitudes and perceptions
> - reflecting on its origins and development" (NDE, 1997, HSS-29-30).

Although geography syllabuses have always encouraged an examination of values and attitudes, it would seem the OBE framework makes it more explicit.

The GDE and GICD have adopted the idea of a progress map. A progress map is a description of levels of progress, also known as expected levels of performance, which a learner might achieve over a particular period of learning. (GDE/GICD, 1999) This progress map outlines the progression of the developing knowledge, skills and understandings that a learner would undergo. HSS is further divided into five strands, which correspond roughly with the focus areas of HSS:

- People in society over time
- People and their environment
- Democracy and citizenship
- Graphicacy skills
- Enquiry skills

It is remarkably similar to the Australian system, which is also divided into five strands (Ciavarella and Calandra, 1997). Values and attitudes also appear prominently in the Australian system. For example, an outcome under the strand on place and space is to compare different views on the management of various environments (Ciavarella and Calandra, 1997, vii).

On the other hand, geography is experiencing a profound resurgence in the USA through increasing undergraduate enrolment and public debate. Previously it was taught as part of social studies. The *Educate America Act* of 1994 specifies that geography is a core subject to be taught from kindergarten to K-12 (National Research Council, 1997). The National Research Council posits that the critical issues facing geography are economic health, environmental degradation, ethnic conflict, health care, and global climate change (National Research Council, 1997). Although the report does not clearly specify its stance on values and attitudes, it is assumed that investigation into these themes would of necessity require an examination of values and attitudes.

The *HSS Draft Progress Map* outlines a progression on developing values and attitudes at different levels:

- "They start to recognise that other people's ideas and beliefs may be different from their own. (level 2 statement)...
- They can recognise that there may be two or more sides to an argument and express an opinion about people's behaviour in particular situations. Learners can suggest different solutions to a problem by looking at it in different ways. (level 4 statement)...
- They can develop a point of view and show empathy in various contexts. They can practise problem solving in the context of their own lives. (level 5 statement)...
- They can show empathy in different situations. They can recognise that values and attitudes affect the way in which people deal with problems and the way they interact with the world (level 6 statement)" (GDE/GICD, 1999, 8-13).

The authors (GDE/GICD, 1998, 2) of the section on democracy and citizenship spell out clearly how values and attitudes are a crucial aspect to developing human rights and democracy.

> "In many respects, a commitment to the notions of human rights and democracy is dependent on the affective domain. Individual learners whose values enable them to enact in ways that are humane, just, compassionate and responsible are the essence of a democratic state. Democracy and human rights education is concerned with the values and attitudes related to these attributes and should seek to inculcate a set of core values around which the life of the learner can be shaped."

Moving outside of the HSS learning area to the LO learning area, one finds an even stronger emphasis on values and attitudes. Almost all of the SOs mention values and attitudes:

- "SO 2 Use skills and display attitudes and values that improve relationships in the family, groups and communities.
- SO 3 Respect the rights of people to hold personal beliefs and values.
- SO 4 Demonstrate, value and respect human rights as reflected in UBUNTU and other similar philosophies.
- SO 7 Demonstrate the values and attitudes necessary for a healthy and balanced lifestyle" (NDE, 1997, LO 3-4).

As can be seen from the above argument, values and attitudes are a central pillar of the new curriculum framework. Values and attitudes are given prominence in the policy documents. However, it remains to be seen how learning support materials apply the policy in terms of values and attitudes.

2.14 Conclusion

The literature on values education covers a vast area that is continuously developing. I have dealt with a number of windows through which one can analyse the literature on values and attitudes. These windows are all factors, which have a bearing on values education. I have shown that there are many approaches to values education. Some are methodological choices while other choices involve the very values and attitudes of the teacher choosing them. There is no shortage of issues on which to develop values lessons. One can deduce that by teaching values education one is entering a veritable minefield by having to make so many choices.

In Britain, government intervention has begun to take its toll on the attempts to teach values education itself. If values education developed dramatically in Britain in the 1980s, by the early 1990s, it came under severe attack from the New Right

government in the form of the centrally imposed Geography National Curriculum. The New Right favoured the development of more utilitarian and vocational aims of state education and sought by all means to limit values education by piling up the syllabus with content (Butt, 1997). According to Butt (1997, 105), "any attempt to raise issues, or to explore pupils' values and attitudes, was to be subservient to the teaching of 'objective' facts". Kenneth Clarke (DES, 1991), the Secretary for State in 1991, put it bluntly:

> "The main emphasis in the statutory requirements should be on teaching a knowledge and understanding of geography rather than on the study of people's attitudes and opinions. Some statements of attainment which appear to concentrate on attitudes and opinions rather than on geographical knowledge and understanding have therefore been removed" (as cited in Walford, 1997).

A curriculum that is content dominated has little space for skill development or the consideration of values and attitudes. Put another way, "the educational imbalance between values and knowledge is costing us our landscape" (Dinkele, undated). Efforts were made to widen the scope of values education through numerous interventions by British geographers which has resulted in the survival of values education although in a more limited form (Bailey, 1986b). This constriction on values education in Britain, which has played such a leading role, will have repercussions for geography in the rest of the world.

On the other hand prospects for values education in South Africa have never been more favourable. The new curriculum framework encourages values and attitudes. It is up to curriculum developers and learning support material writers to capitalise on this opportunity. Whereas Britain played such a pivotal role in the 1980s to develop values education in geography and will no doubt continue to do so (even if hampered by the national curriculum), the thrust could be moving to other parts of the world such as Australia, Canada and South Africa.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This investigation examines to what extent learners' values and attitudes change in the course of value-laden lessons. The research also examines the factors, which develop values and attitudes in the learners. I conducted a pilot study with the grade 11 classes of 1996. The main research was undertaken with the grade 11 classes of 1997. The study revolved around the teaching of three value-laden units of lessons.

3.2 Research Methodology

3.2.1 Qualitative Research

This research is qualitative research as described by Cohen and Manion (1994), Denzin and Lincoln (1994a), Lincoln and Guba (1985) and Maykut and Morehouse (1994). According to Denzin and Lincoln (1994b, 4), qualitative researchers stress:

> "The socially constructed nature of reality, the intimate relationship between the researcher and what is studied, the situational constraints that shape enquiry. Such researchers emphasise the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning".

This research falls into this category of research. Qualitative researchers believe they can get closer to the actor's point of view through detailed interviewing and observation (Denzin and Lincoln, 1994b).

The reader may be surprised to see the number of graphs. There is no reason why qualitative research can not employ graphical representations. I went through a rigorous

process of quantifying and grouping the data that I collected, generating 109 graphs in the process. Quantitative research does not have a monopoly on graphical representation. In any event, there is no reason why a quantitative and qualitative methodology should not complement each other. According to Cohen and Manion (1994, 106) these approaches are complementary:

> "We outline two broad approaches to educational research. The first based on the scientific paradigm rests upon the creation of theoretical frameworks that can be tested by experimentation, replication and refinement...Against this scientific, experimental paradigm, we posit an alternative perspective which we describe as interpretive and subjective, a focus we hasten to add that should be seen as complementing rather than competing with the experimental stance".

Within the qualitative paradigm, I have used three complementary research methodologies, which will be analysed below.

3.2.2 Action Research

Within a qualitative paradigm, I have chosen to use the action research methodology which, is an increasingly popular method. According to Slater (1995b), "part of the educational world has moved in the last decade from a predilection for case-study research to an advocacy of action research". Action research has general characteristics which, I applied to my research.

The reason why action research has become so popular is that it focuses on one's own teaching. McNiff (1988) develops this point well:

> "Action research is not just teaching. It is being aware and critical of that teaching, and using this self-critical awareness to be open to a process of change and improvement of practice. It encourages teachers to become adventurous and critical in their thinking, to develop theories and rationales for their practice, and to give reasoned justification for their public claims to professional knowledge" (as cited in Pym, 1990, 4).

The action research methodology had the advantage of being able to refocus the research as I proceeded through the planning, action, observation and reflection phases. These phases are not linear but interact with each other to influence the overall cyclical process. Grundy (1987) categorises the action and observation moments as practice while reflection and planning is categorised as discourse. The action and reflection moments are strategic moments which are retrospectively and prospectively related to each other through planning and observation which are organisational moments (Grundy, 1987). It is this cyclical and interactive process, which made this research methodology, appropriate to my situation. My research was based on human interaction. Throughout the process I reflected on this interaction. Action research has a dialectical relationship between knowledge and action or theory and practice (Grundy, 1987).

Grundy (1987) outlines three types of action research, i.e., technical, practical and emancipatory. I considered my research as emancipatory because it was critical and related to the social context. Action research is emancipatory to the extent that it can free people from their "institutional and personal constraints which limit their power" (Kemmis and McTaggart, 1988). According to Grundy (1987, 156), "the guiding ethic of emancipatory action research, therefore, embodies the social and political ideals of freedom, equality and justice". Walker (1993), who has written extensively on action research in South Africa, nevertheless, concedes that although she intended her research to be emancipatory it ended up being more technical and practical. It also turned out to be more reflection than research thus demonstrating the unpredictable nature of all research, including action research.

It is my hope that these lessons will contribute to critical thinking and contribute to the ongoing democratic process in South Africa. Action research should be collaborative and participatory. In this instance, I collaborated with the learners in this process and sought their full participation in the research process. Furthermore, I tried to keep an open mind on what I considered to be data. The data was not confined to keeping records but also included reflections and impressions (Kemmis and McTaggart, 1988).

I reflected consciously and systematically on my role in the classroom as I undertook values education. Although action research is intended to develop the idea of a reflective teacher, it is more than this: it needs to be systematic research and public research (Naish, 1996). Action research needs to respond to the broader social situation. Action research lends itself to being sensitive to the social, cultural, political and economic context (Pym, 1990). One of my concerns was that values education should be thoroughly grounded in the South African context. Values education needs to pick up on key issues, which affect the daily lives of students. Action research attempts to change situations not just to understand them (Kemmis and McTaggart, 1988). The strength of action research is that it focuses on one's own practice in order to improve and develop that practice both for one's own transformation and as a spur to the general transformation of education.

3.2.3 Constant Comparative Method

I found the constant comparative method developed by Maykut and Morehouse (1994) to be a suitable vehicle for my research methodology. My research was inductive rather than deductive. In terms of the inductive approach, I collected data around the general theme of values education in the classroom. I did not generate a hypothesis *apriori*. The important issues emerged from the data itself.

I tried to stay close to the learners' feelings, thoughts and action. I allowed the important issues to emerge from the data itself. I looked for recurring words, phrases and topics in the data. From this I sought to find patterns and identified emerging themes. The constant comparative method combines "inductive category coding with the simultaneous comparison of all units of meaning" (Maykut and Morehouse, 1994, 134). As each new unit of meaning was selected, it was compared with other units and categorised accordingly. If no similar meaning was found, I created a new category. This resulted in a continuous refinement where initial categories were changed, merged or refined (Maykut and Morehouse, 1994, 134).

Maykut and Morehouse (1994) outline four stages of the constant comparative method:

- Inductive category coding and simultaneous comparing of units across categories
- Refinement of categories
- Exploration of relationships and patterns across categories
- Integration of data yielding an understanding of people and settings being studied.

3.2.4 Case Study

Strictly speaking, case study is not a methodology but a "choice of object to be studied" (Stake, 1994, 236). This research study is a case study. It is in essence a study of the grade 11 class in one school. Furthermore, it is bounded and limited by research into values education. A case study normally observes the characteristics "of an individual unit – a child, a clique, a class, a school or a community" (Cohen and Manion, 1994, 106). Stake (1995) defines this particularity as: "Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstance" (as cited in Wilmot, 1998). The important circumstances in this case are the school, my role as teacher and the learners each of which have their own particular and peculiar characteristics. Case studies depend on observation, interviewing and document analysis, which I have undertaken in this study.

There are a number of advantages to the case study. It allows the researcher to probe more deeply and get a more realistic understanding. Bailey (1978) finds that researchers can discern ongoing behaviour as it occurs and can develop "more intimate and informal relationships with those they are observing" (as cited in Cohen and Manion, 1994, 110). Case studies are seen to be 'strong in reality' but difficult to organise versus other methods, which can be 'weak in reality', which are more susceptible to organisation (Cohen and Manion, 1994). Possibly the strongest advantage of a case study is that they are easy to translate into action either for the researcher's own use or for education policy.

Case studies also have some disadvantages. They have been described as "subjective, biased, impressionistic, idiosyncratic, and lacking in the precise quantifiable measures" (Cohen and Manion, 110). The greatest challenge for case study research is its applicability to other situations. Stakes (1994, 238) describes this well: "Uniqueness, particularity, diversity are not universally loved". Bearing in mind the perceived weaknesses of the case study, I have employed some means of getting around these weaknesses i.e. triangulation. Triangulation is a process of "using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation" (Stakes, 1994, 241).

I concur wholeheartedly with More (1994, 229) and this describes my own feelings during the research process, when he states that "out of confusion, order and understanding emerge" (as cited in Wilmot, 1998). At the beginning of a case study, the researcher does not know what the issues are going to be. At times one has an intuition of what one feels they are likely to be. However at the end of the day, research findings may turn out quite differently.

3.3 Research Procedures

I used the following research procedures.

3.3.1. Pilot Study

I taught the module on informal settlement with the 1996 grade 11 classes. This was a pilot study in that I could give the lessons a trial run and also experiment with the collation of data. I was able to modify the lessons quite considerably and even omitted two of the original lessons. Marneweck played the role of triangulator with this pilot group and her feedback was helpful in understanding the process for the primary group of learners i.e. the 1997 grade 11 classes.

3.3.2 Observation

I have observed fully what happened in the classroom and used these insights to write up my own reflections. I conducted the research as a teacher-researcher and also as a participant-observer. I was an active participant in the whole process and was able to intervene in class discussions.

3.3.3 Recordings

I recorded the relevant lessons with a tape recorder and used the data for reflection. Appendix H provides a transcript of the lessons. I was able to find some excellent quotes by using this mechanism. In the process of writing up the research I was able to recollect events mentioned in the transcripts. I was also able to recall what occurred in the classroom. The heated interactions between the learners are captured in the recordings. These were vital to analysing the factors that influenced values and attitudes.

3.3.4 Evaluation sheets

All students completed an evaluation sheet at the end of each unit. They were asked to write down their reflections in response to some set questions. These evaluation sheets were very useful in recording the learners' responses to the lessons. The questions were of an open-ended nature allowing the learners to freely express their ideas. Many of the direct quotes in chapters 4, 5 and 6 originate from these evaluation sheets.

3.3.5 Written Responses

I analysed hundreds of worksheets completed through the duration of the research study. I rigorously went through each and every worksheet that was completed. In terms of the constant comparative method, it was necessary to assess reams of evidence to find the patterns. The answers to selected worksheets were generated into a series of pie charts. The initials next to the various shadings in the legend represent the initial of the first name of

each learner. In other words, their responses to a range of issues can be located. Patterns were analysed to unravel the learners' responses to various issues. This type of data triangulation was essential to unpack the way learners were responding to the lessons.

3.3.6 Triangulators

Tony Williams who is a fellow geography teacher at SHC sat in for the 1997 grade 11s. Lorraine Marneweck sat in for the 1996 grade 11s. Their individual triangulator reports can be found in Appendix K.

I include Marneweck's triangulator report out of interest, as it does not pertain to the primary group of learners. Although Marneweck collated her overall report only a considerable period after the lessons, she had already typed up and given me a report on each lesson within a day or two of the lesson. Her overall report was simply a collation of the individual lesson reports.

Denzin (1978) outlines four types of triangulation i.e. data, investigator, theory and methodological triangulation (as cited in Janesick, 1994). I used data and investigator triangulation in the research.

Data triangulation involves the use of a variety of data sources. I used evaluation sheets and worksheets from the learners, classroom observation, tape recordings, learner profiles from the religious education coordinator and interviews. This helped me to overcome the distortions from using only a single method of data collation.

The investigator triangulation was particularly useful. I was not always able to gauge everything that was going on. The triangulators were in a better position as they were less involved in the actual running of the lesson. I found the presence of the triangulator very helpful. We were able to discuss issues after the lesson and to reflect on the general progress of the lessons. The use of investigators increased the validity of the research.

Triangulation is particularly important when doing a case study:

> "This is at the heart of the intention of the case study worker to respond to the multiplicity of perspectives present in a social situation. All accounts are considered in part to be expressive of the social position of each informant. Case study needs to represent, and represent fairly, these differing and sometimes conflicting viewpoints (Adelman *et al.* as cited in Cohen and Manion, 1994, 241)

The type of debates with the quick interactions and sometime heated exchanges warranted the need for investigator triangulation.

3.3.7 Interviews with learners and learner profile

In order to deepen the reflection basis, the triangulator interviewed selected learners. Appendix I provides the transcripts of these interviews. The interviews were recorded. Unfortunately we were not able to interview more learners.

The religious education coordinator of the college drew up a learner profile on each learner (Appendix J). This helped to validate from another source the perspectives of the learners. The religious education coordinator would be well aware of the values and attitudes of the learners given the type of discussions that were prevalent in the religious education class. As SHC is a Catholic college, religious education lessons were an integral part of the curriculum. Thus varying sources were used to analyse the learners' values and attitudes.

3.3.8 Pre-test and post-test

Two questionnaires were drawn up and given to students to complete. This was done to assess if there had been any noticeable change in their responses. Strictly speaking pre- and post-tests are not congruent with qualitative research. However there are occasions when one can combine different methods to throw more light on the study. In this respect, I felt the tests were a useful addition. Clacherty (1988, 57) who undertook a similar type of research found before- and after-tests to be superfluous:

> "However, while such 'before- and after-tests may provide an indication of attitude change as a result of students' experiences during a programme, they reveal little more than the knowledge that a change has or has not in fact occurred".

I agree with Clacherty that they have limitations in what they reveal. However, I feel they can be useful tools if accompanied by other research methods.

For the coal mine at the Vaal River unit, I used an environmental table with choices from 'strongly agree' to 'strongly disagree' to analyse the pre- and post-responses to the same set of questions (Appendix C, 1). This particular instrument was developed by Dunlap and Van Liere (1978) *The Environmental Paradigm* (as cited in Huckle, 1982, 53). It covers general issues related to the environment.

For the informal settlement unit, I used an exercise called Minister of Housing that I designed with choices from strongly agree to strongly disagree on strategies for handling squatters (bulldoze, site and service, low cost housing, give money, land invasion) (Appendix A, 21). These strategies are very broad and each choice involves values positions. There was no pre- and post-test for water access and conservation.

The purpose of the pre- and post-test was to give an indication of where change might have occurred which could then lead me to analyse the factors encouraging or discouraging change.

3.3.9 Design of three teaching units

I prepared three teaching units of six lessons each. These units were based on the following themes:

- Informal settlement
- Water access and conservation
- Coal mine at the Vaal river

The actual lessons are the building blocks of this research. It was necessary to design very carefully the kind of lessons, which would actually serve the purpose of the research. All three of the themes are conventional geographic themes, which I taught in a different way.

A lot of effort went into the planning of the lessons so that they would achieve their desired effect. The lessons are an integral part of the research. Periods at SHC are fifty minutes long and not the normal thirty minutes. Many of the lessons could not be completed in the allocated fifty minutes and were continued in the following lesson with that class. At a conservative estimation, the teaching of the three modules lasted for about six weeks of teaching time.

If I was able to design the type of lessons, which could foreground values and attitudes, there was a greater chance of success for the research. If however, the lessons would not really allow learners to successfully grapple with values and attitudes, this would have made the research so much more difficult.

An integral part of the research study was to develop lessons that would focus on values and attitudes. Given the paucity of such material in South African geography textbooks, in was necessary to spend a lot of time in finding, adapting and developing from scratch the resources needed for the lessons. These lessons can be found in Appendices A – C.

3.4 Comparison to other research in the field

Much of the writing on values education consists of research undertaken. I will analyse the work of research studies related to my area of research below.

Nyikana (1988) has persuasively expounded on the need for values education in geography. Her approach was to cover three former DET secondary schools in Kwazulu-Natal (Empangeni, Nongoma and Madadeni). Nyikana used three student teachers to teach lessons which were adapted from Walford (Wind action/Grasslands), Slater (Renewable and Non-Renewable Resources) and Hall (Developed and Developing Countries) (Nyikana, 1988).

Learners and teachers responded to a questionnaire. She interviewed eighteen teachers from eight schools. Lastly syllabuses and textbooks were analysed on their values education content.

Nyikana's research was finalised in 1988 some 10 years before mine. In the ten years since Nyikana's research there does not seem to have been much improvement in South African schools with regard to values education. While Nyikana's research was done in the context of apartheid, mine occurs at a time when South Africa is establishing a democracy. Nyikana notes that there was not much evidence of values education in the three schools in Kwazulu Natal before her research. Her findings were that the learners responded well and that there was an important place for values education in the South African school curriculum.

I have followed a significantly different research methodology. My target group was limited to one school. Whereas Nyikana investigated values education broadly through a number of schools, I conducted a more in-depth detailed study of a much smaller target group in order to get to grips with the mechanics of how values education occurs. Nyikana has developed three short units largely taken from overseas material with little adaptation. In this respect, I have used material that is more thoroughly South African in order to contextualise values education. At the time of Nyikana's research there was also no mention of OBE. Nyikana's research is significant in that it took place in a sector (ex-DET) which represents the majority of schools in the country. My research was based in a multicultural school which is a different type of schooling and one that has become more widespread in South Africa since the opening of ex-model C schools to all races. My research was also conducted in an independent school as opposed to a disadvantaged school.

Pym (1990) provides an excellent insight into developing critical thinking in the grade 11 geography classroom. She used an action research methodology, which successfully provided an insight into making geography in South Africa more relevant and critical. Her research was based at St. Owens, a Christian Brothers College, in Cape Town. The school was a predominantly Coloured school at the time of the research, which was finalised in 1990. Pym used three action research projects i.e. renewable/non renewable resources,

location of a factory and models of urban structure. Her research is similar to mine in that it was based on the grade 11 class in one school except that she analysed critical thinking and not values education.

Earle (1982) analysed prejudice and ethnocentrism in South African geography textbooks in the period 1930 - 1980. I concur with Earle's (1982, 55) synopsis of textbooks:

> "In more ways than one, therefore school text are important books. They are, after all, the books which authority requires children to read. Children cannot be expected to challenge their textbooks which, unlike nursery tales which are patently fictional, they assume to be literally correct in every way. For these pupils at least, the influence of the textbook is highly potent".

Earle's research filled a glaring gap in that two significant studies had been done on the adverse effect of South African history textbooks on social attitudes (Auerbach, 1965), (Dean *et al.*, 1981) but none on Geography (as cited in Earle, 1982, 56). Earle's study focused on values and attitudes in textbooks while my study focused on values and attitudes in the classroom. Textbooks are often the conveyor of the curriculum and therefore textbooks play a powerful role in determining what values and attitudes are prevalent in the classroom.

Clacherty (1988) used a phenomenological method very successfully to investigate an environmental education programme for training primary school teachers at the Johannesburg College of Education. The application of the phenomenological method worked well in analysing subjective experiences in a rigorous and systematic fashion. Learner-centred, active and experiential learning were found to contribute to environmental education. He ended up with a number of 'essential existential themes', which he derived from learner diaries.

Clacherty finds that the use of 'shock' where a person's basic assumptions are challenged has a dramatic effect on the values and attitudes a person holds:

> "The effect of such an enforced change of loyalties is a breaking away from one's own beliefs, attitudes or values and growth in an appreciation of the multi-faceted nature of the issue being considered" (Clacherty, 1988, 136).

While Clacherty's research focuses on student teachers and mine on secondary learners, there is much in common. Clacherty has designed, implemented and evaluated an environmental programme for teacher training. I designed, implemented and evaluated a programme on values and attitudes. His concern is the environment while mine was a bit broader. However, there is overlap in our focus on values and attitudes. Clacherty (1988, 1), the solution to environmental degradation depends on "people; their perceptions, attitudes, values and behaviour in relation to their environment".

Most of the research on values education has occurred in Britain. There have been a host of dissertations on values education in Britain. Cowie (1974) was the first to do research on this topic in geography. Cowie (1974) found geographers failing to admit that geography is value-loaded:

> "Values enter geographical education through the content and methodology of the subject itself, and as a result of choices made in the classroom concerning content and techniques to be taught" (as cited in Slater, 1989, 59).

Kelly (1978) focused on values and attitudes in environmental problems. He administered pre- and post-tests to 57 fourth year secondary learners who had been through values clarification exercises. His results demonstrated that some value changes occurred but without much commitment to action (as cited in Slater, 1989). Kelly's methodology is similar in some respects to mine. Shortly thereafter, Hartley (1980) researched values education and social action and favoured Newman's (1975) social action model (as cited in Slater, 1989).

There are two major studies in values education outside of Britain i.e. Lam (1984) and Phiri (1988). Lam's (1984) research was conducted in Hong Kong where he felt a 'values crisis' existed. He focused on four l ···· of relationships: with oneself, family/friends, all persons and society (as cited in Slat , 1989).

Phiri (1988) has, in my opinion, conducted a most comprehensive research study (801 pages) into values education in the geography world. Phiri (1988) analyses the link between education and society. Phiri (1988, 577) notes the mismatch between education and society and argues for "enhancing the congruency between education and the desirable socio-economic and ideological aspirations and goals of the Zambian society in particular". He develops and teaches four value-laden geography units i.e. foreign aid, wildlife, "go back to the land campaign", and SADCC. His argument is that if the units were congruent with development aspirations they would contribute to the development of Zambia (Slater, 1995a). He finds that decision-making, political literacy and awareness of values and attitudes "are likely to promote a critical understanding of Zambia's socio-economic development" (Slater, 1995a, 223). Phiri is committed to a reconstructionist perspective and a radical paradigm. This would compare well with my effort to place the three modules within a framework of reconstruction and development in South Africa.

The contextualisation of values education is a major concern of my study. The values and attitudes in a highly developed first world country may not be the most appropriate for a developing third world country. The strength of Phiri's research is that he has been able to make the link between society's needs and education.

Two other pieces of research outside of geography, which tie in with my research, are Lowry (1993) and Parsard (1995). Lowry's (1993) research, which is highly critical of history in the past, attempts to provide some signposts for a new history curriculum in South Africa. This research is pertinent to my research, not least because of the fact that history and geography are placed together under the HSS. History in South Africa, in particular, has been accused of teaching the values of white supremacy. Within this debate, Lowry (1993, 35) analyses the role of values and attitudes in teaching history:

> "The uncritical teaching of values and attitudes can lead to uncritical socialisation, that is, indoctrination. A content-led curriculum can more easily be used for this purpose because it fails to expose the value assumptions of the content chosen. The result is a so-called 'objective' rendering of facts without a discussion of the ideology, philosophy, values or attitudes upon which that particular interpretation is based. This is dangerous, because it teaches values, while claiming not to. It is also intellectually dishonest. The teaching of values and attitudes happens, whether or not they are specified, because history is not neutral and can never be".

While Geography has been accused of teaching the values of colonial domination, the extent of the criticism has not been as severe as the one leveled at history. Nevertheless, Geography cannot pretend to be value free and pass off content teaching as objective teaching. While Lowry's (1993) research points to the broader process for a restructuring the history curriculum, my research is directed at the restructuring the geography curriculum, particularly in relation to values and attitudes.

Parsard (1995) has focused her research on the role of teachers in curriculum development. Parard's (1995) research on curriculum was based on one particular school i.e. Topaz Secondary School. It compares with my research as also being based in one school. This signifies an increasing trend in school-based curriculum research. It also relates to my research as I consider the kind of lessons that I have designed to be curriculum development in practice. The role of teachers as curriculum developers is stressed in policy documents such as the Gauteng Ministry of Education (1995):

> "The substantive transformation of the curriculum is a development in which teachers would participate, is likely to be a long term project but is one which must begin immediately. It will be the start of an ongoing process of teacher-driven curriculum development" (as cited in Parsard, 1995, 138).

3.5 Conclusion

I have alluded above to the distinctive characteristics, which make my research different to what has gone before. These are summarised below as:

- Values education is investigated in South Africa.
- The context is a post-apartheid, democratic South Africa.
- It focuses on three key geographic themes i.e. informal settlement, water and the environment.
- The research is limited to one grade in one school.
- The school is an independent, multicultural school.
- The research is qualitative.
- The research contributes to a new geography curriculum.

In terms of the research methodology and procedures, the research:

- is qualitative;
- uses an action research approach and the constant comparative method;
- is a case study;
- involves a pilot study;
- involves participant observation;
- uses data triangulation such as tape recording the lessons, evaluation sheets, written responses, interviews and learner profiles;
- uses investigator triangulation;
- uses a pre- and post-test;
- involves the design and teaching of three modules of lessons.

CHAPTER 4

INFORMAL SETTLEMENT

4.1 Introduction

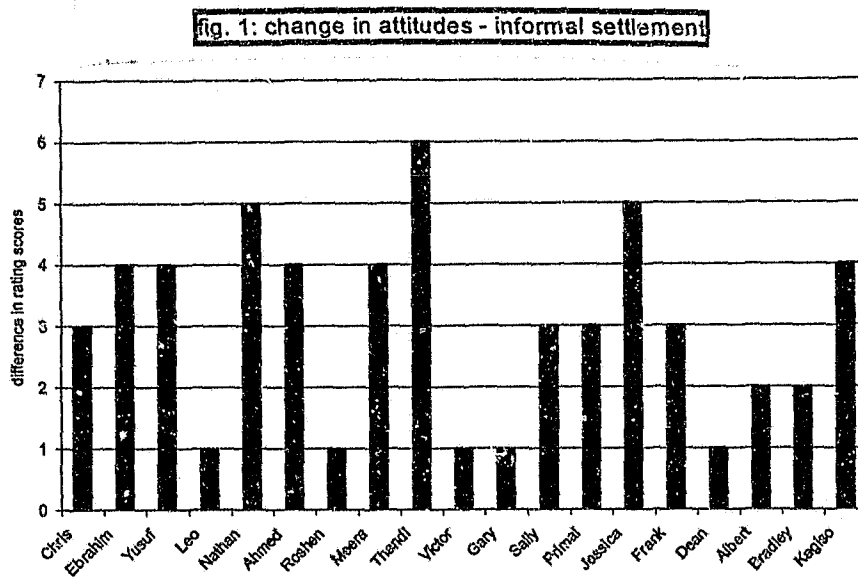
Chapters 4, 5 and 6 each deals with one module of lessons. These chapters provide an analysis of the data. The structure of the chapters follows the order of the lessons in the modules (Appendix A-C) except for the sections - change in values and attitudes (4.2, 6.2). These chapters will show how the theory has shaped the research.

	Video	Slide Show	Guest Speaker	Role Play	Newspaper	Magazine	Textbook	Story Telling	Flow Chart	Public Enquiry	Table	Questionnaire	Poster	Mapwork	Fieldwork	Group Work	Letter/Report	Case Study
Sipho Comes to Town		√		√				√				√						
Soul City Video	√										√							√
Informal Settlement in the Third World						√			√		√					√		√
Newspaper Article Analysis and Role Play				√	√						√					√		
Action on Informal Settlement				√							√	√				√		

Table 3: Teaching methods and aids used in informal settlement

The focus of this chapter is on informal settlement. As one proceeds through the different lessons, various factors, which have an effect on the development of values and attitudes, will emerge. Table 3 outlines the various teaching methods and aids that I used in developing values and attitudes in the informal settlement unit. As can be seen, a wide variety of techniques have been used to foreground values and attitudes. A table was used regularly for the learners to commit themselves in writing to their own or other parties' value positions. This was done to give the learners time to think about their position before a classroom discussion. It also served as a useful record of the thinking of the learners. This unit uses value analysis and values clarification exercises.

4.2 Change in values and attitudes



One of the key aspects of the study is to ascertain if there was any change in the learners' values and attitudes. It needs to be stressed that the change represented here simply gives an indication of where change occurred so that one might try and understand the factors giving rise to that change. Fig. 1 is a composite graph summarising the individual results found in figs. 2 – 17 (Appendix D). This is taken from the instrument titled Minister of Housing (Appendix A, 21). As can be seen from figure 1, some learners showed a marked change in attitudes while others remained fairly constant. Thandi, Jessica and Nathan showed the most change, followed by Kagiso, Meera, Ahmed, Yusuf and Ebrahim.

One can do a breakdown of change in attitudes according to gender and race. This group consists of 3 females and 5 males, with 2 black, 4 Indian, 1 coloured and 1 white learner/s (see table 4). This shows a high proportion of females displaying a change in attitude (75%) against 33% males. Black (100%) and Indian (67%) learners are well represented while white (13%) and coloured (33%) learners are distinctly under represented.

Victor, Gary, Bradley, Leo, Roshen, Dean and Albert showed very little sign of a change in attitudes. In direct contrast to the above group, this group is all male, consisting of 4 whites (50%) and 3 coloureds (100%). We can see that at this early stage, females showed greater change as did black and Indian learners.

There is a marked correlation between fig. 1 and whether the learners themselves felt that their attitudes had changed or not. The exceptions were Thandi and Ebrahim who felt that their attitudes had not changed while Jessica felt that her attitudes had only changed slightly.

Some learners felt that they had not changed their values and attitudes, as is indicated below:

- Sally: "I have always felt sorry for them." This reveals Sally's concern for those less well off.
- Thandi: "Before we started this unit, I knew what was up." Thandi lives in a township area and has probably visited informal settlements.
- Primal: "I understand their problems and other peoples thoughts on squatters." Primal has an above average knowledge of the social situation in South Africa.
- Ebrahim: "I feel the same way about squatters because of the negative effect they're having on the country." Ebrahim retained his negative attitude to informal settlements.

Some learners felt that there had been some change in their values and attitudes and expressed themselves as follows:

- Jessica: "I now can see the other points of view but before I would have stuck to my own." Jessica shows she became more open to other points of view. This is an important facet of values education.
- Meera: "Usually I would say that they should just bulldoze but after seeing the video I don't think that's the way out." This demonstrates that awareness of problems faced by others can lead to a change in values.

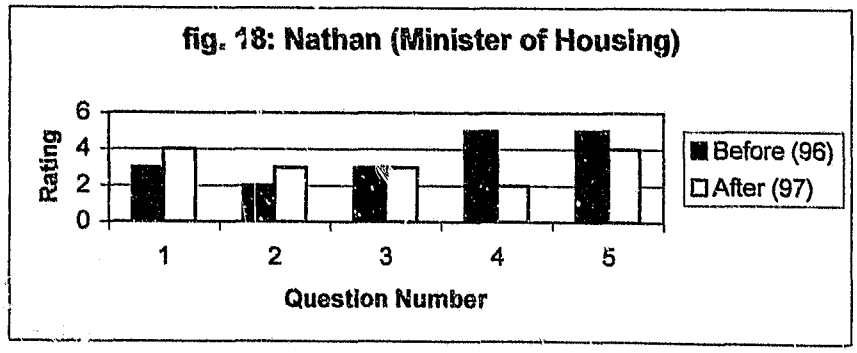
- Leo: " I always thought squatters are human too, although crime rates increase as a result."

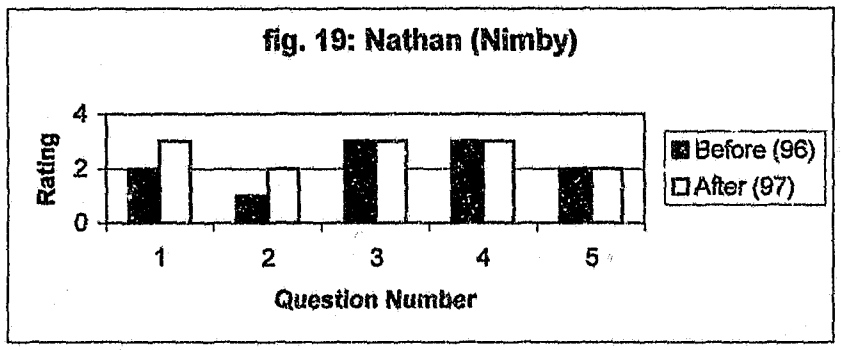
Some learners felt that there was substantial change in their values and attitudes and expressed themselves as follows:

- Kagiso: "I've become more sympathetic towards the situation unlike before, where I saw them as parasites which were lazy to build houses." This statement demonstrates the development of empathy for the plight of others.
- Nathan: "I have learnt of their needs and values and I now realise that they have a very hard life." Nathan also reveals that he has become more empathetic to squatters.

From the above, one can detect varying degrees of change in values and attitudes. For some it was a drastic change, for others there was hardly any change.

Nathan is an interesting case in point. Nathan failed grade 11 and repeated it the following year. Nathan was the only learner to sit through this unit twice. It is interesting to see if there are any noticeable changes in Nathan's attitudes. Figs. 18 and 19 document Nathan's attitudes as expressed in the two exercises in the lesson - Action on Informal Settlement. Fig. 18 refers to the exercise on Minister of Housing (bulldoze, give people money, etc.) while fig. 19 refers to the exercise on Nimby (crime rate will increase, my property value will decrease, etc.).





In 1996, Nathan felt that "in certain situations bulldozing is good, especially in camps where violence, theft and crime is rife". By 1997, Nathan's opinion of bulldozing was that "it does not exactly solve the problem" (see fig. 18, question 1). On the issue of giving people money, Nathan in his first year agreed with this action "because this will help to build houses". By the following year, Nathan moved to the neutral choice arguing that this "does not work. People rely on you without making their own effort". On the issue of low cost houses, Nathan moved from strong disagreement to agreement. While there are some changes, fig. 19 also shows a certain degree of consistency.

It would seem that Nathan, having sat through the same unit twice, was able to come to a deeper understanding of the issues involved. In particular, Nathan's rethink on the merits of bulldozing indicates that his values had shifted. This ties in well with Nathan's interview (Appendix I, 3):

- "A:Before the lessons I just felt they were like another thing, you know. They were just a burden to the community and whatever, they just caused theft and stuff like that.

Q: OK. After we had been through all the different problems they have and what have you, did it change?

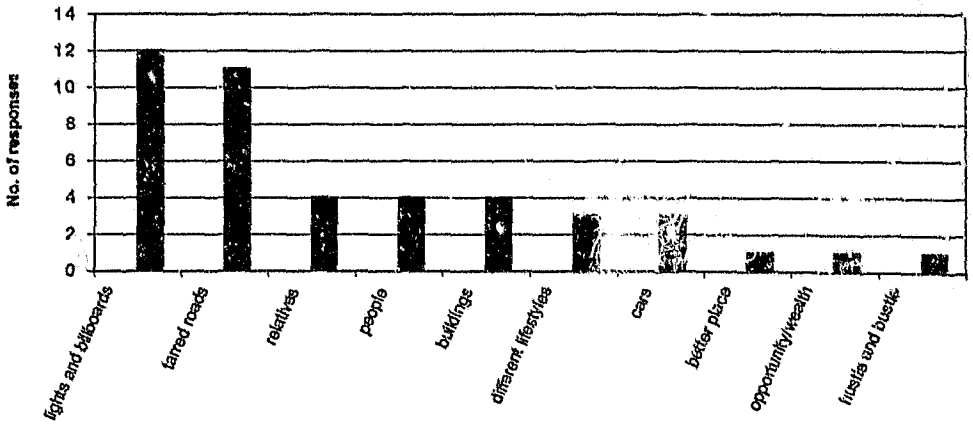
A: Ja, it definitely changed because I saw that they do suffer as well – the rate of crime that we suffer is due to their suffering as well because of no sanitation, no money, no means of getting money, and they have quite a bad life".

In other words, Nathan's change in values and attitudes comes about because of his empathy with the suffering of squatters. The lessons had given him some awareness about the way of life of squatters. With this new knowledge, he was able to shift his values and attitudes quite considerably.

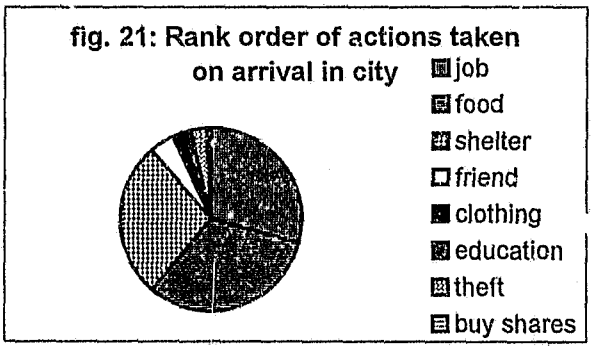
4.3 Sipho Comes to Town

This lesson is an empathy exercise about a migrant arriving in the big city. One of the causes, and by no means the only one, of informal settlement are migration from rural areas. The syllabus normally tackles the issue of migration through a study of push and pull factors. The learners watched a cartoon slide show called "Joe comes to Town" which set the scene on what it might be like to arrive in a big city as a total stranger. The slide show had a humorous side to it, which helped to relax the learners. After watching the slide show, learners were asked to write down the problems and exciting aspects of arriving in the city. Most learners identified the tarred roads and lights and billboards as the most exciting things for Joe on arrival in the city (see fig. 20).

fig. 20: Exciting things for Joe on arrival in the city



The second part of the lesson was to put the learners in the shoes of a migrant arriving in the big city with only R50 in his pocket and a grade 8 education. Developing empathy is a powerful technique for developing values and attitudes. It puts learners into a situation in which they do not normally find themselves. Fig. 21 describes the rank order of what the learners would do when they arrived in the city. Not surprisingly, jobs, food and shelter topped the list.



The third part of the lesson involved a story-telling role-play. Every time one learner finished telling his/her part of the story, another learner had to pick up the story. The story telling really worked well with much laughter and participation. According to Meera, "The lesson was enjoyed because of the way it was done with the slide show and how we had to add to the story of what happened". Gary put it as: "It was a fun exercise. We were learning and having fun at the same time". Having fun and enjoying the ideas of other learners is not only an essential ingredient of the learning process but especially so when it comes to values education.

The learners were able to deepen their understanding of the values and attitudes of migrants:

- Dean: "People's values differ according to their position...I learnt that people who have low paying jobs have to work hard to make a living".
- Meera: "People that didn't have things really valued everything".

Quite a few learners discovered the harshness of the situation for migrants:

- Gary: "We learnt about the problems that migrant workers face and I became more aware of the harshness of the situation".
- Roshen: "This story shows the harsh reality of rural people coming to the city in search of work".
- Chris: "It showed me just how hard it is to live in Johannesburg. People coming from the homelands to the city are faced with a lot of problems".

Learners also developed an understanding of how difficult it is to get employment:

- Kagiso: "I learnt that peoples' perceptions of big cities are wrong and their enthusiasm for jobs in the big city are misplaced".

By immersing themselves in the world of new migrants to the city, they developed a better understanding of what it is like to be a migrant:

- Roshen: "What was interesting was the fact that we put ourselves in the situation".

Frank even went further and suggested we could improve the lesson by "putting us in that situation".

The learners were able to clarify their own values. The learners also had to confront how difficult it is to survive:

- Roshen: "It made me realise that I am lucky for all the opportunities I have".
- Primal: "I now value the security of having a home and knowing the city".
- Bradley: "Most of us think that money grows on trees".
- Albert: "It made me think about my values and attitudes towards the way people work to survive and support the family".

Developing empathy, by putting learners in the shoes of others worked well in developing an understanding of the situation of others as well as clarifying their own values.

4.4 Soul City Video

Soul City is a popular television series, which deals with health issues in an entertaining way. Most of the learners would have watched some episodes in this series and could identify with the actors and actresses. This particular episode was about heavy rain, which destroyed a shack. The first planned outcome of this lesson was to enable learners to develop a visual dimension to living in an informal settlement. As with the previous lesson, it went for an education-cum-entertainment angle as opposed to a straight documentary on informal settlement. A second planned outcome of this lesson was to teach learners to identify the values and attitudes of different role-players. This is a values analysis strategy.

Butt (1991, 51) has argued that far too often geography teachers use videos as a means of "providing convenient 'set' lessons which require little or no planning". Butt (1991) provides a parallel attitudes and values enquiry to the five stages Geography 16-19 Project route for enquiry for the use of videos. I have followed the route of helping learners to critically analyse the values and attitudes of individuals/groups in the video.

Figs. 22 to 27 have classified the values and attitudes of the key actors and actresses in the video as identified by the learners. There is a high degree of consistency between the learners in their identification of the values and attitudes of various individuals. The majority classified Dr. Budlender as generous (fig. 22), Victoria as discriminatory (fig. 23), Green Helmet as helpful (fig. 24), Nonceba as motivating (fig. 25), Mary as helpful (fig. 26) and Ali as generous (fig. 27).

Quite a few learners indicated that the video really affected their outlook:

- Roshen: "This video really changed my attitudes towards people living in squatter camps. I realised that their lives are in constant danger because of the ground they live on and the rain washes their houses away".

- Sally: "I was very upset that they have to start from scratch once the rains come down... I learnt a lot from this video and it made me think how lucky I am to have what I have".
- : "It was sad to see how people living in informal settlements suffered in all ways".

Some of the learners picked up on the class differences:

- Dean: "People forget about others especially if they have a higher standard of living".
- Kagiso: "I learnt that the impoverished valued basic things that the rich tend to take for granted and that they have a sense of pride.
- Bradley: "I found the way that people think that the squatters live is wrong. Their shacks are actually fitted out quite well".

For some, the video was fun while for others it was not serious enough. It remains a challenge to capture this balance:

- Gary: "It was fun watching a video. The comedy mixed with the tragedy interested everyone".
- Primal: "The video is a bit fluffy and not as serious about the subject as it should be".

There was an ongoing contrast between those who had visited informal settlements and those who had not:

- Thandi: "The visuals made it clearer for most of the students who hadn't seen such things happen before. I might not live in a squatter camp but we see these things almost everywhere we go".
- Chris: "There is also a lot of ignorance about the whole idea of squatters on both sides".

By identifying the values and attitudes of different individuals in the video, the learners seemed to have developed a critical insight into the different individuals. However the

comments from the learners indicate quite clearly that the actual footage of an informal settlement gave them a much clearer idea of what informal settlements looked like. This was an invaluable asset for the lessons to follow.

4.5 Informal Settlement in the Third World

The intended outcome of this lesson was to enable learners to understand that informal settlements occur in most parts of the developing world and not only in South Africa. I felt that after the first two lessons, which were heavily value-laden, it was important to introduce content on informal settlements in the form of three short extracts on other countries. The teacher always has to work out how to balance content, skills and values/attitudes. Given that the focus of these modules was values education, obviously it was given more prominence. However, content and skills were included periodically. The lesson also looked at the connection between informal settlements and health problems. The action taken by governments in other third world countries was analysed. Learners completed a sequenced flow chart on the possible route following an illegal squatter invasion.

Most learners realised that the informal settlement phenomenon exists in other countries as well:

- Kagiso: "I learnt that the squatter problem is international and that the countries in which they breed have similar economic status".
- Dean: "I learnt that South Africa is not the only country with a large number of informal settlements".
- Roshen: "Some countries have had this problem for 30 years. This proves that squatters are a problem in all major third world cities".

This lesson had more information and thus required some reading which was not as exciting as the other lessons:

- Thandi: "This lesson was slightly boring due to the reading of information, but we did learn a lot".

- Frank: "I can't remember the lesson that well so it can't have been very good".

4.6 Newspaper Article Analysis and Role Play

According to Walford (1996), role-plays are highly effective methods of values clarification. I felt that it would be better to give the group some preparation for the role-play. They read four short newspaper articles to set the scene for the role-play. As usual, the class had to identify the values, attitudes and behaviour of the different groups mentioned in the articles in terms of value analysis. I drew a line down the middle of the class assigning one half as squatters and the other half as suburban residents. With both classes, the role-play was explosive with much heckling, jeering and shouting much to the dismay of the teacher next door. The learners' values and attitudes came to the fore very strongly. This was a good example of values clarification.

The role-play achieved its goal of helping the learners to express their values and attitudes while at the same time enjoying the exercise:

- Frank: "That was a very good lesson because when we acted it out your own values and attitudes came out. Plus it was very enjoyable playing out the different roles in the community".
- Meera: "The role-play was a good way in which to express our values and attitudes".
- Thandi: "The role-play was the best but some people didn't just know what they were talking about".

Even though the learners were acting out roles, which were not necessarily their own beliefs, some of the learners realised the differences amongst their classmates:

- Primal: "The role-play was most interesting as I learnt more about my classmates and their points of view on sensitive issues".
- Leo: "That everybody's values and attitudes are different".

The learners seemed to be a little surprised by the difference in values and attitudes that emerged in the course of the role-play:

- Kagiso: "I learnt that there were both hateful and sympathetic attitudes towards squatter dwellers. The selfish rich tend to be against squatters because of the devaluation of their homes and businesses. Yet the politicians (council) are relatively sympathetic and are trying to improve their living conditions".
- Sally: "I learnt that most people in the upper classes didn't care about those in the lower classes. They think they are too great for others. They don't have a heart. When we did the role play, most people had bad attitudes towards each other and only think of themselves".

Bradley seems to be surprised at his own attitudes. This suggests that Bradley is in the process of changing his values:

- Bradley: "It was amazing to find out how anti people were about squatters moving into their area and how they would rather that they moved somewhere else. I found it strange that I even wanted them somewhere else".

In addition to finding the values and attitudes of the groups mentioned in the articles, the learners tried to locate their own values and attitudes and those of the authors as well. Fig. 28 depicts the attitudes of the learners after reading the newspaper articles. The majority see themselves as finding solutions, concerned, helpful, and concerned about basic needs. Bradley stands out a little suggesting that squatters should be moved. The learners describe the authors as sympathetic, caring, truthful, but distant (fig. 29). In terms of the police (fig. 30), some found them to be interested in decreasing crime while others found them to be violent and unkind. The majority of learners described the squatters as wanting security and to meet their basic requirements (fig. 31). On the other hand, learners saw the city council as looking after certain interests and being selfish.

The fact that this was a multicultural class made the sharing of views so much more interesting. The class was fortunate to have people who came from quite different backgrounds. This made for a very lively interchange in the role-play. People were

randomly assigned to a group so they might not have been sharing their true feelings. This was advantageous in that it took the edge off in what could have been a little tense. The role-play was also slightly humorous so you could be forgiven for saying things that upset others because it was not really clear whether you really thought like that or were just playing a role.

4.7 Action on Informal Settlement

The last lesson in this unit looks at the question of what action should be taken on the issue of informal settlement. The lesson is divided into two exercises i.e. Minister of Housing and Nimby. After placing their crosses and comments in the appropriate block, the learners discussed the similarity and difference of their answers.

The majority of learners either strongly disagreed or disagreed with bulldozing (fig. 33). Three learners (Kagiso, Albert and Frank) were neutral. For Roshen, bulldozing is "barbaric and not democratic". Jessica argues that bulldozing puts "too many lives at danger and solves nothing". Ahmed feels that "It is not ethical or helpful to anyone" while Roshen contends that "it just aggravates the situation. People will just rebuild and waste money". This exercise allowed learners to express their feelings quite openly.

Similarly fig. 34 shows most learners in disagreement with giving money. Roshen was the only one in the class who agreed with giving money because "loans would help a lot of poor people to own their own land". From a more left wing perspective, Kagiso found that it "will breed a culture of dependence on the government". From a moral perspective, Thandi was against it "because some don't know how to manage money" while Victor felt "the money may be abused and not used correctly". From a more conservative perspective, Bradley contends that "it won't be economical for the country" while for Frank "people must work for their money".

Most learners strongly agreed or agreed with site and service except for Yusuf, Nathan and Sally (fig. 35). Sally felt it wouldn't really help them because they would still look

untidy. Gary, using his economics background, agreed because then lots of people can get land". Kagiso contends that site and service will "compel people to better their surroundings further" while Victor found it to be "the best solution for all so everyone can get what they want".

Most learners agreed with low cost houses except for Jessica, Thandi and Dean (fig. 36). Jessica once again shows her analysis of the situation by arguing that "only a few lucky people will receive housing". Kagiso chose the neutral option because while on the one hand "it could cost the government too much, on the other hand it addresses the problem".

Everybody either strongly disagreed or disagreed with land invasion (fig.37). Frank felt quite simply that "the land doesn't belong to them". Albert argued that his rights would be curtailed: "I would not like to have my land invaded". Victor sensed the complexity of the issue: "This aggravates everyone and no solution will be found". For Meera, "they can't take someone's land which the person has paid for".

The second part of the lesson was about the Nimby (Not in my backyard) phenomenon. The learners looked at how they would respond if a group of squatters moved onto an open piece of land across the road from their neighbourhood. Most learners saw a negative impact from such a scenario. Quite predictably they asserted that the crime rate would increase (fig. 38), their property value would decrease (fig. 40) and pollution and disease would increase (fig. 41). Furthermore, most suggested that a place should be found but not in their neighbourhood (fig. 39). In a notable exception, Jessica and Victor, showing their sympathy with squatters, disagreed with this. Similarly, Jessica, Victor and with Nathan this time, unlike their peers saw it as an opportunity to bridge the gap between different communities (fig. 42). Caught in this dilemma, Gary, Bradley, Leo, Thandi, Sally and Ahmed promptly expressed their neutrality on bridging the gap.

One of the key indicators to the learners' values and attitudes is how it is expressed in action. This ties in with action learning. The last two parts of the lesson focussed on

broad strategies of action to manage informal settlements. I was looking here to see if any of the learners wanted to take some personal action flowing out of the issues raised in this unit. I posed this question to the learners at the end of the lesson: "Is there a need for you to do anything about the situation of squatters? If so, what would you like to do?"

Jessica, Ahmed and Victor indicated a specific yes answer.

- Jessica: "I've done things like plant trees and promote schooling in the area. But I would rather like to meet the people who live there and hear how they feel".
- Ahmed: "Yes. I think that I should write a letter to the press and to my council to ask them to help these people".
- Victor: "Donate money to squatter development and try to lend a hand to improve the situation".

Both Jessica and Victor were highly involved with YCS and they have visited informal settlements on different occasions. This suggests that their values and attitudes were developing quite importantly outside of the classroom. For example, they had planted trees in informal settlements. The learning that they had received out of this was noticeable. The solutions proposed by Jessica and Victor were more realistic and practical and not vague, general solutions to the problem as proposed by the others.

Yusuf, Leo, Thandi, Frank, and Nathan gave general yes answers which indicated that something needed to be done but without any specific participation on their part.

- Yusuf: "Yes, we need to address this problem now and we should try to come with a solution to providing low cost housing for everybody".
- Leo: "Supply them with jobs, not necessarily in town, but amongst themselves in their own neighbourhood".

Gary, Roshen and Meera didn't know what to do.

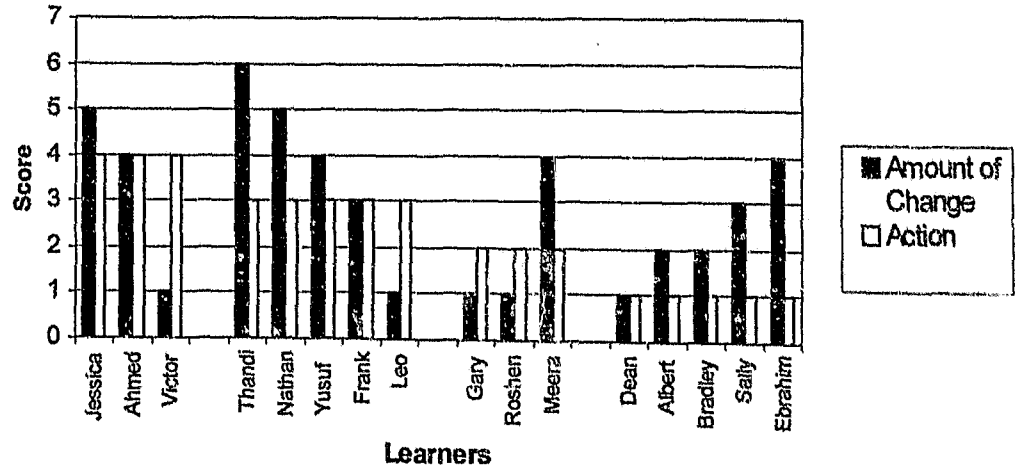
- Meera: "I would like to, but I don't think there is anything I can do and I don't think it will make a difference. It would be too small to even be noticed". This ties in with Meera's earlier statement that it all depends on the government.
- Gary: "I don't really know what to do. It's the government's job to sort it out".

Sally, Ebrahim, Bradley, Albert and Dean indicated a no answer.

- Sally: "No, I can't really do anything".
- Ebrahim: "No, Because they are the reason for the crime situation". Ebrahim was consistent in his negative attitude to squatters. He always linked them to the crime problem.
- Bradley: "I don't believe there is anything that I can do now, because there is still racial conflict and problems". The racial issue is a big issue for Bradley.
- Albert: "I don't think there is a need for me to do anything about it". Albert remained distant from the issues and did not participate much in the debates.

There is some degree of correlation (fig. 43) between the readiness to get involved in action and amount of change as measured in fig. 1 (change of attitudes – informal settlement). For example, there is a close correlation with Jessica and Ahmed (specific yes) who scored high on amount of change. In contrast, Dean, Albert and Bradley (no action) scored low on the amount of change in fig. 1. There is also a close correlation for Yusuf, Leo, Gary, and Roshen. What we see emerging here is an

fig. 43: Correlation between amount of Change and Action



interesting correlation between interest in action and change of attitude during the module.

In terms of an overall evaluation of the lesson, some learners expressed how their attitudes had changed:

- Roshen: "This exercise opened my eyes to the scale and effects that informal settlements have on our lives".
- Primal: "This section again made me feel sympathetic towards the squatters' problems. The lesson made clear the never ending cycle of homelessness and the difficult evictions that threaten peoples lives".
- Bradley: "Very informative and cleverly done, it was well worth the time and effort. I learnt a lot and I enjoyed it. People's attitudes have changed with the new SA since back in the old days we would have all said bulldoze the shacks but now we don't". Bradley puts it down to the new SA thus showing the impact of the social context on the values and attitudes of the learners. The lessons were conducted in a period of transition and an atmosphere of democracy. Had the lessons been conducted a few years prior to this it is quite possible there would have been an entirely different set of outcomes.
- Leo: "Many people think about their own good. When they are put in bad situations, they realise what the problems are. Although informal settlements do cause lots of problems, some squatters are not really that bad".

Some learners focused on the solutions to informal settlement:

- Chris: "Informal settlements are a problem but nobody knows what to do about them. This showed us that there are pro's and con's to the different ways of removing squatters".
- Meera: "We came up with many good ideas and solutions that could be part of the action that could be taken but of course this all depended on the government because it was their responsibility. But the solutions we came up with sure were good".

From the above, it is evident that many of the learners shifted in their values and attitudes towards squatters.

4.8 Informal Settlement Unit – Grade 11 (1996)

I tested the unit in a pilot study on the grade 11 clases in 1996 before it was tested on the main sample group in 1997. The triangulator for the 1996 group, Ms. Lorraine Marneweck (Appendix K) observed these lessons. The lessons were fairly similar. The research data can be found in figs. 43 – 59 (Appendix E – Research Data on Informal Settlement – 2). Having been through a trial run, I was able to modify the lessons based on the learners' feedback.

In lesson 1 (Sipho Comes to Town), the learners also ranked jobs, food and shelter as the first three priorities (fig. 43). The analysis of the values and attitudes of the individuals in the Soul City video were fairly similar to the main sample group (figs. 44 – 49). In the lesson on Action on Informal Settlement, there were some significant differences. The minister of housing exercise reveals a shift to a more conservative perspective by the 1996 grade 11s. Fig. 50 (bulldoze) shows a much higher grouping being neutral with some also strongly agreeing. Similarly in fig. 51 (give people money), there is a more significant grouping of learners agreeing and being neutral than the 1997 group. Fig. 52 (site and service) also has a larger group disagreeing and strongly disagreeing with this strategy than the 1997 grade 11s. Fig. 53 (low cost housing) shows the majority in disagreement. For fig. 54 (land invasion) there was a high degree of similarity. There is a clear difference between the two sample groups. The 1996 group was more conservative in their outlook.

The Nimby exercise reveals a different picture to the Minister of Housing exercise. Fig. 55 (crime rate will increase) shows three learners strongly disagreeing whereas there was no dissent in the 1997 group. Similarly fig. 56 (a place must be found) shows a significant serious disagreement whereas there were not any dissenters in the 1997 group. Fig. 57 (an opportunity to bridge the gap) is fairly similar to its equivalent in the 1997 group. The dissension appears again in fig. 58 (my property value will decrease) and in fig. 59 (pollution and disease will increase). This suggests that there is a significant grouping in the 1996 group who sympathise with the squatters. The Nimby

exercise reveals a shift towards sympathy with the squatters as opposed to the minister of housing exercise, which showed a shift towards the suburban residents.

In response to the question "How have my values and attitudes changed in this unit?" 18 learners found that they had changed, either substantially or slightly, and 14 that they had not. Some learners indicated that their values and attitudes had changed substantially:

- Angela: "My values have changed. I've become more sympathetic to squatters. I feel we should work with the government to help homeless people e.g. supply legal land and services for them.
- Gino: "I have learnt to become more understanding and recognise squatters as equals. It is because of other peoples' ignorance that we are now in this position".
- Basil: "I have changed by means of realising the hardships and struggles that the squatters go through in fighting the ignorance of the arrogant".
- Josephine: "I have come to understand the different viewpoints of people in different situations".
- Peter: "I take these matters more seriously because now I know what they are really all about".

Other learners indicated that their values and attitudes had changed only slightly:

- Phumzile: "My attitudes to squatters have changed slightly because I understand more about them although I would not want them near my neighbourhood".
- Brandon: "No values have changed yet my attitudes to squatter settlements have become more positive".

Some learners indicated that nothing had changed:

- Kebo: "My attitudes have not changed. I still think the same way as at the beginning".
- Shaira: "They have not! I still don't sympathise with squatters".
- Josephine: "My values and attitudes have not changed towards the squatters in the unit that we are doing".

The 1996 grade 11 classes were larger in number. This made it more difficult to get everyone's participation in class discussions. The 1996 group was not only larger but also a lot more polarised racially and politically. The 1997 group seemed to get on better with each other and there was less open antagonism and polarisation between the learners. Tables 4 and 5 give a breakdown by gender and race. There were many more black learners and females in the 1996 group. It is difficult to pinpoint whether this made a substantial difference to the outcomes of the lessons.

Part of the action research methodology is to adjust one's research as one goes along. Having taught this informal settlement unit to the 1996 grade 11 group, I was able to make improvements for the following year. On occasion, I was able to make improvements on the same lesson between one class and the next. As Marneweck (Appendix K, 4), notes: "I was not disappointed, Stephen had obviously thought about the previous lesson and possibly deepened his own understanding of the complex issue of values and attitudes". Marneweck (Appendix K, 6) raises the point that I missed some opportunities to challenge the values and attitudes of remarks made in the classroom such as "white chick". On the whole, however, the fact that I was able to teach the lessons as a pilot study prepared me well for the main learner group.

4.9 Conclusion

The variety of teaching strategies had a positive effect on the class. They found the lessons interesting varied and most importantly they could participate actively in the lessons. In five lessons a video, a slide show, a role-play, and story telling were used. These were all, appealing to learners and provided much stimulation.

The role of the teacher was of paramount importance in these lessons. Another teacher when teaching informal settlement may have chosen to focus on quite different aspects. The values of the teacher therefore determine what informal settlement issues; the class

would focus on. Secondly, the values of the teacher would also determine how the class would tackle those areas.

Politics inevitably came in a number of times in the lessons on informal settlement. The problem of informal settlements touches on so many other aspects of life including the political. I did not try and limit the political questions or issues that emerged. On the other hand, I also did not see the need to respond to them. The lessons were following a process and I did not need to continuously intervene. I did not try and play the role of neutral chairperson or of devil's advocate, as outlined by Stradling *et al.* (1994) but rather a facilitator of the process. In fact, the learners were not particularly interested in what I thought on every issue. The learners were too busy with their activities and discussions.

In this sense, the most important role of the teacher is to guide the process without having to pontificate at every opportunity. The process has a logic of its own. By allowing the process to unfold, values clarification will occur. The teacher's views are incidental to the process.

CHAPTER 5

WATER ACCESS AND CONSERVATION

5.1 Introduction

As in chapter 4, the data will be analysed in terms of the theory on values education. This chapter is about water access and conservation. By going through the various lessons, factors, which illuminate values and attitudes, will be analysed.

	Video	Slide Show	Guest Speaker	Role Play	Newspaper	Magazine	Textbook	Story Telling	Flow Chart	Public Enquiry	Table	Questionnaire	Poster	Mapwork	Fieldwork	Group Work	Letter/Report writing	Case-study
Siting of a Reservoir				√							√			√			√	√
Water Conservation												√	√	√		√		
Water for Jabula Squatter Camp				√		√						√		√		√		√
Water Consumption						√					√					√		
Water Transfer Schemes	√					√					√	√		√				√
Role Play on Different Water Sector Consumers				√	√					√		√				√		
River Study												√			√	√		√

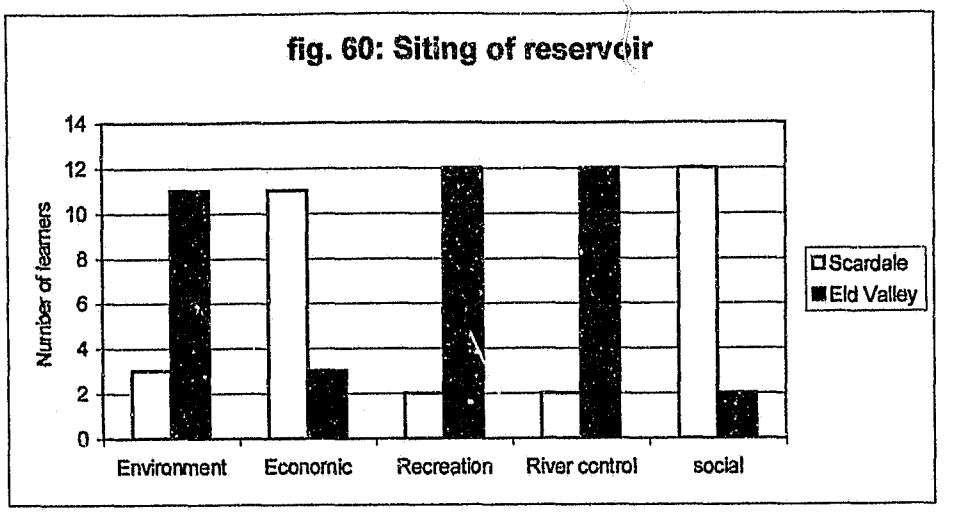
Table 6: Teaching methods and aids used in water access and conservation

Once again a range of different teaching methods and aids were used to elicit the values and attitudes of the learners. Table 6 demonstrates that group work was prominent, as were role-plays, tables, questionnaires, mapwork and case studies. As in the previous chapter, no textbook was used.

5.2 Siting of a Reservoir

This lesson used a British example of a case study involving a decision-making exercise. One of the aims of this research study was to develop South African examples of value-laden lessons. As I have pointed out earlier, such lessons are few and far between in South African geography textbooks. In contrast, geography textbooks in other countries have many such lessons. However, I believe it is not necessary to throw the baby out with the bath water by not using any international examples. I do think a weakness though, is the lack of balance between international examples and South African ones at present. The problem is exacerbated by the fact that publishers have not brought out major new textbooks for grade 10 – 12 in the last few years because of the uncertainty of the new curriculum. Publishers have targeted the implementation dates of curriculum 2005 at grades 1, 2, 3 and 7 and have brought out books for these years. The new curriculum 2005 textbooks may, however, shift the balance and provide more values lessons.

This particular case study, developed by Raw (1989), is an excellent example of a values laden lesson with a water theme. Raw introduces a fourth tier into the values, attitudes and behaviour hierarchy by including beliefs as well. Fig. 60 shows the best site chosen by the learners according to various factors. Coming to a decision by having to weigh up various conflicting factors helps to clarify the values and attitudes. In a classic value analysis exercise, learners also filled in the missing values, beliefs and attitudes in a table of the different role-players (Appendix B).



Both Meera and Sally identified the issue of self-interest:

- Meera: "It was very interesting to see how people were selfish and only thought about themselves. It was actually quite difficult to decide on who to listen to because on both sides peoples lives would be disturbed".
- Sally: "A lot of people wanted to build a reservoir to benefit themselves and their companies. I learnt that these people don't care about the benefit of others".
- Kagiso: "I learnt that peoples values are a deeper cause to their attitudes. I learnt that MPs and businessmen have goals which benefit them and that the only way of letting them get their way is to sit back".

In one sense, self-interest is a strong factor in the real world when it comes to decision-making around controversial issues. Yet in another sense, one of the weaknesses of identifying values and attitudes of different individuals is that we tend to caricature them and box them into self-interest positions. Real life can be a little less predictable.

This particular lesson had sufficient depth and complexity, which gave the learners a challenging task to perform:

- Yusuf: "At first I never thought building a reservoir could be so complex. After reading the notes I saw the work and negotiations that go on ...It put me in both the farmers' and workers' shoes. Also I realised that money can easily overpower a small minority".

The letter writing exercise allowed the learners to express themselves in their new roles as various characters in the village:

- Gary: "My situation is becoming desperate as my money is running out. I feel that myself and all the other people in Storby would benefit greatly if the dam was built".
- Chris: "I have worked my whole life to get what I have and I think it is extremely unfair for the bureaucrats in parliament to take my land away".
- Ahmed: "As I am elderly, I do not wish to move or sell my farm to the water authority. The building of this reservoir will spoil the beauty of this valley".

Many values lessons tend to err on the simplistic side. This lesson does not. It has sufficient depth and also combines content, skills and values/attitudes quite successfully. I thought that this lesson worked well.

5.3 Water Conservation

Posters often adorn classrooms as pretty decorations. This whole lesson revolved around the use of a poster. The difference was that this poster (Enough clean water for us all) had been specifically designed as an educational tool. The poster was accompanied by a booklet which was developed by the Department of Water Affairs and Forestry (Clacherty, 1996) This is an exciting trend where national government departments are now putting out posters which are educationally sound and interactive as opposed to only being visually attractive. This ties in with Lobinger's (undated) approach to posters. Posters can be used as codes which participants can decode and apply to their own situation.

Each group was given a poster, booklet and a worksheet to complete. The theme was about the wise water management of a river system. The lesson was able to integrate content and skills with values and attitudes.

Frank who up until now had been a bit detached from the lessons and who adamantly claimed on each form that his values and attitudes had not changed suddenly did a turnabout:

- Frank: "My values and attitudes changed drastically to see what really happens in a dirty river. We must make it clean so we don't end up dead".

This may have come about because he felt uncomfortable with the political undertones of the informal settlement unit and much more at home with discussing water conservation. When discussions become too heated, some learners tend to withdraw.

Bradley was developing his critical ability and made constructive suggestions on how to improve the lesson:

- Bradley: "It was very interesting to find out the problems with water, but it could have been better if we had to think of the problems ourselves and work out ways to fix them".

Thandi raises a valid concern about doing too much group work:

- Thandi: "I don't think the group work was worth it because the pamphlets were good enough and it was better to work alone".

There is always a dilemma of how much group work to use. Some learners prefer working on their own while others prefer working in groups. This is a difficult balance to maintain. It also raises the purpose of group work. Is it just a subdivision of the class or is there some cooperative task that the learners need to complete together?

5.4 Water for Jabula Squatter Camp

This lesson links to with the unit on informal settlement with the focus now on water access. Learners were put in the position of the local councillor who had to submit a report to the council covering four key areas. Learners were asked to locate seven taps using some mapwork skills. Mapwork skills are often taught without any link to values and attitudes but purely as a skill on their own. Bradley and Gary enjoyed this aspect very much:

- Bradley: "The best exercise of the term. I learnt about the problems of the lack of water. I enjoyed drawing the circles and trying to work out where all the seven taps would go".

- Gary: "This was fun practical work. We decided where to place taps in a squatter camp. We were learning whilst we were having fun. Our values and attitudes on water were changed drastically during this lesson."

Gary, who was also a little reticent in saying whether his values had changed, was quite forthcoming about his change here.

The teaching strategy that I was employing here was to take normal geographical skills like mapwork and calculation of water volume and put these into a thoroughly South African context. One is raising an issue of the social use of geographical skills and their role in the reconstruction and development of South Africa.

Fien and Slater (1980) and Maye (1984) see the importance of action learning, a strategy with which I agree. It seems to me that there is also a place for an indirect or delayed action. Learners might be developing their ideas at this stage of their lives and only later on in their careers choose to take action. In this context, allowing learners to practise their geographical skills in the context of providing water to an informal settlement, may provide an inspiration with which they could follow up later in life.

Learners also had to provide a solution to the problem of squatters helping themselves to water from garden taps. Fig. 61 summarises the solutions. The majority suggested allocating other taps followed by building obstructions:

- Leo: "Put taps in and apologise to residents of nearby suburbs. Tell people about the new taps laid".
- Ahmed: "Provide water for them so that they will not need your water".

Roshen, Ebrahim and Gary suggested guarding the taps and were quite explicit on how they would do this:

- Roshen: "Barbed wire, security system, motion detectors, land mines the gardens, and big dogs".
- Ebrahim: "Build higher walls. Put barbed wire on your fence. Motion sensors. Buy a good security system".

- Gary: "Tell the residents to get dogs or get locks for their taps".

The crime situation in South Africa obviously has a major impact on the values and attitudes of the learners.

Similarly, the learners had to propose a solution to the problem of sewerage from the fields finding its way into the nearby river. The majority chose to introduce proper sanitation (fig. 62).

The second part of the lesson looked at the general water situation in South Africa focusing on how many people do not have access to water. The learners studied the water and sanitation section of the RDP (ANC, 1994). Fig. 63 shows the learners' suggestions on where adequate water could be obtained for informal settlements.

Meera and Frank were obviously touched by the plight of squatters:

- Meera: "I learnt that water was valued so much more by other people than by us. We just open our taps and let them run. It was sad that these people had no where to live and had no water and sanitation facilities there".
- Frank: "I was shocked to hear how our people have to walk. So I thought in that lesson that everybody should have an adequate water supply. I actually felt sad for them hoping they would get water soon".

Both Yusuf and Primal were grappling with the complexity of providing water to all with such limited resources. Primal goes one step further than Yusuf in the complexity and raises the general tension in South Africa in providing for all with limited resources:

- Yusuf: "This proved that putting taps is not as easy as a normal person would think it is. These things take careful preparation".
- Primal: "I now understand what a difficult task it is to provide for as many people as possible with such limited resources at hand. The question faced by the ministry of who gets what and how much is very complicated".

Even though there are three separate teaching units. There are common threads running through them. I specifically tried to create linkages where possible.

5.5 Water Consumption

The intended outcomes of this lesson were for learners to look critically at how much water they use and how this compares to other people in South Africa. In addition, I wanted the learners to clarify their attitudes towards water usage.

- This lesson provided a welcome change from the big issues like informal settlements and siting of reservoirs which did not always effect the learners directly. No matter how big the issues, the learners always brought it down back to their experience. For example, when the class was discussing the amount of water used in different parts of South Africa e.g. the old homelands, townships and suburban areas, Sally was concerned about how long she spent in the shower:
- Sally: "They say that if you shower it saves water but how does that work out, because when you are showering water is constantly going through, and if you wash your hair it is going to take longer?" (Appendix H, 9).

A bit further on, Bradley was preoccupied with the same issue:

- Bradley: "But who stays in the shower for half an hour"?

Teacher: "Some people do. Some people sing songs in the shower and shampoo their hair three times" (Appendix H, 9).

At times like these one is tempted to press ahead with the lesson. But I found that it is important when dealing with values and attitudes to give learners the latitude to relate the content matter to their experience even if it is not exactly where you intended the lesson to move.

When dealing with values and attitudes every now and then one encroaches on difficult issues such as confidentiality. A useful way of checking whether the learners' calculations were at all realistic was to compare it to their monthly water bill. Gary was not too happy about this:

- Gary: "It's confidential".
  Teacher: "Who says it's confidential"?
  Gary: "My brother".
  Teacher: "Your brother? Tell him it's not confidential. Fill the water bill figure in that block - I want to see the correlation with what you guys estimate. The water bill is the only accurate recording of how much your household uses. For homework you get that piece of paper from your mother and father and you fill it in here" (Appendix H, 14).

You can detect the irritation in the teacher's voice here. This is in itself an unintended attitude coming across in the lesson. Possibly such information may have been embarrassing for Gary or it may just have been an excuse not to do the homework. In retrospect, Gary raises an important dilemma. What right does the teacher or the class for that matter, have to personal information. On the one hand, for values education to be meaningful it needs to relate to the real lives of the learners. On the other hand, other learners can misuse such information. Relating to the personal experience of learners can be contrasted with simulation games that are often used in values education. Sometimes the learners have to play out fixed roles. This can be a little forced at times and can fail to achieve its objective.

Having calculated how much water they used, the learners then had to draw a pie chart of their daily household consumption and a bar graph comparing the monthly household consumption totals for their group. This demonstrates that although the focus was on values and attitudes it was nevertheless well complemented by developing skills. The learners also had to fill in the empty balloons on a picture of a river catchment, in this way assisting the development of their creative and expressive abilities (Johnson, 1995). This allowed the learners to use humour in looking at water problems, which is another angle in which to develop values and attitudes:

- Victor: "That guy drank straight from the river the other day and look what happened to him".
- Gary: "Moo, this w:ter is bad"(a cow speaking).

Most of the fun in the lesson occurred in working out how much water the learners used at home. There was lots of animated discussion in groups arguing about how much water a particular household item consumes:

- Gary: "It was interesting learning about how much water I was wasting. It changed my attitudes on water wastage. I no longer waste so much water".
- Thand. "This was fun. We got to see roughly how much water most people and you used. Now you begin to understand why people and organisations are forever preaching for people to save water".
- Chris: "We use water everyday without even thinking about it. This section made me think about just how much water I use each day. This section was a real eye-opener".
- Kagiso: "I learnt that relatively privileged people tend to misuse or overuse water. Their attitude towards water preservation is quite bad because they think it's in abundance".

I think a lot of learners were genuinely surprised to see how much water was consumed in their household's consumption. This was a lesson to which frequent reference was made, suggesting a greater awareness of water usage. This lesson proves that if the issues touch learners in a relevant way, they are likely to develop values and attitudes around it. This lesson was a surprise to me. Of all the lessons in this unit, I never thought this one would have the most impact. This raises a pertinent issue for values and attitudes. As much as one can plan to include values and attitudes in lessons, their impact is highly unpredictable.

5.6 Water Transfer Schemes

This lesson consisted of two short ten-minute videos with a worksheet to complete. The first video was on the Tugela-Vaal Project and was largely content-based. The second video, on the Lesotho Highlands Water Project, was also content-based. I decided to include content-based lessons intermittently so as to cover certain aspects of the

syllabus. However I used the second video as an exercise whereby the learners analysed the values, attitudes and behaviour of the different role-players (figs. 68 – 71)

Fig. 72 shows the attitudes of the learners towards the Lesotho Highlands Water Project. Almost all of learners said that the project should go ahead unconditionally. Victor supported it on condition that it "accommodates all the people" and Primal realised that "the project will make northern Cape farming possibilities very limited". Yusuf felt that "nobody should be hurt and people should be compensated for their loss."

The lessons impacted on the learners' attitudes as follows:

- Gary: "We learnt how much work goes into making a dam. It changed my attitude of "Dams are there and I don't really care".
- Ebrahim: "People value life more than anything else. Life is dependent on water. Water is very scarce and there is very little of it to support the population".
- Primal: "This lesson simply built upon the last lesson to emphasise the size and consequences of the water shortage. The video made the previous lesson's graphs and charts more real and thus more important".

Not all lessons were equally exciting but I felt that the learners gained some important information.

5.7 Role Play on Different Water Sector Consumers

This lesson hinged around a role-play. In terms of both expression and clarification of values and attitudes, it rates as one of the best in the three modules. The class was asked to choose which of the following four sectors they would like to represent. I find it preferable to let learner's choose the role they would like to play. This already involves them in choosing a value. Their choice is shown in table 7.

	Class 1	Class 2
Commercial Farmers	Primal and Thandi	Meera and Jessica
Subsistence Farmers	Sally and Nathan	Dean and Albert
Municipalities	Yusuf and Bradley	Roshen and Ziyaad
Industry and Mining	Victor and Kagiso	Chris and Ahmed

Table 7: Learners representing different water sector consumers

A raging debate occurred around the question of paying for water:

- Bradley: "They can't collect money for water in Soweto and that, the ANC and every body caused it that they mustn't pay their rates to bring down the government and people haven't got that out of their thick skulls yet – that you mustn't pay your rates".

  Thandi: "If they can't get accounts to people then how are they supposed to know how much to pay". (Appendix H, 18-19)

A little later on Bradley and Primal differed on the same issue:

- Bradley: "If everybody in Observatory didn't pay their water, they would cut all the water to Observatory. Am I right? They would, so if everybody in Soweto hasn't paid they must cut off their water".

  Primal: "Everybody in Observatory has a job".

  Bradley: "Let's say I've got no income and I can't pay my water. They are going to cut my water". (Appendix H, 20)

Inevitably when one discusses controversial issues one is bound to get entangled in political/racial differences. It is precisely at times like this, when the debate gets a little heated, that would scare some teachers off values education. My own feeling is that these differences are already there and you can't avoid these issues emerging. What is critical however, is how the teacher handles these types of discussions. What tone does the teacher set for the class? I always expected the learners to respect and listen to the contribution of the others. At the end of the day, even though there was intense debating,

there was still cohesion in the class. There was never any animosity between these individuals because of the discussions. The learners expected to defend their point of view. It was made easier by the fact that sometimes the learners were expected to defend views that were totally contrary to their own. In fact, they got so used to the process of role-playing and debating that this was no major concern to them.

Bradley in the face of opposition, stuck to his views. He operated out of a worldview where the same standards applied to everyone. If the authorities were going to cut his water then they should cut everybody else's out of fairness. This could tie in well with what the Religious Education Co-ordinator (Appendix J, 1) calls his "strong Catholic background" which is used to applying moral laws to all people equally. At the same time Bradley also represents the views found in conservative white families.

On the other hand, Primal operates out of a worldview of the struggle for social justice. The clash between the values and attitudes of these two individuals is part of a broader clash between the values and attitudes embedded in different worldviews. This relates well to Slater's (1992) assertion that values belong more closely to one or other ideology. The question of ideology seems to hover in the background when dealing with values and attitudes and is in some ways inescapable. The South African situation is rich in ideological diversity. However at secondary level and unlike tertiary level, learners are not overly preoccupied by ideological differences.

Because both Primal and Bradley were prepared to argue their viewpoints, it could be argued that they benefited the most in terms of clarifying their values and attitudes. In other words, because both of them gave a lot to the classroom discussions, it stands to reason that both of them got a lot in return. If one were to do an assessment of values, which this research did not cover, one would have to find the categories in terms of participation for these two learners to score well. Bradley and Primal seem to concur with this assessment:

- Bradley: "It was very informative and exciting. These were periods when I learnt the most. It was fun to find out how I put together knowledge that I have gathered from other sources and put it in for extra information".
- Primal: "This exercise was successful for me because I had to step into somebody else's shoes and argue their case successfully".

Because the lessons were a process, I was not expecting any signs of a change in values and attitudes in the early lessons. I felt that as the learners got into the swing of things, they would clarify and develop their values and attitudes with time. Over time Gary who was a bit reluctant in the first module got more involved in the process:

- Gary: "It was fun pretending to be different people. ... We learnt not to take everything for granted".

Some learners were a bit bowled over by the conflicting views:

- Roshen: "This shows how difficult it must be to debate a topic rationally and form any kind of solution.
- Albert: "Not very successful because everybody attacked one sector consumer more than others".

Other learners found the lively debate to be fun:

- Chris: "I really enjoyed this section because of the very lively conversation which resulted from it".

Kagiso discovered a connection between values and attitudes:

- Kagiso: "I learnt how peoples' values towards water affected their attitudes. If water was readily available it was taken for granted and vice versa".

Good debates don't just happen off the cuff. My experience shows that a lot of preparation needs to go into it beforehand. The issues needed research from the teacher. I often gave the learners articles to find out information before I allowed them to

debate. These lively debates were often preceded by preparation in their small groups. So by the time the learners went into the debate, they were more than prepared for it.

5.8 River Study at Bezuidenhout Park

I concur with Opie (1997, 83), who suggests that "thirst for adventure-plus experiences (which) bring all things together: imagination, sensory awareness, discovery and action-filled adventure in and for the environment". The fieldtrip to Bezuidenhout Park, which is situated approximately five kilometres from the school, was done jointly between the geography and biology departments. Hence many of the exercises have a biological bent to them. However, at the end of the day, the river is just one ecosystem, which can be studied from different perspectives. Sacred Heart College has a strong tradition of integrated studies, which encourages interdepartmental co-operation.

The fieldtrip gave the learners firsthand knowledge of what a polluted river looks like. They were able to relate this to their classroom discussions of rivers.

5.9 Conclusion

This unit raises a host of pertinent issues for values education. The most central issue is relevance. The learners were engrossed in calculating how water their households consumed. They argued about this for days. This was obviously a very real issue for them. It touched them all directly. None of the learners, on the other hand, lived in informal settlements and these issues were only of interest from a distance. At another level, the issues of poverty and development are right here on our doorstep. This is unlike first world countries, which have to include discussions on third world countries for these dimensions.

Again variety played a big role in this unit. Role-plays, case studies, videos, posters, group work and letter writing were all used. Once again no textbook was used. Raw's exercise was well constructed, challenging and thoughtful. By taking a real case study and turning it into an exercise seems to have worked well. Similarly, Clacherty's

educational poster also heralds a new way of educating. This idea holds endless possibilities.

Frank livened up in this unit more than in the previous one. Some issues will always be more interesting than others for some. Values education needs to take this into account.

The unit raised a number of other pertinent issues on the learners: Sally's preoccupation with the shower, Gary's concern for confidentiality, Thandi's dislike of groupwork, Primal's and Bradley's clash of worldviews. These are all significant factors, which influence values education in the classroom.

CHAPTER 6

COAL MINE AT THE VAAL RIVER

6.1 Introduction

This chapter, as in chapter 4 and 5, will analyse the research data on coal mine at the Vaal river. In particular, I will attempt to understand and examine the factors which influence values education.

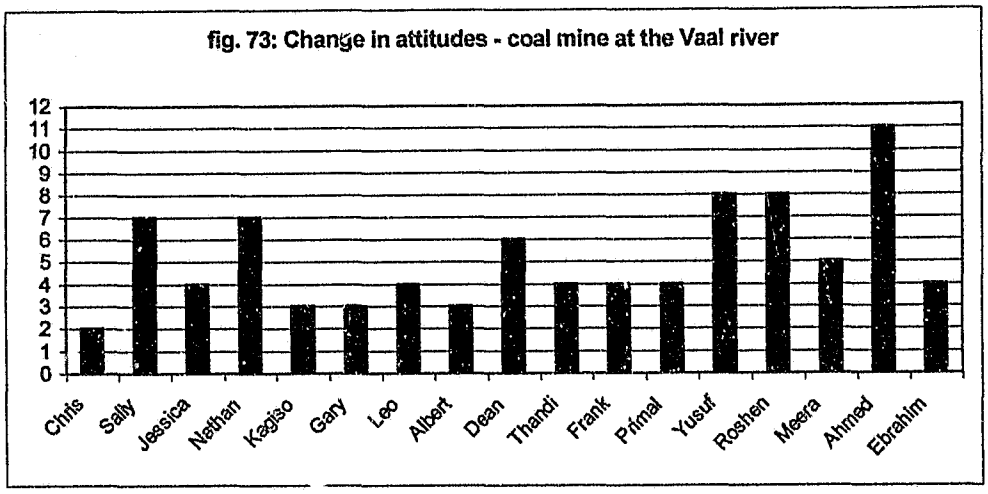
	Video	Slide Show	GuestSpeaker	Role Play	Newspaper	Magazine	Text Book	Story Telling	Flow Chart	PublicEnquir	Table	Questionnaire	Poster	Manwork	Fieldwork	Group Work	Letter/Report	Case Study
Living in South Africa	√										√							
Lesotho Highlands Water Project			√															√
Introduction to Coal Mine at Vaal River					√	√							√			√		√
Preparation for Public Enquiry					√	√										√	√	√
Public Enquiry										√						√		√
Environmental Impact Assessment											√					√		√
Drakensberg Fieldtrip												√			√	√		√

Table 8: Teaching methods and aids used in coal mine at the Vaal River

Table 8 shows the wide variety of teaching methods and aids that were used in this unit. I searched for a controversial environmental issue on which to peg this unit, eventually selecting coal mine at the Vaal River. One of the teachers at school had a holiday house in the affected area. Her elderly mother had taken up the campaign and had even written the president a letter about it (Appendix C, lesson 4). The premise on which I based my thinking was that a case study was the best way to teach environmental issues, especially if the case study had an element of controversy surrounding it. Many teachers had used the St. Lucia debate but after a few years it

had become a bit stale and hackneyed. In terms of the range of values education strategies, I used the values clarification strategy.

6.2 Change in Values and Attitudes



As in chapter 4, Fig. 73 is a composite graph summarising the individual results found in figs. 74 –91 (Appendix G). This results are summarised from the instrument titled environmental questionnaire (Appendix C, 1). Ahmed, Yusuf, Roshen, Sally, Nathan, and Dean have shown the most change in attitudes while Chris, Kagiso, Gary and Albert have shown the least change.

One can also give a breakdown by race and gender. The high change group consists of 5 males (33%) and 1 female (25%), with 2 coloureds (65%), 3 Indians (50%) and 1 white (13%) learner/s. Where as in fig. 1 females showed a predisposition to change, the opposite is true here. Coloured and Indian learners are well represented, while white and black learners are under represented. Chris, Kagiso, Gary, and Albert have shown the least change in attitudes. This consists of 4 males, (27%) with 2 white (25%), 1 black (50%) and 1 Coloured (33%) learner/s.

By doing a comparison of both fig.1 and fig. 73, we can identify those that showed high or low amounts of change on both occasions (Table 9).

	Coal Mine	Informal Settlement	Total
Ahmed	11	4	15
Roshen	8	1	9
Yusuf	8	4	12
Sally	7	3	10
Nathan	7	5	12
Dean	6	1	7
Meera	5	4	9
Jessica	4	5	9
Leo	4	1	5
Thandi	4	6	10
Frank	4	3	7
Primal	4	3	7
Ebrahim	4	4	8
Kagiso	3	4	7
Gary	3	1	4
Albert	3	2	5
Chris	2	3	5

Table 9: Comparison on change in attitudes between Coal Mine and Informal Settlement

From table 9, it can be observed that Ahmed, Yusuf, Nathan, Sally and Thandi have shown high amounts of change. On the other hand Gary, Albert, Chris and Leo have shown low amounts of change. From the preceding discussion it has become clear that Gary, Albert, Chris and Leo are pretty set in their ways and resistant to change.

6.3 Living in South Africa

This video served as a general introduction into environmental issues in South Africa. The video raised issues around fishing, electricity, water, and a focus on the Sabie river valley. A common theme running through the video was that 'brown' and 'green' environmental issues go hand in hand. The learners were becoming skilled at analysing the values, attitudes and behaviour of the groups portrayed in the video. The results of

this analysis can be found in figs.92 – 103. Values and attitudes are grouped together as views for the purpose of these figures.

Having set the general framework for looking at the environment, I then wanted to proceed to specific case study. Obviously the kind of video that I choose reflects the values and attitudes of the teacher. This has an important bearing on the development of the values and attitudes of the learners.

6.4 Lesotho Highlands Water Project

Mr. David Fig, director of the Group for Environmental Monitoring (GEM) spoke to the class. Mr. Fig was involved in the Lesotho Highlands Water Project. His organisation was involved in negotiations between the Basotho rural dwellers whose land was to be occupied by the dam and the Lesotho government. There was conflict between the rural dwellers and the Lesotho government over the issue of being displaced from their ancestral land.

This lesson was not originally planned but came as a suggestion from Primal whose mother worked for GEM. The idea came from the previous unit on water access and conservation. Primal was very excited by what he was learning and the level of debate in the class. Primal personally arranged with the director to address the class on the Lesotho Highlands Water Project. Primal has undertaken action learning in this instance.

This is an example of action being taken on the basis of one's values and attitudes. I would rate Primal's behaviour as generalised set (5.1) in Bloom's taxonomy of objectives (affective domain). This would also be the equivalent of stage 6 of Rath's schema – doing something with choice.

A key aspect of values education is exposing the learners to people who hold strong values themselves. Gayford (1987, 2) argues that the "experience for the pupils seeing strong commitment to important issues facing mankind today is an element in the

education of young people which should not be allowed to disappear". While Gayford is referring to the role of teachers, I have applied his argument to guest speakers as well.

The learners seemed to have many questions for Mr. Fig because of his intimate knowledge of the project:

- Chris: "We got a personal response on questions we had. The speaker was informative and had first hand experiences of the problems faced".
- Roshen: "He showed us the scale of the project and the finer details of the project. We also got an idea of the amount of money spent on the project".

6.5 Introduction to Coal Mine at the Vaal River

We were fortunate enough to get large A1 size photographs of the area from Mrs Molenaar. This was especially helpful in giving a visual dimension to the problem. The learners were able to see exactly which area was going to be mined. In retrospect it would have been good to have asked Mrs. Molenaar to come and speak to the learners herself. I gave an input on the issues to explain the broad parameters of the controversy as seen from some of the key role-players (Appendix H, 29-32) I refrained from giving too much input in the course of the three modules but tended instead to focus on activity based learning. I felt that I needed to give the learners a broad understanding of the issues involved so they could quickly find their way around the complexities of the controversy.

6.6 Preparation for Public Enquiry

By now the learners had been through some public enquiries and debates. They were beginning to realise that they needed to prepare their arguments very well if they wanted to look good in front of their peers. I was amazed at how they set about preparing their arguments and thinking ahead about possible counter arguments they might encounter. Some learners got involved in the preparation whilst others found it too much to read:

- Sally: "The groups worked well together as they gathered information".

- Roshen: "Too many notes to read".

The learners also had to prepare a written report on their findings. Gary's report links the environmental problems to the new democracy that exists:

- Gary: "South Africa is today a fledgling democracy. We have a new president, a new democracy, and a new constitution. But our country is falling apart. Everywhere you look new pollution making factories are going up. Is major damage of the environment the price we have to pay for progress, or is the government going to help everyone by imposing stricter laws on where factories, buildings and even strip mines can be placed?"

Gary is also able to detect bias in the official reports. This is an important aspect of values education by not simply accepting things at face value:

- Gary: "The report that SASOL says was 'fair and impartial' is a load of nonsense and it is obvious that it was biased towards the people that were paying the salaries of the experts. If this country wants to avert an ecological disaster it must put a stop to SASOL's plan".

6.7 Public Enquiry

The learners seemed to really get into the spirit of the public enquiry just as they did with the role-play on different water sector consumers.

The learners displayed different attitudes to the reports they read. Chris was able to detect the bias in them while Dean quoted them like the bible:

- Chris: "First of all they said there be no increase in the properties along the Vaal, the general report says that the value of properties along the Vaal will decrease".
  Dean: "If you read your report you would see that it says "NO IMPACT" in large bold letters. "NO IMPACT ON PROPERTY PRICES". (Appendix H, 30)

One of the key skills in values education is looking for the values position of the author. Although the learners state it rather crudely here, they seem to be questioning the impartiality of the report:

- Chris: "In that report they excluded such things as generators".
  Teacher: "Who wrote that report"?
  Chris: "Some moron working for SASOL".
  Teacher: "So you have problems with that, you think SASOL paid them"?
  Ahmed: "Ja, SASOL paid them".
  Teacher: "So you are unhappy with this report?"
  Ahmed: "I think we should get a second opinion." (Appendix H, 31)

In this particular debate, Chris and Dean seem to become the two main protagonists:

- Chris: "Where are they going to house all these miners"?
  Dean: "They'll build hostels. On the other side, as far as possible from the houses".
  Chris: "Can you guarantee that these workers are not going to go near the river"?
  Dean: "Why what are they going to do at the river? Wash"? (Appendix H, 32)

Getting into the mindset of the role that you are playing takes a bit of dramatic skill. Chris, Ahmed and Ebrahim who are normally fairly quite in class seem to have excelled at this:

- Chris: "We built holiday homes to be able to get away from it all, now we are going to have a little community just across the river from us".
  Ahmed: "There'll be skelms and shebeens and things like that. Drinking on the weekends" (Appendix H, 33).
- Ebrahim: "That just shows the demand for coal in the country. That just shows the demand for coal in the country. That's how much people use it. So people in the townships use it to supply power there, for everything. So that's why they say one truck every minute has to arrive. That's capitalism – supply and demand" (Appendix H, 35).

Ahmed's concern for the finite resource of coal and Chris' critique of the profit motive came through very strongly:

- Chris: "And the managing directors and the board of governors and the *groot koeke* (big shots) at SASOL; where do they live? The people who are actually going to benefit from this move in the end are managers and the MDs of SASOL. (Appendix H, 37)

- Ahmed: "They say that when coal is mined in one place and then another place and another place, eventually South Africa won't have any coal left And then where are they going to go"? (Appendix H, 35)

All in all, I think the lesson worked well given that most of the groups had done their research except for the wildlife society who was hardly vocal. Another factor to bear in mind is that some learners are quiet and shy in these types of debates. This may have been why Meera and Albert weren't able to represent their cause as well as they might have.

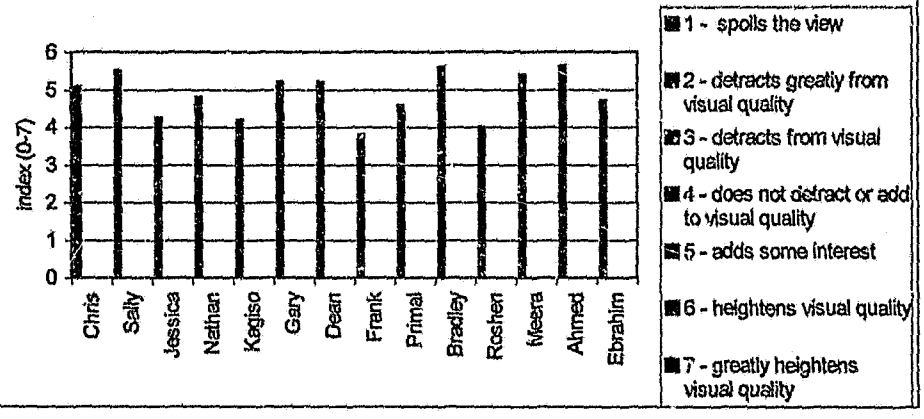
6.8 Environmental Impact Assessment

I thought that conducting an EIA on the coal mine at the Vaal River would be a useful way of ending off the coal mine issue. The main outcome of this lesson would be for the learners to develop the skill of running their own EIA. This lesson has a skills focus and not a values and attitudes focus. Jollands *et al.* (1996) provide three exercises for conducting an EIA i.e. conflict matrix, index of visual quality and Leipoldt matrix

The conflict matrix was a useful in that it gave a numerical value to the level of conflict. In the conflict matrix most learners identified high negative interactions between SASOL and the homeowners and lower negative interactions between the SASOL and the wildlife society. On the other hand they found high positive interactions between SASOL and the mineworkers

Secondly, the learners did an index of visual quality. The index relates to the area before mining has taken place. The results can be seen in fig. 104. The majority rated the area as a five on the scale. Interestingly no one rated it as a six or seven. Some even went as low as three and four. The Leipoldt matrix was more complex and required a great deal of application.

fig. 104: Index of visual quality



The learners had mixed feelings about this lesson. As in the previous lesson, Chris displayed a lot of concern for the environment:

- Chris: "This showed us how beautiful the Vaal is and what would happen if the plans for the coal mine went ahead".

On the other hand some found the lesson uninteresting:

- Sally: "Not very interesting. I just learnt how we all had very different views. I also learnt how to work out averages".
- Thandi: "Very boring, should have thought of other strategies for this lesson".

Mrs. Molenaar had given me some SAVE support forms. Only Sally and Thandi filled them in. There was not a lot of interest shown by the class in taking any type of action.

6.9 Drakensberg Fieldtrip

Fieldtrips are excellent strategies for developing values and attitudes of learners (Opie, 1997), (Bourquin, 1995). I was not able to take the 1997 grade 11 classes on the Drakensberg fieldtrip, which normally occurs in October because I left SHC mid-1997. However I was able to take the 1996 grade 11 classes to the Drakensberg in October 1996. As mentioned before the 1996 grade 11 classes were a pilot study. There is no reason why the results should be fundamentally different. The phenomenology exercise was the key exercise on the fieldtrip for this research study. In addition we visited the Tugela Vaal Water Project which dovetailed well with the section on water transfer schemes. We also did a settlement study of a rural village (Appendix C, lesson 7).

Bourquin (1995) developed the phenomenological enquiry that I used. It is based on a subjective approach. The exercise looked at how the learners felt about things and even tried to imagine how objects felt. This allowed the learners to use their senses in discovering nature. We sat up on the escarpment at Mont Aux Sources for an hour in solitude looking at beautiful surroundings. This is where the learners completed this exercise. The situation was perfect for this exercise. The learners responded well to this exercise and the quality of their reflection was very deep.

Fig. 105 represents the learners' feelings if a power plant was built nearby. All learners without fail interpreted this negatively. They were distressed, disappointed, angry and sad:

- Basil: "Angry and claustrophobic, because the nature that brought us up is being destroyed by its own 'children' just so someone can make big bucks".

Figs. 105 –108 reveal similar values and attitudes from the learners. Fig. 109 links up with the previous lessons on the coal mine issue:

- Angela: "I would feel glad for the poor people who are now able to put food on the table but I would somehow feel angry that they had to use this beautiful area".
- Shaira: "I think that's just plain greedy. Coal mining is important to survive but not at the expense of irreplaceable natural landforms".

The settlement study on the village was extremely value laden. I dropped the learners off a kilometre apart in groups of five trying to ensure that there was one Zulu speaking learner in each group. For most of the learners it was their first time to actually go into a village. Some went into homes and saw what conditions rural people lived in. The animated discussion that followed afterward was testimony that their attitude to rural dwellers had really changed. It was an eye opening experience. The learners were astonished to see electricity in the huts in the form of ready boards. This helped to break down their stereotypes of rural villages.

6.10 Conclusion

The variety of teaching methods allowed development of values to occur. As this was the final module, learners were able to express their values and attitudes quite clearly. The success of this unit was in the choice of the theme i.e.. coal mine at the Vaal river. The Vaal river was not very far away and some had visited it. The issue was also topical and related to one of the teachers they knew well. The controversial nature of the issue encouraged value expression. Environmental issues lend themselves well to the development of values and attitudes.

In terms of value analysis, the learners were able to detect bias in reports and newspaper articles. The public enquiry worked exceptionally well. The learners discussed this for days afterwards. Having to articulate your position in front of your peers as well as defend your position, allowed values clarification to occur.

I was somewhat surprised to see that not many were particularly interested in signing the SAVE forms. The follow through to action is not an automatic process. Possibly this particular form of action did not appeal to the learners and they would have preferred some other way of expressing their action. Primal had moved to action quite easily on the Lesotho Highlands water project.

The Drakensberg fieldtrip also developed values and attitudes effectively. The hour of solitude at Mont Aux Sources was an appropriate setting for the phenomenology exercise. The visit to the dwellings in the rural village was an eye-opener for all.

The ability of the learners to clarify their values and attitudes had developed considerably since the first module. They had become fully involved in the process and clarification of values had become second nature to them.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The aim of this study was to investigate the factors, which contribute to the development of values and attitudes in the geography classroom. The study also assessed the extent to which there was change in the values and attitudes of the learners. The literature review analysed the theory pertaining to the development of values and attitudes in geography. The research methodology described the approach of the research, which inter alia consisted of qualitative research based on an action research, constant comparative and case study methodologies. I designed and taught three modules of lessons and then evaluated those lessons to derive the key factors contributing to the development of values and attitudes.

The research accepted the premise that values education is an integral aspect of geography education. The focus was on how one goes about successfully developing values and attitudes. This brought into sharp focus, Fien and Slater's (1980) lament, that too few people were addressing the 'how' of values education. The essence of this research is to unravel the key factors in the development of values and attitudes. The key factors are analysed below.

7.2 Change in Values and Attitudes

This research study set out to discover which factors enabled the development of values and attitudes in the geography classroom. In order to do this; the study needed to have some indication as to whether learners' values and attitudes changed in the course of the lessons. The findings suggest that there was a change in values and attitudes of the learners in the course of the three modules. As expected, for some

learners there was clearly more development than others. A number of the learners spoke of having discovered things for the first time or seeing issues in a slightly different way. From my own position as participant observer, I noticed a change in values and attitudes in some of the learners.

Certain individuals came to the fore in the course of these lessons i.e. Bradley, Primal, Ahmed, Chris and Jessica. It was clear to me that they were in the process of articulating and clarifying their values. They were certainly growing in confidence in what they were feeling and improved their ability to share their opinion with others.

Tony Williams (Appendix K, 2) felt quite confident from his observation that there was change in values and attitudes: "Overall I feel that the lessons allowed pupils to form their own ideas and attitudes towards the modern day phenomena. Interviews confirmed that pupils felt that their values had been clarified and that greater knowledge of the topics had allowed for this. My view - based on this observation, there is definitely room for values education in the geography classroom".

The findings suggest that there was development of values and attitudes in the learners. It is now necessary to turn to those factors, which played a key role in the development of values and attitudes.

7.3 Teaching Strategies

Variety of teaching strategies is undoubtedly a key factor in values development. Through the group work discussions, the role-plays, the newspaper article analyses, the slide show, the videos and the EIAs, the learners were able to express their values and attitudes clearly. The variety of teaching strategies played a role in contributing towards the development of values and attitudes. An examination of the wide variety of teaching strategies that were employed in the course of these three units could be linked to the clarification of values and attitudes.

There are six major teaching strategies i.e. values clarification, value analysis, moral reasoning, values probing, values inculcation and action learning. I mostly used values clarification, value analysis and action learning. Some strategies were better suited to some issues than others. I adopted an approach which tried to choose the most appropriate strategy for the particular outcomes of the lesson. Teaching strategies tie in closely with the role of the teacher, which is discussed next.

7.4 Role of Teacher

I did not stick rigidly to any one of the four roles of the teacher as outlined by Stradling *et al.* (1994), i.e.. 'neutral chairperson', 'devil's advocate', 'stated commitment' and 'balanced approach' but used different strategies at different times. In general, I found the neutral chairperson to be the most useful strategy in that most of the lessons were activity-based. My key finding in this respect was that the teacher needed to guide the process. If the process is well thought out and planned, this would in itself allow values clarification to occur. The teacher's role is to allow processes to unfold in a meaningful way.

When I was asked a question, I would often turn it back to the class hoping to keep a discussion going without falling into the role of being the font of all knowledge. Tony Williams (Appendix K, 1) picked this up: "He was often asked by the pupils how he felt and what his view on the topic was but he did well in allowing the pupils to develop their own attitudes and values and not just copy him. This worked well". This ties in well with what the 16-19 Humanities Project advocated.

The learners' perceptions of the teacher's role are critical. Primal disliked teachers who simply got stuck in the chalk and talk mode:

- Primal: "It is very interesting because it is not the usual teacher just blabbing out facts to you, it's where we become involved and we understand a lot of the issues clearer in our heads because we have to fight on these issues and it not only makes us aware of the water issues, it makes us aware of our classmates as well

and what they think and that's very effective because you get to know your people in the class better" (Appendix I, 2).

For Nathan, the lessons worked well because he had total freedom to express his feelings and emotions:

- Nathan: "I thought it was very good because last year we didn't have anything like this and it's a new way because you're bringing out your own emotions, you're not just writing stuff out on paper all the time – you're honestly giving your own feelings and your own opinions" (Appendix I, 4).

One of the keys to success in values education is the relationship between the teacher and the class. Tony Williams (Appendix K, 1) observed that "Mr. Sadie had a good relationship with his pupils and was always willing to listen to any questions the pupils may have had or any queries that may have occurred. These queries were opened to discussion and this seemed to help with the overall understanding and allowed various attitudes towards the topics to be surfaced".

The role of the teacher is a critical factor in the development of values and attitudes in learners. Each teacher has his/her own style of teaching which is inevitably influenced by their training, personality and desired outcomes. One would have to evaluate one's dominant method of teaching and work in other ways, which could facilitate the development of values and attitudes. Variety of teaching strategies seems to be a key aspect for values development. Perhaps I was fortunate in having worked in the student movement and in adult education where participatory methods of education were dominant.

7.5 Which Values?

As the unit on water access and conservation demonstrated, a central issue is relevance. The learners were so engrossed in calculating how much water their households consumed that they argued about this for days. This was obviously a very

real issue for them. Frank, for example, felt more comfortable with the unit on water than he did with the unit on informal settlement. Many in the class could appreciate the lesson on water consumption because it affected them directly. Quite a few learners were genuinely surprised to see how much water they consumed. None of the learners, on the other hand, lived in informal settlements or on the Vaal river. These issues were only of interest from a distance.

This research study was concerned about the dependence on foreign values lessons. I think that the lessons demonstrated quite convincingly the abundance of issues there are in South Africa which can easily be translated into values education. This also raises the issue of which values need to be given priority over others. This study has argued that we need to tackle local issues in an exciting way. This is not to suggest that we should cut ourselves off from the rest of the world.

The South African context gives geography teachers some pointers to the types of values that teachers should be focusing on. These values can be found in the constitution and in national and provincial education policy documents. As table 1 demonstrates there is an increasing consensus on the key values facing geography teachers. Certainly the values that geography teachers need to focus on should tie in with the developmental needs of the country. Phiri (1988) has successfully demonstrated this in relation to Zambia. In this respect, the three modules contribute to the reconstruction and development of South Africa.

7.6 Multicultural Classroom

One of the riches in this exercise was the fact that the lessons were conducted in a multicultural classroom. We were able to have lively debates precisely because the learners had different experiences. When the learners contributed to the discussions, they brought their different experiences to bear on the discussion. This allowed the exchanges and interaction to be of a much richer nature than for a homogenous group.

Sacred Heart College lends itself to this type of study with its tradition and character. With the growing number of multicultural schools increasing rapidly, the results of this research could be applicable to a large number of schools in South Africa. Race and gender came up on a number of occasions. Often the different perspectives of the learners related to their cultural background. These discussions helped some learners to break down their racial and gender stereotypes. In terms of assumed values and attitudes on third world development issues, a parallel was found to exist between the centre and the periphery in South Africa. Similar dynamics in this relationship occur.

One of the recommendations of this research is to conduct a similar study in a township school. How would one approach values lessons in a very large class? How would the findings of this research change if the majority of learners experienced informal settlements and poverty first hand? A second recommendation would be to research ways of assessing values and attitudes in geography, something that was outside the scope of this research but nevertheless very important.

7.7 Group Work and Debates

Unfortunately group discussions were not recorded. My observation here, however, is that some of the best discussions occurred in groups. This is where most of the values clarification occurred. Almost every lesson had group work. On some occasions the groups were a place to share their viewpoints, on others the groups had to collaborate to achieve a particular task.

Often the learners were in the same groups over a few lessons where they were able to build up the security of knowing the others well. This helped to develop feelings of security and comfort in expressing opinions on controversial issues. This also allowed those who were more shy to participate in discussion. Classroom organisation here helped to present the message that learners are not there to receive knowledge but are able to construct knowledge themselves.

Undoubtedly the most successful aspect of the lessons was the role-plays and the debates. There were three such lessons:

- Squatters and suburban residents
- Role play on different water sector consumers
- Public enquiry on the coal mine at the Vaal

These lessons represented the highlight of all the lessons. I was amazed at how well the learners participated in the debates. They immersed themselves into the preparation so that when the time came to speak they knew what they were speaking about. The high level of debate also surprised me. It was in these debates and role-plays, above all, that the learners gave practical expression to clarifying their values. Role plays and debates need to be used more widely in values education.

7.8 Learning Support Materials

Tables 3, 6 and 8 all indicate that a geography textbook was not used once throughout the three modules. Values education lends itself to finding interesting resource material without having to rely on textbooks. This is not because I propagate that textbooks are unnecessary in OBE as some teachers have argued. On the contrary, and as I have argued elsewhere, good quality textbooks are absolutely essential for OBE to succeed in South Africa (Sadie, 1998). However, it is an indictment that the majority of South African geography textbooks in the pre-OBE era have been so slow to include values education in any significant way. It is unfortunate but true that many teachers experience the curriculum through the textbook.

The three modules give some direction on the way values and attitudes can be presented in textbooks. These lessons are activity-based and make use of a wide range of teaching strategies. If values and attitudes are to be taken seriously, then textbooks will have to give some indication to teachers on how to teach such lessons. The OBE learning support materials for grades 1,2,3 and 7 have shown a definite improvement in their treatment of values and attitudes.

7.9 Action

The few examples of lessons in the modules based on action learning worked out well. The Drakensberg fieldtrip highlighted this important area for values and attitudes. I include the phenomenology exercise and the visit to the rural village as examples of action learning. I agree with the statement that "nothing teaches better than action".

I have also pointed out that the learners did not respond well to the invitation to fill in SAVE forms. It seems to me that a direct follow-up to action does not always occur. However, there may be a slow movement in this area, which can entail life-choices at the end of the day in the form of a career choice or joining an interest group. We may well take some cues from The Australian Geography Teachers' Association (1988), which has outlined four types of projects in which this could occur i.e. informative, stimulative, directive and operative.

7.10 Politics

In some ways, it is inevitable that values education will touch on political questions. This applies to geography as a whole and not only values education. However, I believe that I have demonstrated that this need not scare teachers away. Every teacher has the choice as to how best they will feel comfortable in handling controversial issues in the classroom. Avoidance of such issues is not a productive way of handling controversial issues.

At another level, Huckle (1985) asserts that there are political and ideological issues around the different types of values education. I do not agree with the British national curriculum's limited understanding of values education. Certainly, as my lessons have shown, one need not be constrained by the British National Curriculum's expression of what is suitable values education or not. The South African curriculum

framework, in contrast, encourages values education and certainly has not prescribed that they be dealt with in a liberal framework.

7.11 Planned and Systematic Values Education

This research has demonstrated that values education needs to be done in a planned and systematic way. Half-baked attempts and tacking values education onto the end of lessons as an after thought are unlikely to be sufficient. If anything this research has shown that there is tremendous scope for teachers to tackle values education. However, it needs to be done with the same systematic thought and planning that we give to content and skills. It needs to be well planned and systematic.

One of the guiding principles of my approach was to develop a process. Nothing dramatic occurred in any lesson but when taken as a whole, there were definite signs of value development. Obviously I am not suggesting for one moment that this is the only way to do values education, but it is one way that has worked for me. I understood the attempt to do values education as a process. Teachers may want to plan this into the year's scheme of work. It need not all necessarily be done at once.

7.12 Conclusion

One of the reasons that I used the action research approach was that it would help to change my own approach. Until the final writing up of this research, it had not fully dawned on me how much my own understanding of values education had developed. When I started this research, I set out to develop values education for the learners. I had not realised just how much my own sense of values education had developed in this process.

This research was designed to establish the key factors in developing values and attitudes in the geography classroom. The discussion above highlights and elaborates on these factors. Teaching of values and attitudes has reached an exciting phase in

South Africa. The new OBE curriculum framework is very encouraging of values and attitudes. It has however been lacking in a theoretical and philosophical foundation for this expressed interest. The OBE policy documents have also been a little thin on the approaches and methodologies that teachers should use. It is in this sense that this research hopes to make a contribution to the ongoing debate.

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APPENDIX A

INFORMAL SETTLEMENT UNIT

Plan of Lessons

1. **Sipho Comes to Town**
2. **Soul City Video**
3. ***Informal Settlement in the Third World***
4. **Newspaper Article Analysis and Role Play**
5. **Action on informal settlement**

Lesson 1

Sipho Comes to Town

References:

Archdiocese of Sao Paulo. *The Journey of a People* Undated manuscript of slide show (Johannesburg, The Grail)

1. Slide show 'Joe comes to town'

1.1 What problems did Joe come across when he came to town?

_____

_____

_____

_____

1.2 What could have been exciting for Joe?

_____

_____

_____

2. Sipho comes to Town

Sipho has R50 in his pocket when he arrives in the big city. Sipho has a grade 8 education. He does'nt know anyone in the city. Pretend that you are Sipho.

2.1 What would you do? _____

_____

_____

_____

_____

2.2 Rank the above items starting with the most important.

_____

_____

_____

_____

2.3 Describe your experience of your first item.

_____

_____

_____

_____

2.4 Describe how you felt about your answer to question 2.3

2.5 One week later someone came to interview you about being in the city. Give your response below.

2.6 Explain what you spent your money on.

3. Role Play

The teacher invites different people in the class to build up a story around Sipho's initial actions in the big city. Using the blackboard the teacher draws a timeline indicating Sipho's actions as suggested by different students. A new person picks up the story after the last input.

Sipho Comes to Town

1. Slide show 'Jose comes to Town'

1.1 What problems did Jose come across when he came to town?

He didn't know where to go, he was lost in this city of lights, billboards and signs.

1.2 What could have been exciting for Jose?

Seeing his family and walking on a tarred road maybe also seeing all the lights and being in the heart of the busy city

2. Sipho comes to Town

Sipho has R50 in his pocket when he arrives in the big city. Sipho has a standard 6 education. He does'nt know anyone in the city. Pretend that you are Sipho.

2.1 What would you do? Firstly I'd look for a job that doesn't need a high education requirement. I would then find a place to stay and buy a little food to eat. I'd go somewhere where somebody could find me a job eg. gardening or anything to give me money.

2.2 Rank the above items starting with the most important.

Food to eat and survive, find a job where I could be sure to find shelter and even more food.

2.3 Describe your experience of your first item.

In the beginning I walked for days going

to many places to look for a job and I couldnt spend all my money incase I never get a job. Eventually I found a job as a gardener with one meal a day and shelter.

2.4 Describe how you felt about your answer to question 3.

Well in the beginning I was hungry and lived on little rolls of bread and water from taps. I nearly gave up as everyone turned me away. Then I hit it lucky and felt very happy, even though the pay wasn't great and the shelter was a bit messed up at least it was a start.

2.5 One week later someone came to interview you about being in the city. Give your response below.

The city is a hard life and it was very hard in the beginning for a long time I went hungry because I needed to budget my money but now that I have found a job it is much better and I get to do piece jobs here and there which can give me money for extras

2.6 Explain what you spent your money on.

I spent it on bread and milk and once I got the job I used it on better food and clothes and things to fix my house or room with.

3. Role Play

The teacher invites different people in the class to build up a story around Sipho's initial actions in the big city. Using the blackboard the teacher draws a timeline indicating Sipho's actions as suggested by different students. A new person picks up the story after the last input.

Joe Comes to Town

(This is an adapted version of Journey of a People)

1. Our story is of a journey that begins a long way from here.
2. The people in our story come from far away
3. they come from all corners of South Africa.
4. They leave their lands because of hunger, thirst, privation.
5. One of these persons is Joe,
6. animated by the hope of a better life.
7. After a long trip, he sees the big city.
8. Joe arrives in the heart of the metropolis.
9. For the first time he walks on a tarred road
10. and feels lost in a world of lights, billboards and signs:
11. Johannesburg.
12. Joe asks how to arrive at his relative's house.
13. He makes another trip across the city
14. until he arrives at the outskirts of the big city
15. He discovers the shack where his relative John lives
16.
17. and is received as a brother.
18.
19. The house always has room for one more.
20. Joe asks about life in Johannesburg. "The life here is harsh," John answers. "We have many problems but we face them together.
21. Come with us tonight when we meet to see how we can help one another".
22. At the home of a neighbour, a group of people meet.
23. They talk about their problems.
24. Joe, surprised, asks: "but is your neighbourhood like this?" "It's a long story", answers John.
25. When we first came here there was only bush.
26. Then other migrants arrived. Today, this is the outskirts of the big city.
27. Everyone lives jumbled together in small rooms and shacks.
28. There are only dirt roads that turn to mud when it rains
29. and to dust with the sun.
30. There was no place to throw the garbage
31. and we often ended up throwing it in the wrong place.
32. Public transport was like riding squashed in a sardine can.
33. There was no piped-in water
34. and the well water was contaminated.
35. Living this way, everyone was subject to sickness and there was no place to go to get well.
36. Sometimes, when your turn came to be seen by the doctor, it was too late.
37. Everyone here worked hard, but we always ended up with empty hands. We always seemed to end up with more month than salary!
38. How could we get out of this mess? First we tried to spend and eat less.
39. Even so that wasn't enough. So we worked more, the whole family worked.
40. The littlest children stayed locked up in the house,
41. without care or affection,
42. because if they stayed on the streets they could be run over.
43. Mothers suffered even more. They worked all day outside the home
44. and then they had to cook, clean and take care of their own house and children.
45. Even with all this there wasn't enough money, so we worked over-time at night.
46. We worked on weekends, on holidays, until we literally turned into machines.
47. We became more and more tired.
48. The machine did not stop turning

Lesson 2

Soul City Video

References:

Bobby Heany Productions. (1996) *Soul City II* (Johannesburg, ZSE TV)

characters	problems	solutions	values	Attitudes
man with dreadlocks	doesn't have a house, drinks a lot	plot near bottle store	enjoys life, family life	likes drinking,discrim inates against single women

characters	problems	solutions	values	attitudes
man with dreadlocks	doesn't have a house, drinks a lot	plot near bottle store	enjoys life, family life	likes drinking, discriminates against single women
Father Mother (Ali)	House is being flooded and is collapsing	leave the settlement and go to the clinic	cares about the safety of his family	want to help family and themselves
Lady with braids	Her house was collapsed	She goes to the clinic to find shelter.	Loves her family and is her first priority to solve her problem	
*Nonsebe	House has been destroyed and she needs to support her parents looking after her child.	She tries to recieve help from friends and from the clinic	Worries about loved ones	
Lady on cellphone with green jacket (TB Lady)	Has Tuberculosis	Goes for treatment and can no longer transmit the disease	Dedicated to work at the hospital and other people	Always worried about everyone else.
Victoria	Is paranoid and selfish	Causes problems for everyone	Thinks of herself only	She doesn't care about anyone and wants everything her way.
Thandi	Is wanting to organize housing project with nonsebe but doesn't quite know how to go about it	Needs to encourage community involvement and get the project in motion by raising money	Deep loyalty to the community	
*Girl with multi-coloured jersey (Nonsebe)	Works to long hours at the canteen and wants to organize housing project	To organize meetings find a site raise money go to the council	Love and dedication to the community and belief in the ability of the community to [illegible] housing	Improving her job
Doctor	People need a place to stay and shelter	He gives them shelter in the clinic	Very compassionate and generous	To help others
Counsellor	She has to help people find housing	Find a suitable site owned by council	Love of people and respect for them	Willing to help those in need
Vus,				
Nhlabati	needs money	must find a [illegible]		

Lesson 3

Informal Settlement in the Third World

References:

Jones, N. and Smart, C. (1986). "Urbanisation" in *Only One Earth*, Beddis, R. (ed) (London, WWF)

POOR HOUSING AND HEALTH — WHAT ACTION IS NEEDED?

Questions and activities

1 Look at the part completed table on this sheet. Then study the boxed words below and write in where you think each one should go in the table.

Provide enough water to each house and drains to get rid of waste water	Support [illegible] households to enlarge their houses and improve ventilation	Provide garbage disposal services and install drainage pipes
Supply clean water to all houses	Skin and eye diseases linked to dirty water	Stagnant pools and household wastes attract rats and insects which can pass on diseases
Give the poor the legal right to live on the land where they have built houses and supply water and sewers		

POOR HOUSING AND HEALTH

Housing Problem	Related Health Problem	Action needed by the government
Dirty water supply	Many diseases including diarrhoea, dysentery, typhoid, hepatitis	
Poor having to build houses on an illegal site	Government does not provide water supply and sewers so same health problems as those listed above are common	
Over-crowding and lack of fresh air	Makes it easier to catch diseases like flu, TB and diptheria where infection is through the throat	
No drainage and garbage disposal		
Lack of water for washing		

2 Study Photosheet A showing a range of housing in Third World countries. For each photo, list on a piece of paper which housing problems are most likely to occur.

3 What do you think makes a house a "real home"?

TWO WAYS TO DEAL WITH SQUATTER SETTLEMENTS

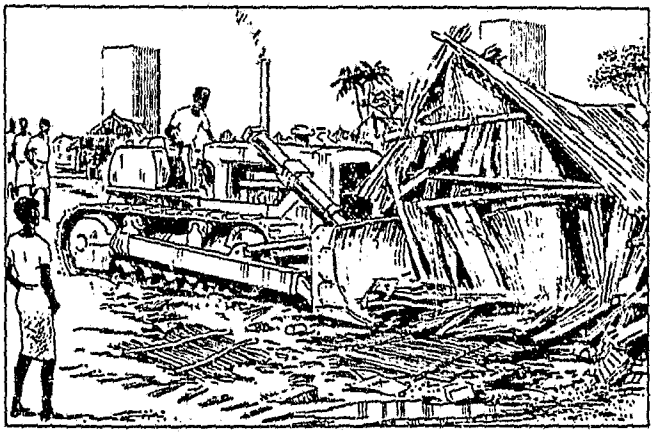
Questions and activities

1 Read extracts 1 and 2 on this sheet. They will give you an idea of two very different ways governments can deal with squatter settlements.

2 Then study the list of ten phrases and write them in the correct order in the boxes provided on this sheet. The first one has been placed for you.

3 Label the two alternative routes "the conflict approach" and "the co-operation approach".

4 Finally read extract 3. What do the writers think are the main reasons for governments now being less likely to bulldoze squatter settlements. List the reasons. Do you think bulldozing squatter settlements is a solution to the Third World housing crisis? Use extract 3 and any other information you have available to help justify your answer.



EXTRACT 1

The first squatter settlements grew up in the late 1940s. At first the settlers met with heavy police repression. The police would drive them off, beat them (sometimes fatally) and burn their shacks and possessions. So the squatters began to organise in large numbers. A site would be surveyed, always on vacant public land, of which Lima, surrounded by desert, has plenty. Then up to 100 families would get together and invade the site all at once, turning up in vans and lorries loaded with straw mats and tools. The houses were rushed up on lots that had already been marked out in advance in an orderly street grid. Often the eve of a national holiday would be chosen to give everyone a clear day for building and sympathetic journalists would be invited along as witnesses to deter police violence. The initial invasion required the creation of a tight, supportive organisation, which was also needed after the event to prepare for self defence against possible police attacks. This democratic organisation persisted and adapted itself to later needs such as the provision of services.

Source: The Third World Tomorrow Paul Harrison 1980

EXTRACT 2

In Argentina, the democratically elected government which replaced a military government in 1983 has shown a far more open attitude to squatter settlements than its predecessor, accepting land invasions, eliminating the repression of illegal settlements and stopping evictions.

A major land invasion of abandoned private property took place in late 1981 in Quilmes municipality in the suburbs of Greater Buenos Aires. By the end of 1982, one of the new settlers commented that:

> "20,000 people, driven by hunger, driven by high rental costs and unemployment searched for abandoned land . . . and that is why, today, thank God, we are here, we're organised, we're united . . . the only things the authorities gave us was a police cordon which frightened our children and jeopardised our progress".

Attempts by the municipality to destroy the new illegal settlements and by the security forces to isolate them through a cordon failed. Since 1984, with the new democratically elected government, the municipal and national authorities have been more sympathetic to the squatters' problems — although they have yet to formulate explicit plans to support the upgrading of such settlements. Municipalities are now taking the initiative, promoting self-help cooperatives, devising new ways of regularising illegal settlements, providing technical assistance and lending equipment.

Source: Shelter Infrastructure & Services in Third World Cities by Jorge Hardoy and David Satterthwaite, 1986

URBANISATION — ACTIVITY SHEET 6

EXTRACT 3

Over the last two decades, the attitude of many governments towards the eradication of existing slums or squatter settlements has changed. The fact that this simply destroyed some of the cheaper housing options open to the poor became evident to many city governments, eradication policies simply exacerbated the problem . . .

Certainly part of the reason was the sheer size of the problem. By the late 1970s most of the Third World's multi-million cities had more than a million living in illegal settlements – São Paulo, Rio de Janeiro, Bogotá, Cairo & Bangkok among them. Most smaller cities between a third and a half of their population living in illegal settlements. In virtually all, most new house construction was taking place in illegal settlements. In democratic societies, an increasing proportion of cities' electorate lived in such settlements. Elected city officials who could convince such settlements' population that he or she had their real interests at heart had a very large constituency . . .

Source: [illegible]

Residents build permanent houses

Government makes settlement legal

Evicted squatters search for a new home

Government bulldozes the squatter settlement

Government provides water and drainage

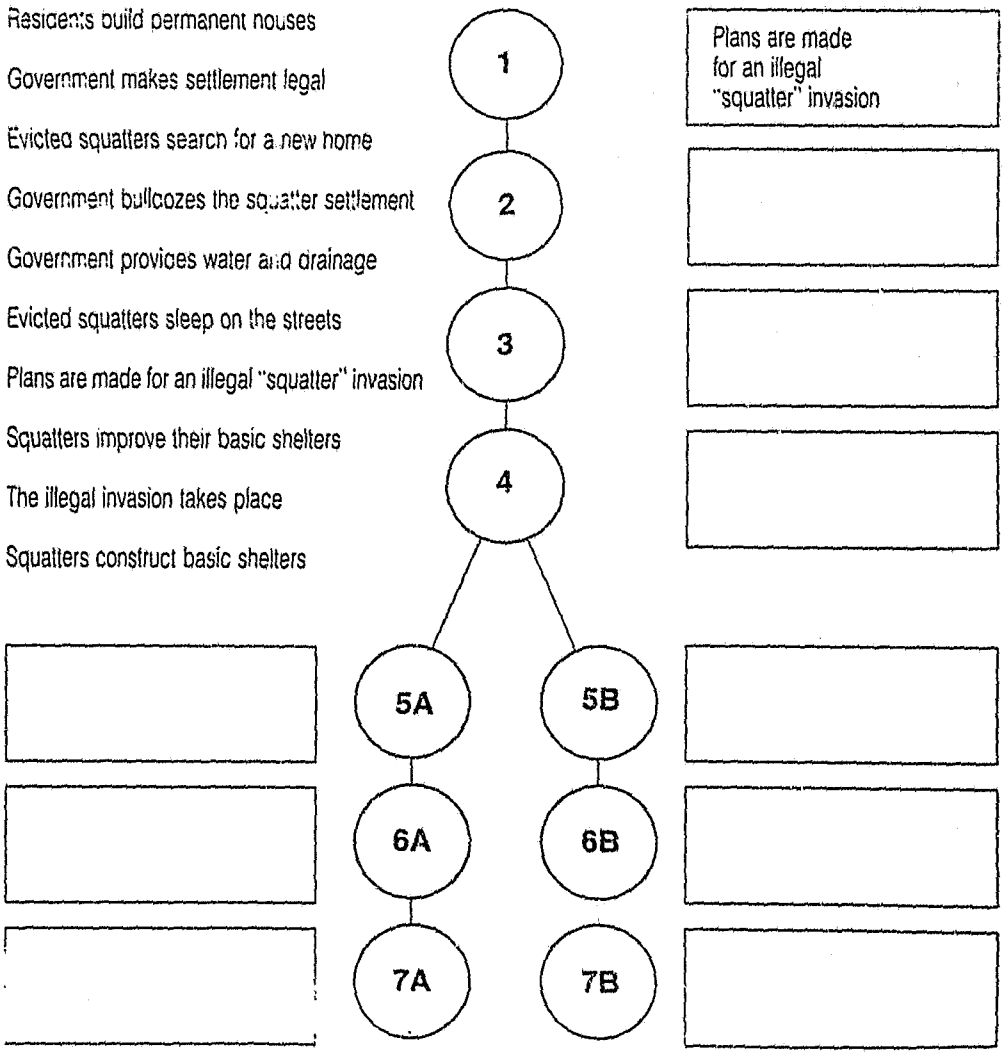
Evicted squatters sleep on the streets

Plans are made for an illegal "squatter" invasion

Squatters improve their basic shelters

The illegal invasion takes place

Squatters construct basic shelters



Lesson 4

Newspaper Article Analysis and Role Play

References:

Cox, A. (1996). Squatter Invasion of City Parks Growing Daily, The Star, 22 May, 1996

Cox, A (1996) Sheriff to Carry on Alex Squatter Evictions Today, The Star, 5 August, 1996

Lund, T. (1996). Squatters Stone 200 In Self Defence, *The Star*, 18 June, 1996

Read the newspaper articles and fill in the table below.

Newspaper Article Analysis	squatters	city council	police	me	Authors
values					
attitudes					
behaviour					

Newspaper article analysis	squatters	city council	police	me	authors
values	family life surviving day to day to keeping their families together	try to be sympathetic understanding	truth & justice	sympathy family the right to have a safe place to live	sympathy
attitudes	Hatred, Violence offence	Try to relocate the squatters	Aggressive proffessional	helpful, thoughtful	Neutral tries to be factual
Behaviour	Resiliant & Fight with the police	hand out documents to prove that the squatters are entitled to be there	determined to serch even in the field	Try to help in the little ways I can	Try to evoke empathy from readers

Squatter invasion of city parks growing daily

THE STAR 22.05.96

BY ANNA COX

A disturbing 80% of Greater Johannesburg's parks and public open spaces now have squatters, and urgent action must be taken to stop the land invasions.

City councillor Claire Quail says the estimate comes from the Greater Johannesburg Parks Department which has warned that, although there were at present only pockets of squatters in most of the city's parks, the numbers were growing daily with people arriving in the city looking for work.

The city did not have the budget for major relocations, and preventive action should be taken immediately to prevent another Moffat Park and Alexandra Far East Bank situation, which cost the city's ratepayers millions of rands, she said.

"The more people are allowed to invade the parks, the more it will cost taxpayers to eventually move them. It is essential action be taken immediately."

The conditions under which these homeless people were living were also inhumane and something should be done to alleviate their plight, Quail added.

Citing just one example, she said the number of squatters living in the Melrose bird sanctuary had doubled over the past few months. The problem had become so bad that the squatters were catching birds and eating them.

They were using the river to bathe and wash in, and water which was probably very contaminated to cook with, said Quail.

But council planning, urbanisation and environment chairman Lindsay Bremner said policing was not the answer. Various projects to address homelessness were already under way. These included reception areas, which had been successful, and a shelter programme providing 2 000 units in the inner city.

The reception areas would be reassessed and re-evaluated, and the shelters programme should be extended to suburban areas.

Big police search in Phola Park

The SAPS braved the cold yesterday to conduct a massive search in the East Rand squatter camp of Phola Park following renewed violence there this month. Police seized a substantial amount of weaponry, ammunition and four stolen vehicles and arrested seven people, spokesman Insp Hampie de Kock said. More than 10 people, including children, have lost their lives in the area in the past month. One woman was arrested for the unlawful possession of firearms, two men were charged with being in possession of stolen vehicles, and three illegal immigrants were taken into custody. One arrest for the possession of dagga was also made. – Staff Reporter.

THE STAR

Squatters stone 200 in defence of shacks

Eviction squad of casual labourers are attacked on arrival: bewildered families mill around saying no date was given

BY TROYE LUND

Men hired as casual labourers by a sheriff to demolish about 600 shacks along the Golden Highway were stoned this morning by illegal squatters who claimed they'd had no warning they were to be evicted.

Minutes after about 200 of the eviction squad descended from trucks and started breaking down shacks with iron bars, they were stopped by a hail of stones from angry squatters.

Police fired teargas when squatters attacked a labourer demolishing a home. One of the squatters was arrested.

'We have negotiated the move for months'

There were weeping women carrying screaming babies in the tense and smoke-filled atmosphere.

Victoria Nomonde sobbed: "I never knew this was happening. My husband is at work, my children are at school – they will find me and our house gone when they come back. I do not even know where we are going."

But Martha Cooper was calmer and urged Nomonde to "pull yourself together".

"They told us a month ag they would move us but did nc name the the day. It is still a nast thing to happen to a family. M husband works within walkin distance and will have to give u his job if we are moved to Weile Farm," she said, and shoved piece of paper with Wellers Farm and a number into her friend hand.

The pieces of paper wer being given out to each family b council representatives as proo that they were entitled to be ther when they got to Wellers Farm.

Squatter Jacob Ngubeni ra around the crowds trying to fir someone who could give him "in formation" about the fact that h had paid squatter "leaders" R4 to live in the camp. Ngube wanted to know if he would hav to pay again at the next site an whether he could move his Zor hut somewhere other than Wel ers Farm.

The council official on th scene, Eric Phukwana, said: "Th message of the relocation obvi ously has not filtered down to th ground. We negotiated the whol thing with leaders of the cam over the past six months. They agreed to be moved as long th council provided an alternativ site."

He said the evictions woul continue over the weekend an hoped that by Monday all 6(families would be at Weller Farm, where the council has pro vided tents until people have n built their homes.



Burning issue ... members of the Sandton fire department try to extinguish a burning mattress in Alexandra yesterday. Some s they would rather burn their shacks than have them broken down and relocated.

Sheriff to carry on Alex squatter evictions today

BY ANNA COX

The Randburg sheriff was set to resume evictions of squatters on the Far East Bank today after a night without incident.

Many squatters have resigned themselves to the move to Diepsloot. Others say they cannot move because of jobs and schools for their children, and will have to find land within Alexandra or on the banks of the Jukskei River to re-erect their shacks.

Yesterday, violence broke out for the second consecutive day in Alexandra when another 400 families were removed by the Randburg sheriff.

Yesterday's removals bring the total number of families relocated to Diepsloot, north of Randburg, to about 700 since Monday. There were an estimated 1 800 shacks at the camp before the removals began.

Yesterday, two people were injured while trying to cut the barbed-wire fence leading on to the N3 freeway in an attempt to disrupt traffic. Another man was shot in the head with live ammunitionand and is in a serious condition in hospital.

SAPS spokesman Sgt Mark Reynolds said it appeared the man was shot as a result of a dispute among the squatters because no live ammunition had been used by police.

During mid-morning a crowd protesting against the relocation was dispersed by police after someone fired a shot at police. As the crowd fled a man dropped a pistol. He was arrested.

Reynolds said squatters generally co-operated with the removals yesterday and many moved willingly. However, there was a small element trying to destabilise the relocation.

"But for the rest, people have assisted by demolishing their own shacks and voluntarily moving with the trucks to their new sites in Diepsloot," said Reynolds.

Lesson 5: **Action on informal settlement**

Name:

1. Minister of Housing

You are the minister of housing in Gauteng. Given the background developed in the last few lessons, how would you deal with the housing situation in Gauteng. Put a small cross next to each solution. In the same block give reasons why you put your cross there. Share your answers with your group and discuss the differences and similarities.

	strongly agree	agree	neutral	disagree	Strongly disagree
bulldoze					
give people money					
site and service					
low cost houses					
land invasion					

2. NIMBY

Nimby stands for "not in my backyard". Everybody realises that the squatter phenomenon is here to stay. Most people think that a place must be made for them as long as it is "not in my backyard". So

what happens when a group of squatters moves onto an open piece of land across the road from your neighbourhood? Indicate your response to the following issues. Share your answers with your group and discuss the differences and similarities.

	strongly agree	agree	neutral	disagree	strongly disagree
The crime rate will increase.					
My property value will decrease.					
A place must be found for them as long as it is not in my neighbourhood.					
Pollution and disease will increase.					
This is a good opportunity to bridge the gap between different communities.					

3. My values and attitudes

1. How have my values and attitudes changed in this unit?

_____

_____

_____

_____

2. Is there a need to do anything about the situation of squatters? If so, what?

_____

_____

_____

Name: _____

Action on informal settlement

1. Minister of Housing

You are the minister of housing of Gauteng. Given the background developed in the last few lessons. How would you deal with the housing situation in Gauteng. Put a cross next to each solution. In the same block give reasons why you put your cross there. Share your answers with your group and discuss the differences and similarities.

	strongly agree	agree	neutral	disagree	strongly disagree
bulldoze			X because it does n't get rid of the problem		
give people money					No. It will breed a culture of dependance on the government
site and service		It compels people to better their surroundings further, if they know where they're land is			
low cost houses			It could cost the government too much on the other hand it addresses the problem		
land invasion					

Evaluation Sheet on Informal Settlement

Name:

Give an evaluation of the lessons below. Points to consider are:

- What did I learn about values and attitudes?
- What did I learn about informal settlement?
- Was the lesson enjoyable?
- Did I clarify my own values and attitudes?
- How could the lesson have been improved?

1. Sipho comes to Town _____

_____

_____

_____

_____

_____

2. Soul City Video _____

_____

_____

_____

_____

_____

_____

3. Informal Settlement in the Third World

_____

_____

_____

_____

_____

_____

4. Newspaper Article Analysis and Role Play

5. Action on Informal Settlements

of squatters? If so, what would you like to do?

Evaluation Sheet

Name:

Give an evaluation of the lessons below. Points to consider are:

- What did I learn about values and attitudes?
- What did I learn about informal settlement and water?
- Were the lessons enjoyable?
- Did I clarify my own values and attitudes?
- How could the lessons have been improved?

Informal Settlement Unit

1. Sipho comes to Town His values are getting a home and stable job its attitude is to try he best to achieve his values. The lessons were enjoyable. I found my values is my family, home and school The lessons could have been better if each person in the class played a role of a person that sipho met.

2. Informal Settlement in the Third World

I learnet that each person has their own values and attitudes Some informal settlement in other countries have access to water while others dont The lesson was enjoyable and it clarified my own values and attitudes about informal settlements

3. Soul City Video

People valued their homes, jobs, and families. I learned about problems faced by the squatter residents. I learnt their values. I think that their values and attitudes clearly depict those of residents of informal settlements. The lesson was enjoyable

4. Newspaper Article Analysis and Role Play

I learnt about the values of people owning squatters I learnt about current problems that we are facing in South Africa. The lesson was very enjoyable and debatable. I clarified what I should do to make situations abit better in South Africa.

5. Action on informal settlements

I learnt about the actions of two different groups. I realised that we should not bulldoze these people home but try our best to help them. I think that it was fun and educational. I also learnt about what was done in the past to prevent squatter settlements.

APPENDIX B

WATER ACCESS AND CONSERVATION UNIT

Plan of Lessons

1. **Siting of a Reservoir**
2. **Water Conservation**
3. **Water for Jabula Squatter Camp**
4. **Water Consumption**
5. **Water Transfer Schemes**
6. **Role Play on Different Water Sector Consumers**
7. **River Study at Bezuidenhout Park**

Lesson 1

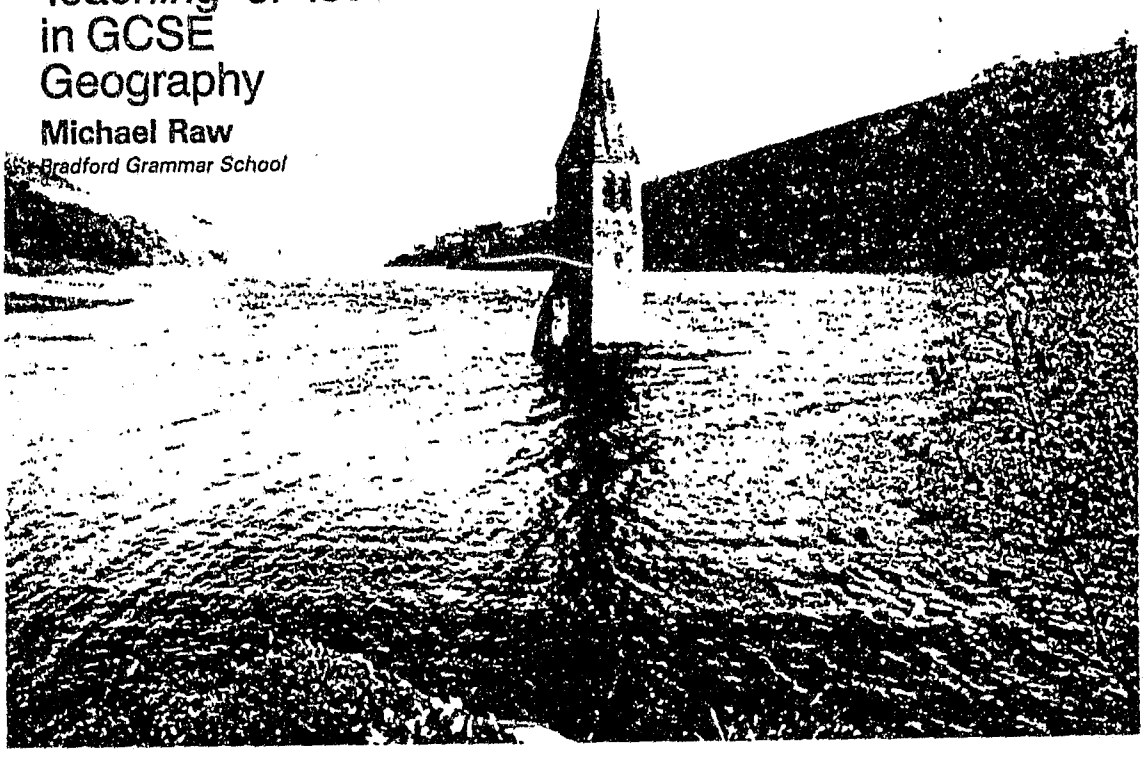
Siting of a Reservoir

References:

Raw, M. (1989). "Teaching of Issues and Values in GCSE Geography" in *Teaching Geography*, vol. 14. (1), pp.18-25.

Teaching of Issues and Values in GCSE Geography

Michael Raw
Bradford Grammar School



Derwent church — once part of the village, now part of the reservoir.
© Local archives, Sheffield Central Library.

Probably the most challenging feature of GCSE — especially if, like me, you have never taught the Schools Council's geography projects — is the teaching of values, beliefs and attitudes, through social, economic, political and environmental issues. This article looks briefly at the nature of values education in geography and then concentrates on some possible teaching approaches towards issues, using the water supply industry as an example.

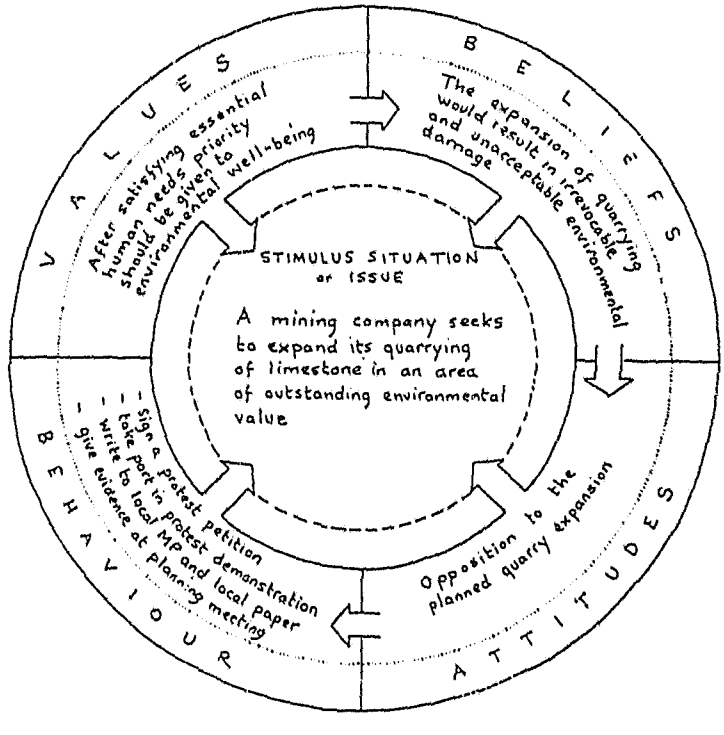


Figure 1. An example of an issue, and it relationship to values and behaviour of an individual.

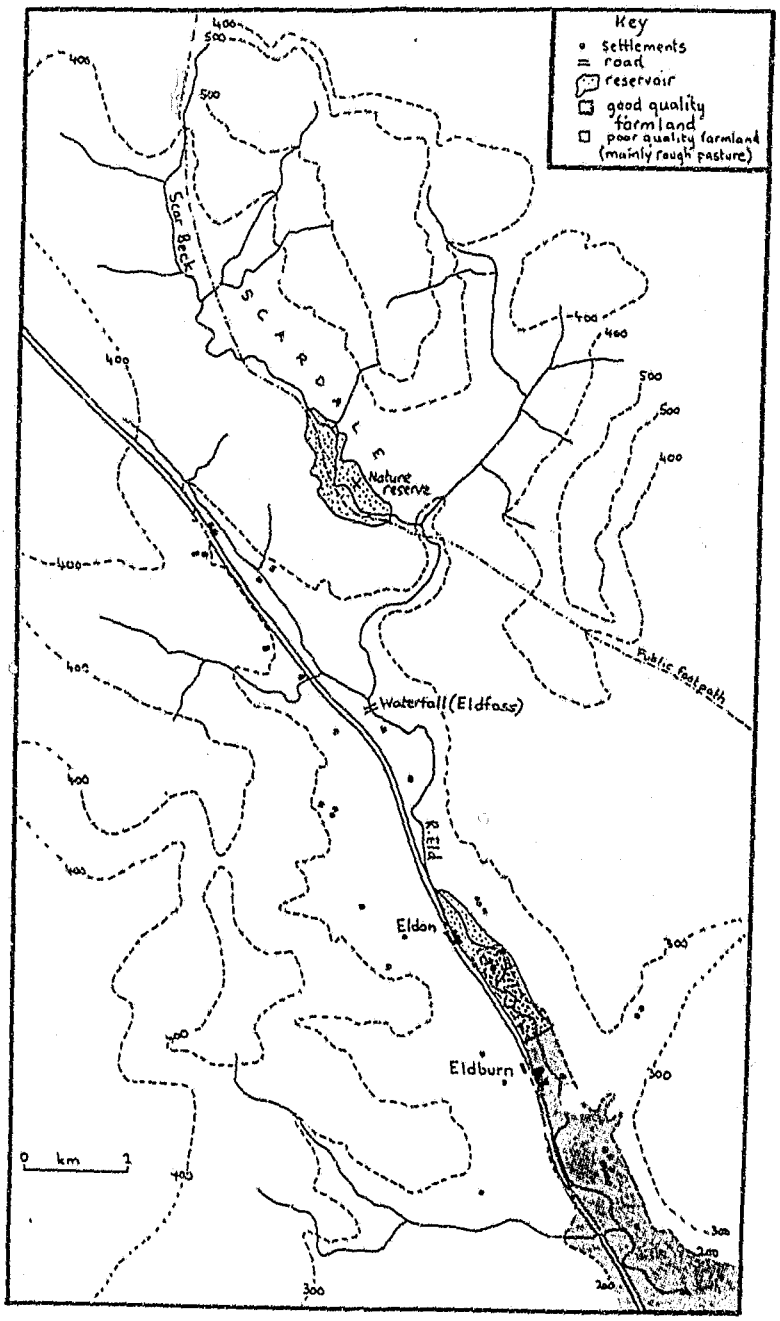


Figure 2. Potential reservoir sites in the Upper Eld Valley.

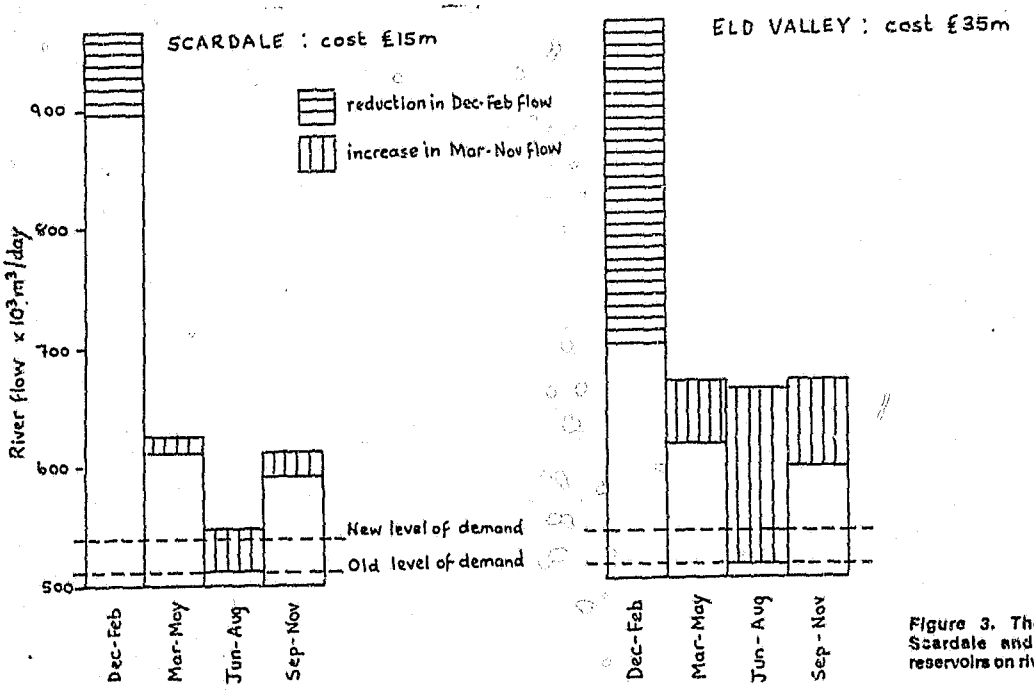


Figure 3. The effect of Scardale and Eld Valley reservoirs on river flow.

Siting a reservoir

The planned location of a new fertiliser plant at the mouth of the River Eld will increase the demand for water from the river by an additional 30 000 m³/day. The water authority has the task of providing these extra water resources, and has decided that this can be achieved by building a regulating reservoir somewhere in the upper part of the Eld's catchment. Such a reservoir would help to even-out the river's seasonal flow: surplus rain, falling in winter, would be stored and released in the summer when the flow is lowest. The river itself would be used to transfer the water downstream, where it would be abstracted for use by industry. Further advantages of such a scheme would be to: guarantee water supplies during periods of drought and reduce the risk of flooding in the lower Eld Valley.

After a thorough survey of the headwaters of the Eld, the water authority has chosen two potential sites: Scardale and Eld Valley near Eldburn (Figure 2). The effect of each site on the river's seasonal flow or *regime*, and the water resources available, are shown as graphs in Figure 3.

Exercise

Study Figure 3 and answer the following questions.

(a) When the River Eld is unregulated, what proportion of its flow occurs between (i) December and February (ii) June and August? Assuming that rainfall is evenly distributed throughout the year, give two possible reasons for this difference.

(b) During which three month period are existing water resources fully utilised?

(c) How much additional water could be supplied between June and August by: (i) Scardale (ii) Eld Valley?

(d) Which reservoir would have the biggest effect on the river's regime? Apart from additional water resources, mention further benefits which would come from this modification.

Figure 4.

Issue 1: where should the reservoir be sited?

(a) Using the information about Scardale and Eld Valley, together with the map (Figure 2) and the graphs which show river flow (Figure 3) construct a table like the one below, to compare the two sites. For each factor, put a tick against the site which you feel would be preferable.

Table 1

Area of impact	Factor	Scardale	Eld Valley
Environment	Damage to wildlife Damage to landscape[1]		
Economic	Cheapest site Loss of farmland Water resources[2]		
Recreation	Less access for walkers Tourist potential[3]		
River control	Better flood control Reduced drought risk		
Social	Loss of jobs/settlement and community		

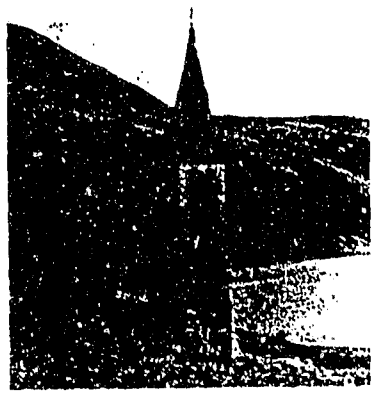
[1] Includes the effects on Eldfoss and road construction to site.

[2] If you think that larger water resources to meet long-term demand is preferable, tick Eld Valley. If you feel that excessive resources for which there is no immediate demand are unnecessary, then tick Scardale.

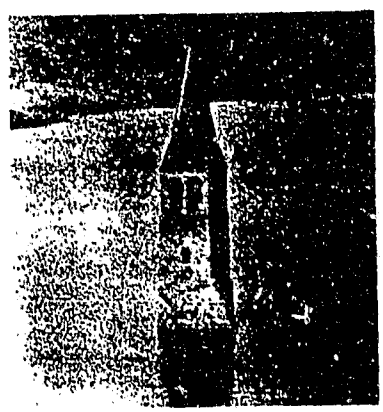
[3] If you favour tourist development then tick Eld Valley. If you feel that tourism would further spoil the area, tick Scardale.

(b) Summarise your results from your table in a paragraph, by comparing the areas of strength and weakness of each site.

(c) The table you have compiled provides a useful summary of the arguments for each site, but it does not give any idea of how important each argument is. Look carefully at your table, and then arrange the five areas of impact in order of importance. Try to explain your first choice. Why is it so important? How important is it to you?



Before.....
© Severn Trent Water Authority.



.....and after.
© Severn Trent Water Authority.

Values, beliefs and attitudes of persons involved in the issue of reservoir construction

Person	Values 'What is desired to be true'	Beliefs 'What is thought to be true'	Attitudes 'Positive and negative feelings/opinions on the issue'
Chairman of Chemco	Company profits are most important.	?	Reservoir must be built either at Scardale or the Eld Valley.
MP for Storby	Creating jobs for unemployed is most important.	Unemployment will get worse unless the reservoir is built. Those opposing the reservoir are self-interest groups either recently moved into, or living outside the Eld Valley area.	?
MP for Storby	Political power is most important.	?	Reservoir must be built.
Engineering trades union leader	?	Without jobs people won't have the means to enjoy the environment.	Reservoir must be built.
Farmers' union representative	Protection of jobs of members most important.	If the reservoir is built farmers will lose their livelihood.	?
University scientist	?	If Scardale is chosen a major environmental resource will be lost.	Oppose the reservoir particularly in Scardale.
Local farmer	Human needs of the farming community are most important.	?	Oppose the reservoir, particularly in the Eld Valley.
Representative of the Council for the Protection of Rural England	Environmental well-being is most important.	The reservoir would spoil the natural beauty of the region. The reservoir may only be useful in the short-term.	?

Table 2

Issue 2: should there be a reservoir? The issue of jobs and environment

In the previous exercise you chose a site for the reservoir on the assumption that the decision to build had already been taken. You may have felt that there was a need to prove the case for reservoir construction. This exercise focuses on the issue of environmental well-being and jobs, by considering whether a new reservoir needs to be built at all.

(a) Read the statements of people who have an interest in the issue (Figure 8). If a reservoir were built, some would benefit and some would lose out. Make a list of those who would benefit, and those who would lose out.

(b) People's *attitudes* or feelings about issues, are based on their *values* and *beliefs*. Values are what individuals *desire* to be true, and beliefs are what they *think* is true. For example, you may value the well-being of the environment above the nation's future economic growth, even though this may mean no improvement in your standard of living. However, at the same time you may hold the belief that government generally places economic growth above environmental well-being. Your combination of values and beliefs could result in an attitude which opposes the expansion of housing and industry in the countryside, the removal of hedgerows by arable farmers, the dumping of low-level nuclear waste in the sea, and so on.

(i) With these ideas in mind, re-read the statements in Figure 8 and insert what you think are the missing values, beliefs and attitudes in Table 2.

(ii) Using all of the information that is available, and balancing economic, environmental and political interests and human needs, work out your own attitude towards the issue of reservoir construction. Identify your own basic values and beliefs in relation to the issue.

What they say about the reservoir

President of the Chemco Corporation in a letter to the Secretary of State for the Environment.
"Dear Sir..... we would prefer to locate our new plant in the UK..... however, if our profits are to be maintained it is essential that the go-ahead is given to build a new reservoir either in the Eld Valley or Scardale, and that its water be available within three years..... otherwise we shall have no alternative but to look to the continent to expand our operations."

MP for Storby-on-Eld in an interview for radio.
"..... we all appreciate the concern felt by residents in the Eld Valley to protect the environment, but at the end of the day employment has to come first. Last month's unemployment figures for Storby were the worst on record..... every day, people in my constituency tell me that they cannot understand how the prospect of hundreds of new jobs could be lost for the sake of a few rare plants and creepy crawlers, let alone the odd acre or two of poor farmland..... and it's got to be said that a lot of those who oppose the reservoir most strongly are commuters who live in the Eld Valley, but work in Storby, or who own weekend cottages in the area."

MP for Storby-on-Eld in a letter to the Chairman of the Democratic Party.
"Dear David..... it is vital that you put pressure on the Minister to approve the new reservoir in the Upper Eld Valley. You know how difficult the employment situation is here and the poor showing of the party in recent local elections..... and Storby is not the only marginal constituency in the region. What is needed is a decision to go ahead, and quickly..... whether it's Scardale or Eld Valley doesn't matter..... we have a lot to do if we are to change public opinion before the next general election."

Engineering trades union leader addressing a union meeting in Storby.
".....we've got to get our priorities right: jobs must come first..... many of you at this meeting know only too well the hardship of life on the dole..... it's alright for scientists and second home-owners to talk about protecting the countryside, but ordinary working class people round here can't even afford the bus fare, let alone a car, to get out into the countryside and enjoy it."

Farmers' union representative speaking to a meeting in the Eld Valley.
".....thousands of acres of farmland are being lost to industry and housing every year in this country, and yet farming is our most essential industry..... we can't allow the countryside to be carved up like this any longer. Of course, we all know that unemployment in Storby is a national disgrace and it's high time the government did something about it..... but it's no solution to provide new jobs in Storby while farmers lose their livelihood in the Eld Valley."

University scientist in an article in the local newspaper.
".....the plants and insects at Scardale are of enormous scientific significance..... This is an exceptional site, of national importance, which a recent independent study recommended should be protected at all costs. If Scardale cannot be protected, then no site in the country will be safe from big business and government interests. We must remember that we have a duty to protect the environment for future generations, and that although unemployment will not last forever, once Scardale has been flooded, its unique plants and insects are destroyed for all time."

Local farmer at a meeting in the village hall.
".....I don't want to sell my farm to the Water Authority so that they can flood it..... I just want to be left alone to get on with my life..... my family have farmed this land for six generations..... those politicians and bureaucrats in Storby don't know what it means to us, and if they do they don't care..... there are seven farms that would be destroyed by the reservoir and our community would never be the same."

Representative for the Council for the Protection of Rural England, at the same meeting.
".....any reservoir would completely spoil the beauty of the valleys. Like other reservoirs in this region, the reservoir would become a tourist attraction, with day trippers and tourists congesting the narrow roads with their cars; and picnic sites and water sports on the reservoir would destroy the peace and tranquility. And if past experience is anything to go by, in a few years Chemco will probably close their factory and transfer their operations elsewhere, where profits are better. Then unemployment in Storby will be as high as it is now, and the Upper Eld Valley will have been despoiled for no purpose."

Figure 8.

Lesson 2

Water Conservation

References:

Clacherty, A. (1996a). *2020 Vision of Water in South Africa* (Department of Water Affairs and Forestry. Pretoria)

Clacherty, A. (1996). *Enough Clean Water for Us All,* Poster (Pretoria, South Africar Water Information Centre)

1. What is a wetland? _____

2. Explain why the man with the RDP T-shirt is removing vegetation _____

_____

_____

3. Describe the problems with South African dams._____

_____

_____

4. How should dams be built? _____

_____

5. Contrast the water management between the two cities _____

_____

_____

_____

_____

6. What problem is illustrated in the large circle?_____

_____

_____

7. Why does this problem exist?_____

_____

_____

_____

8. How is the Department of Water Affairs and Forestry planning to overcome this problem?

_____

_____

_____

9. What suggestions could you give your parents in order to improve your garden at home with respect to water usage?

_____

10. Describe the problems with farming and water usage.

11. List the pollution problems illustrated in the poster and suggest solutions to these problems.

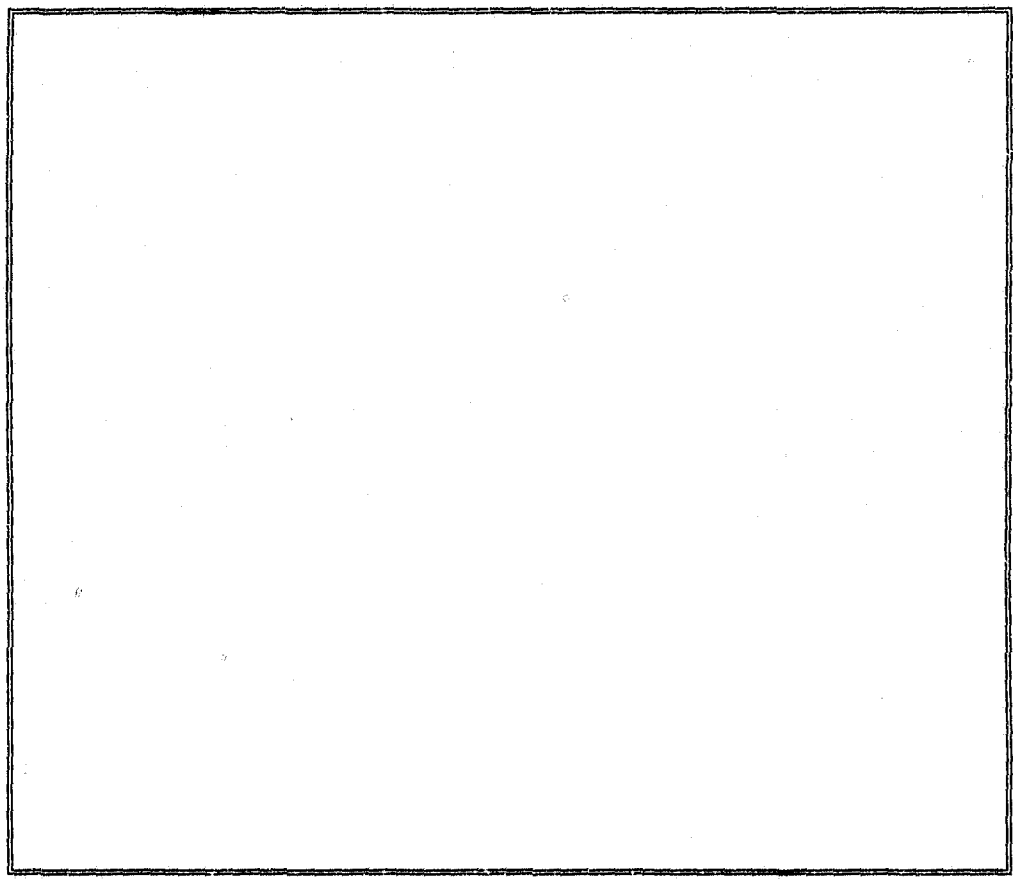
Problems	Solutions

12. What purpose does an estuary serve?

13. Give two examples of estuaries in South Africa.

14. What was your household's water consumption last month?
(Check your water bill)

15. Draw a plan of your house below. Indicate where water comes into your house and where it is used in your house.



16. Will the current rain overcome the water problem in the long-term? Explain.

_____

_____

water conservation

1. What is a wetland? Area of the River where lots of Plant growth
2. Explain why the man with the RDP T-shirt is removing vegetation. Because the alien plant take in to much water so there will be enough for the rest of the river
3. Describe the problems with South African dams. Dams are to shallow or easy evaporation & water hyacith dies then Rots using all the waters oxygen killing marine life
4. How should dams be built? in valleys or gorgeous with a less surface area and so its natural
5. Contrast the water management between the two cities. Sewage pollution sanitation is a weak aspect in the city on the right
6. What problem is illustrated in the large circle? water supply in the area is not spread out more.
7. Why does this problem exist? because it's an informal settelment
8. How is the department of water Affairs and Forestry planning to overcome this problem? more pipes laid out so there's more pipes.
9. What suggestions could you give your parents in order to improve your garden at home with respect to water usage? use watering can's

10. Describe the problems with farming and water usage — the irrigation to much water used. & pesticides wash into water & animals went kept in kraals.

11. List the pollution problems illustrated in the poster and suggest solutions to these problems.

problems	solutions

12. What purpose does an estuary serve?

13. Give two examples of estuaries in SA.

14. What was your household's water consumption last month? (Check your water bill) _____ Kl.

15. Draw a plan of your house below. Indicate where water comes into your house and where it is used in your house.

16 Will the current rain overcome the water problem in the long-term? Explain —

2020 VISION OF WATER IN SOUTH AFRICA

Department of Water Affairs and Forestry



In association with Department of Education, Schools Water Awareness Campaign, Eco Link, Delta Environmental Centre, Independent Examinations Board, Independent Schools Council, Durban Water & Waste, Media in Education

RAND WATER UMGENI WATER Pick 'n Pay WWF

LOOK INSIDE FOR AN EXCITING COMPETITION!

Using the poster to introduce Water Week

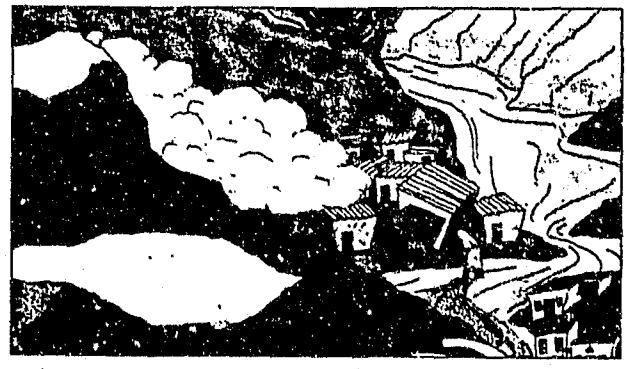
You can use the poster to introduce Water Week in your classroom. The poster is designed so you can use it as an interactive learning resource. Here are some activities you can use:

- Divide the class into groups. Put the poster on the wall and let the students look at the poster one group at a time.



- Ask them to trace the course of the two rivers and talk about what they can see. Use the background information on pages 2 and 3 of this booklet to answer their questions.

- Write one sentence labels based on the background information on pages 2 and 3 on small cards. Let the group find the correct picture for each label and then stick it in place.



- Let the students find as many examples of bad management of the catchment as they can. Then as many examples of good management as they can. The information on pages 2 and 3 will help your students.

- Let the students write short sentences on cards and stick them on to the poster to help someone who does not know about water management to understand the good or bad things that are shown on the poster.

- Let the students do research and find out more about the different things they see on the poster. Look on the back cover for resources for this research.



- Play a game in groups. One person in the group identifies an example of bad water management from the right hand side of the poster. The rest of the group has to then find a good example of the same thing on the left hand side of the poster.

The National Water Conservation Campaign

"Make every drop count"

Water Week in 1996 is from 17 March to 22 March. Friday 22 March is World Water Day. Across most of the world on this day, people will be celebrating Water Day. This booklet has been written to help teachers use the National Water Conservation Campaign poster during Water Week. The booklet also has many other activities for Water Week. Inside the back cover you will find information about a competition that your school can enter.

The National Water Conservation Campaign poster shows two rivers and their catchments. A catchment is all the land drained by one river. A river catchment includes all the land on both sides of the river from its source to the place where the river reaches the sea.

The river on the left of the poster shows good catchment management. The river on the right is badly managed, so before long there is too little water flowing in it. The river is also polluted.

The aim of the poster is to help students to see that the water they use is part of the system; it comes from somewhere and goes somewhere. It also aims to encourage them to think and talk about how we should be managing our part of the water system so that there will be enough water for us all in the future.



B - 17

Enough clean water for us all?

Background information on the poster.

South Africa is rich in natural resources like gold, diamonds and coal, fertile soils, natural beauty and sunshine, animals and birds. But it is important to know that one vital natural resource, water, is scarce. Our average rainfall is less than 500mm a year (the world average is 830mm a year).



Wetlands and Springs:

Find the source of the well managed river on the poster. One thing we need to do to protect our water is to protect our rivers and the places where rivers start. Many of our rivers start in spongy, wetland areas that are often in higher areas. We need to protect these places. We need to make sure they stay clean and do not dry up. A healthy river will also have wetlands further down the river. These keep the river water clean.

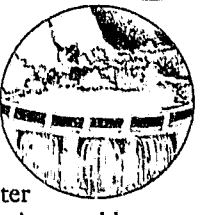
Water Resources:

In this booklet we often speak of conserving water resources. What do we mean? Not just conserving water itself, but conserving the natural systems that give us clean water all year round. The soil, the sponges or wetlands that help keep the water flowing and the plants that grow next to the river and protect the soil and river banks.



Removing alien vegetation:

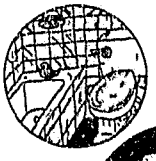
Look on the poster for the people removing alien vegetation near the source of the well managed river. Vegetation like wattle trees uses too much water so that not enough is left for the river. The Department of Water Affairs and Forestry has a project funded by the RDP to remove these plants from rivers and river sources.



Dams:

About half of South Africa's annual rainfall is stored in dams. Dams can affect the environment in both negative and positive ways. Dams can help to reduce flood damage and make sure water flows all year round. But our landscape is not suited to dams. There are few deep valleys and gorges, so most dams are shallow with a large surface area. This, together with the hot, dry climate, means that water evaporates easily from dams. Look on the poster for a dam where a lot of evaporation could occur. Look for the dam with lots of water hyacinth growing on it. Water hyacinth is a weed that uses a lot of water. When water hyacinth dies it rots and uses up oxygen in the water and many other living things in the water also die.





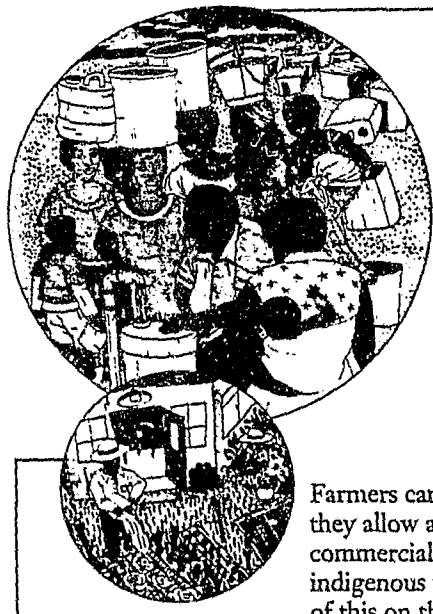


Water wise cities:

You will see two large cities on the poster. Look for the city that manages water wisely. A city with lots of open green spaces and trees allows falling rain to soak into the soil and not run off too quickly. In the houses there is plumbing that works properly and the taps do not leak. A well planned city has a safe sewage system where human waste is treated and only clean water is allowed back into the river. In a well managed city there are strict laws about pollution from factories and homes.







Between 12 and 16 million people in South Africa do not have access to clean, safe water. The Department of Water Affairs and Forestry plans to make sure that everyone can get at least 25 litres of clean water per person within 200 metres of their homes within the next 5 years.

Water wise gardening and farming:

Gardeners in the well managed city have plants that do not use a lot of water. Indigenous plants that come from that area are best. Fallen leaves and grass are allowed to stay on the soil to cover it and prevent evaporation. The gardeners water their gardens only in the evening or early morning and not when it is windy, to prevent evaporation.

Farmers can also save water. Overhead and flood irrigation waste water because they allow a lot of evaporation. On the well managed river, crops and commercial forests are not planted right down to the river and a belt of indigenous vegetation is left along stream and river banks. Can you see examples of this on the poster? The riverine vegetation protects the river banks against erosion and floods.



There are many examples of badly managed farming on the poster. Find the windmill and small dams close to the source of the badly managed river. Windmills should normally be used only for giving water to domestic stock and for people living where no other water can be found. Problems can be caused by using ground water for irrigation. Ground water should not be over-used otherwise there will not be enough for later months or years. Dams may be a problem if there are too many of them and if they are not being used, because then they cause too much evaporation if they have not been planned properly to avoid wastage.



Water education:

Water is very important in our lives. This is why the school curriculum should include education about water. Our children need to learn about practical ways of saving water and of protecting the natural systems that give us enough clean water.



Pollution:

Find the pollution from the factories on the poster. Pollution from factories is a problem for our rivers. But sewage (human waste) pollution that is washed into rivers is also a big problem. People can get diseases like diarrhoea and cholera from sewage polluted water. All people should have access to proper toilets, which could be either flush toilets or pit toilets. Pit toilets should be built away from rivers or wet areas. Rivers should never be used as rubbish bins for chemicals, litter, sewage or other pollution. But many people do think about rivers like this without even realising it.

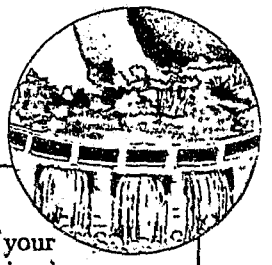


Estuaries:

Estuaries are the meeting place between the river and the sea. They are calm, sheltered and shallow, and are very important because many fish come in from the sea to breed there or to feed. If there is bad water resource or river catchment management upstream, then pollution and silt from erosion can get into the estuary. This can kill many fish and other water creatures and affect life in the sea. Look on the poster for a healthy estuary and an estuary in bad condition. Which one has become completely blocked off from the sea? How has this happened?

Some activities to do during Water Week

You can photocopy these activity sheets or put them onto overhead projector transparencies or copy them on to the chalk board



Where does your water come from?

1. If you collect water from a tap, a pump or a river, draw a map of your street or village. Show on your map where the tap or pump or river or spring is.

- Find out how many families use the tap or pump. Look closely at the tap. Is it leaking? What does the area around the tap look like? Do any animals drink at the tap or pump?
- Who fetches the water in your house? How much time does it take you to fetch the water for your house every day?
- Ask an old person about the rivers in your area. Have the rivers changed since the old person was young? Is it more difficult now to get clean water? Why? Is the river water safe to use? Do you need to boil it before you drink it?

2. If you have running water in your house, sketch a plan of your house and show:

- Where the water comes into your house.
- Where water is used in your house, for example kitchen, toilets.
- Your water probably comes from a dam. Find out the name of your dam and where it is. Find out what happens to the water between the dam and your tap. If you need help to find this out, contact your local water authority, or your local council or municipality office.

How much water do you use?

Keep a water diary.

From the time when you get up tomorrow until the time you go to bed, write down on a chart like the one shown on this page how much water you use and what you use it for. The information at the bottom of this page will help you to know how much water you might use for different things. Did you know that factories and farms use a lot of water when they make things for you. One serving of chicken from a battery farm takes 1545 litres of water to get it to your mouth! The next glossy magazine you buy will use about 200 litres to get to you. Do you believe this? Think about washing the chicken farm buildings and cages, transport, refrigeration, and more. Think about growing the trees, using chemicals, inks and dyes, cleaning, transport. So you use much more water every day than you think you do.

Time of day	What I used the water for	How much water I used

At the end of the day add up how many litres of water you used in the day.

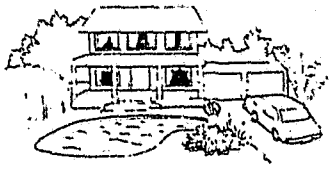
Flushing the toilet uses about 9 litres of water. A shower uses about 11 litres of water per minute. A bath uses about 90 litres of water. These figures are all estimates. Can you think of a way of working out more exactly how much water you use? This may help you.....A 2 litre plastic cold-drink bottle holds 2 litres of water.

How much water for the future?

Families who live in houses with taps can use a lot of water!

- Many average suburban households with only four people can use about 3200 litres of water in a day. But as we move into the future, we all need to protect our water resources. If we do not do this, by the year 2020 many of us might not be able to get enough clean water easily.
- Imagine you have moved forward in time to the year 2020. Water resources have not been protected and there is also a bad drought. You are restricted to only 25 litres of water every day. On Water Day, Friday 22 March, you must try and use only 25 litres (about two buckets) from the time you wake up until the time you go to sleep. Can you do it?

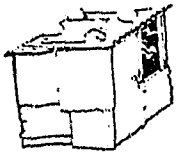
There are families living in houses like this who have been metered to use as much as an average of 7000 litres of water per day.





A family living in a house like this can use 600 litres of water per day.

A family living in a house like this can use 60 litres of water per day.



If you use, who loses?

Think about this

9 litres of water can keep four impala alive for one day. (One toilet flush uses 9 litres)

The water from one ten minute shower could keep 200 children alive for one day.

Half of the water supplied to Johannesburg is used by only 16% of the homes there.

It is possible for an adult to stay alive and clean on only 5 litres of water per day, but we should have a minimum of 25 litres.



Some ideas for teaching about water

It is possible to include water conservation activities in every school subject. Here are some ideas that you can try.

Language Lessons

Ask students to write poems about water and what it means to them. Here is an example of a shape poem.

Pula,
pulatshaneng
u
tla
na
na
na
leng?
Little
rainy raindrop
when
will you
drop
drop
drop?

This rain drop poem comes from a book called Sechuana Proverbs by Sol Plaatje.

Let your students try shape poems about a river, a pool, a tap, a waterfall, a bucket, rain, a pond or a dam. They can use any South African language.

Drama

Imagine that you are walking down one of the rivers on the National Water Conservation Campaign poster. Make up a play about your journey.

Art

Draw or paint a picture of your journey down one of the rivers on the poster.

Physical Science

Let your students become water scientists for the day. You can put scientific tools into the hands of children in the form of a simple and inexpensive water test kit. The kit is available from the resource contacts mentioned on the back cover of this booklet.

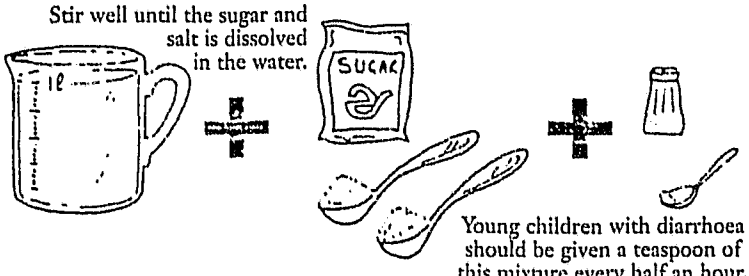
With this kit your students can test the water in a river near your school. They will be able to find out for themselves if the river is polluted.

Health

If you live in an area where your students may drink unsafe water you should teach them about the rehydration drink that they should give to a child with diarrhoea. They can make posters and cards with the recipe of the mixture on them and run their own small community health programme by displaying these in public places.

Mix together:
one litre of clean water, 2 big tablespoons of sugar and a quarter teaspoon of salt.

Stir well until the sugar and salt is dissolved in the water.



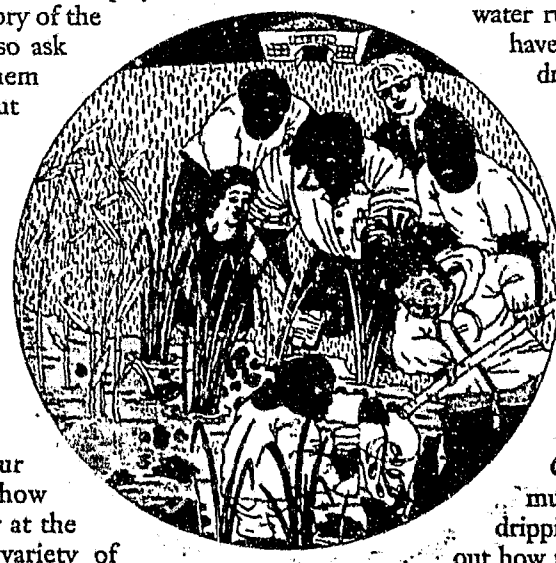
Young children with diarrhoea should be given a teaspoon of this mixture every half an hour.

History

Organise a river oral history project. The students can ask old people how they got water in the past and also what the river was lik : long ago and if it has changed. They can then present their information in two pictures or two stories titled "Then" and "Now", or they could make a display or a book about the history of the local river. They can also ask old people to tell them interesting stories about the river.

Geography

If your school has piped water let the students do a mapping exercise in which they draw a sketch map of their school showing where the water comes from, where it comes into the school and where it is used. Let them find the water meter and mark this on their map. They can also mark where water is stored e.g. geysers and where rain water and waste water run. If your school does not have piped water the students can draw a map to show the way to the place where your water comes from.

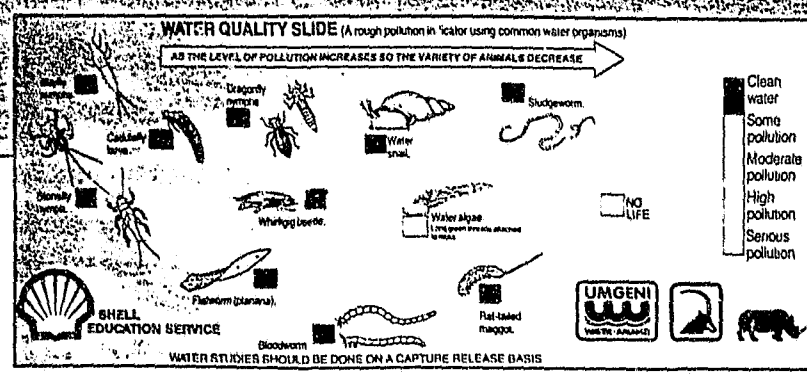


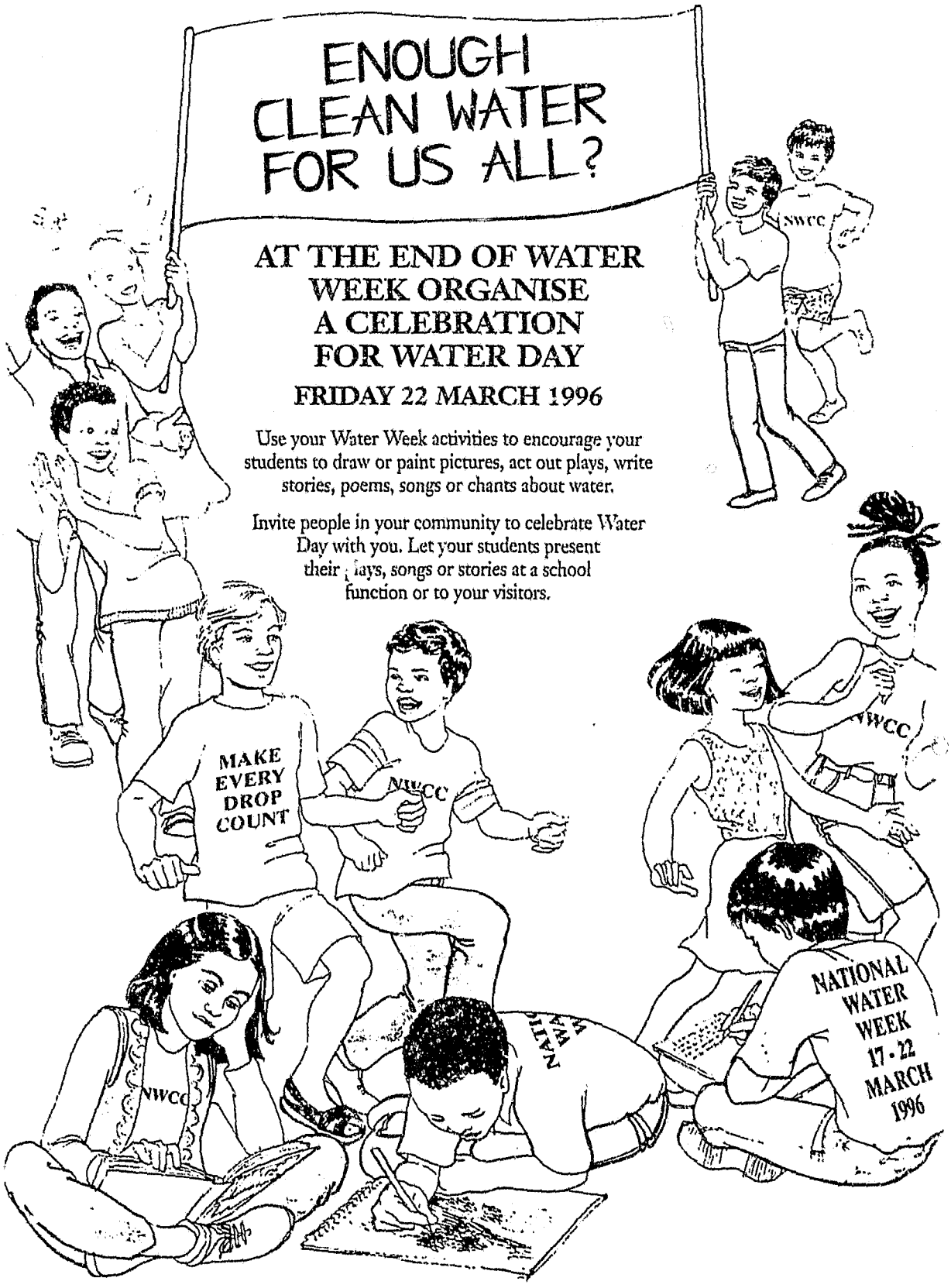
Biology

Visit a river near your school and find out how polluted it is by looking at the water life there. The variety of water animals decreases as the level of pollution increases. So you can see how polluted your water is by counting the number of different animals you find. A water quality slide like the one shown here is available from Share-Net. The slide has information that will help you to identify the water quality levels in the river you are studying. You can get help with this activity from many of the resource people listed on the back cover of this booklet.

Mathematics

Collect and measure how much water drips out of a dripping tap in five hours. Work out how much water will be lost in a whole day or a week. Do a survey of the taps in your school. Which ones are dripping? Work out how much water is being wasted in a day from all of the dripping taps in your school. Get the taps fixed.





AT THE END OF WATER WEEK ORGANISE A CELEBRATION FOR WATER DAY

FRIDAY 22 MARCH 1996

Use your Water Week activities to encourage your students to draw or paint pictures, act out plays, write stories, poems, songs or chants about water.

Invite people in your community to celebrate Water Day with you. Let your students present their plays, songs or stories at a school function or to your visitors.

Competition

Your school can enter the National Water Week Competition and win a prize worth R5000-00.

This is what you must do:

- Choose the 10 best pieces of work done in your school for Water Week. You can send stories, poems, paintings, songs, plays, as well as science projects, environmental projects, maths activities, history projects, essays, geography projects and other curriculum materials you might have used or developed.
- Write a description or report of what your school did for Water Week. Keep it simple and send in no more than 3 typed pages.
- Your competition entry must reach the address given below before the end of May 1996.

If you need assistance, please contact one of the resource people listed.

Professor Kader Asmal, Minister of Water Affairs and Forestry says: *"I am very excited about the 2020 Vision of Water in South Africa - it gives me a wonderful opportunity to hear from schools throughout the country about their commitment to water conservation as an integrated part of their lives."*

Send your school's competition entry to:

2020 VISION OF WATER IN SOUTH AFRICA
YOUTH PROJECT
c/o Catherine Wilson
National Water Conservation Campaign.
Private Bag X9052, Cape Town, 8000 South Africa.
Do not forget to include your school's address and telephone number with your entry.



Lesson 3

Water for Jabula Squatter Camp

References:

ANC. (1994). *The Reconstruction and Development Programme – A Policy Framework* (Johannesburg, Umanyano Publications)

generation and training. Support must be provided to black and, more generally, to small builders.

2.5.21. **Community control.** Beneficiary communities should be involved at all levels of decision-making and in the implementation of their projects. Communities should benefit directly from programmes in matters such as employment, training and award of contracts. Key to such participation is capacity building, and funds for community-based organisations must be made available. Educational institutions must also be reorientated to provide the skills needed for development.

WATER AND SANITATION

2.6.1. Water is a natural resource, and should be made available in a sustainable manner to all South Africans. Today, more than 12 million people do not have access to clean drinking water and 21 million people do not have adequate sanitation (toilets and refuse removal). Less than half the rural population has a safe and accessible water supply, and only one person in seven has access to adequate sanitation. Communities have had little say in the provision of water and sanitation, and decision-making in the water delivery agencies has reflected broader apartheid ideology. Access to water resources is dominated by a privileged minority while the majority of the population enjoy little or no water security.

2.6.2. South Africa is a water-scarce country. The existing limited water resources are also unevenly distributed, with 70 per cent of the country receiving 11 per cent of the rainfall. Apartheid South Africa used its military and economic might to coerce its neighbours into acting as sources of water, sometimes to the detriment of these countries' own water needs and of the sub-continental watertable.

2.6.3. **Right to water.** The fundamental principle of our water resources policy is the right to access clean water – 'water security for all'. The RDP recognises the economic value of water and the environment, and advocates an economically, environmentally and politically sustainable approach to the management of

our water resources and the collection, treatment and disposal of waste.

2.6.4. Because of geographic limits to the availability of water, there must be very careful attention paid to the location of new settlements. The long-term environmental costs of sourcing water from neighbouring countries and between provinces must be given greater consideration. South Africa is also a drought-prone country, and a national drought management system and water reserves are a priority.

2.6.5. **Goals of water management.** Water management has three main goals: meeting every person's health and functional requirements, raising agricultural output, and supporting economic development. Decisions on water resources must be transparent and justified so as to reduce conflict between competing users. The use of water must be balanced with a realisation of the dangers of overuse and inappropriate disposal. Community organisations must also receive training in water management and must ensure such management is integrated into overall planning.

2.6.6. The RDP's short-term aim is to provide every person with adequate facilities for health. The RDP will achieve this by establishing a national water and sanitation programme which aims to provide all households with a clean, safe water supply of 20 – 30 litres per capita per day (lcd) within 200 metres, an adequate/safe sanitation facility per site, and a refuse removal system to all urban households.

2.6.7. In the medium term, the RDP aims to provide an on-site supply of 50 – 60 lcd of clean water, improved on-site sanitation, and an appropriate household refuse collection system. Water supply to nearly 100 per cent of rural households should be achieved over the medium term, and adequate sanitation facilities should be provided to at least 75 per cent of rural households. Community/household preferences and environmental sustainability will be taken into account.

2.6.8. The RDP's long-term goal is to provide every South African with accessible water and sanitation.

A. Councillor of Jabula Squatter Camp

You have been elected as the local councillor of Jabula Squatter Camp. The residents are complaining about the lack of clean water. Draw up a plan for your next council meeting by answering the following questions:

1. Locate 7 taps in the squatter camp. The Department of Water Affairs says that people should not have to travel further than 200m to fetch water.

2. Calculate the daily amount of water for your area. The Department of Water Affairs says that everyone is entitled to 25l of clean water daily. Assume an average of 4 people per shack.

3. Residents from the nearby suburbs have made complaints to you that the squatter are freely helping themselves to water from their garden taps. What are you going to do?

4. When it rains, sewerage from fields around the squatter camp finds its way into the nearby river. What do you propose to do?

B. Reconstruction and Development Programme on Water and Sanitation

To acquaint yourself with the general water situation in S.A., read the RDP (section on water and sanitation)

5.. How is rainfall distributed in S.A.?

_____

6. Describe water access to people living in rural areas.

_____

_____

7. List the 3 main goals of water management.

_____

_____

_____

8. How many people do not have access to a) clean drinking water and b) adequate sanitation.

a) _____

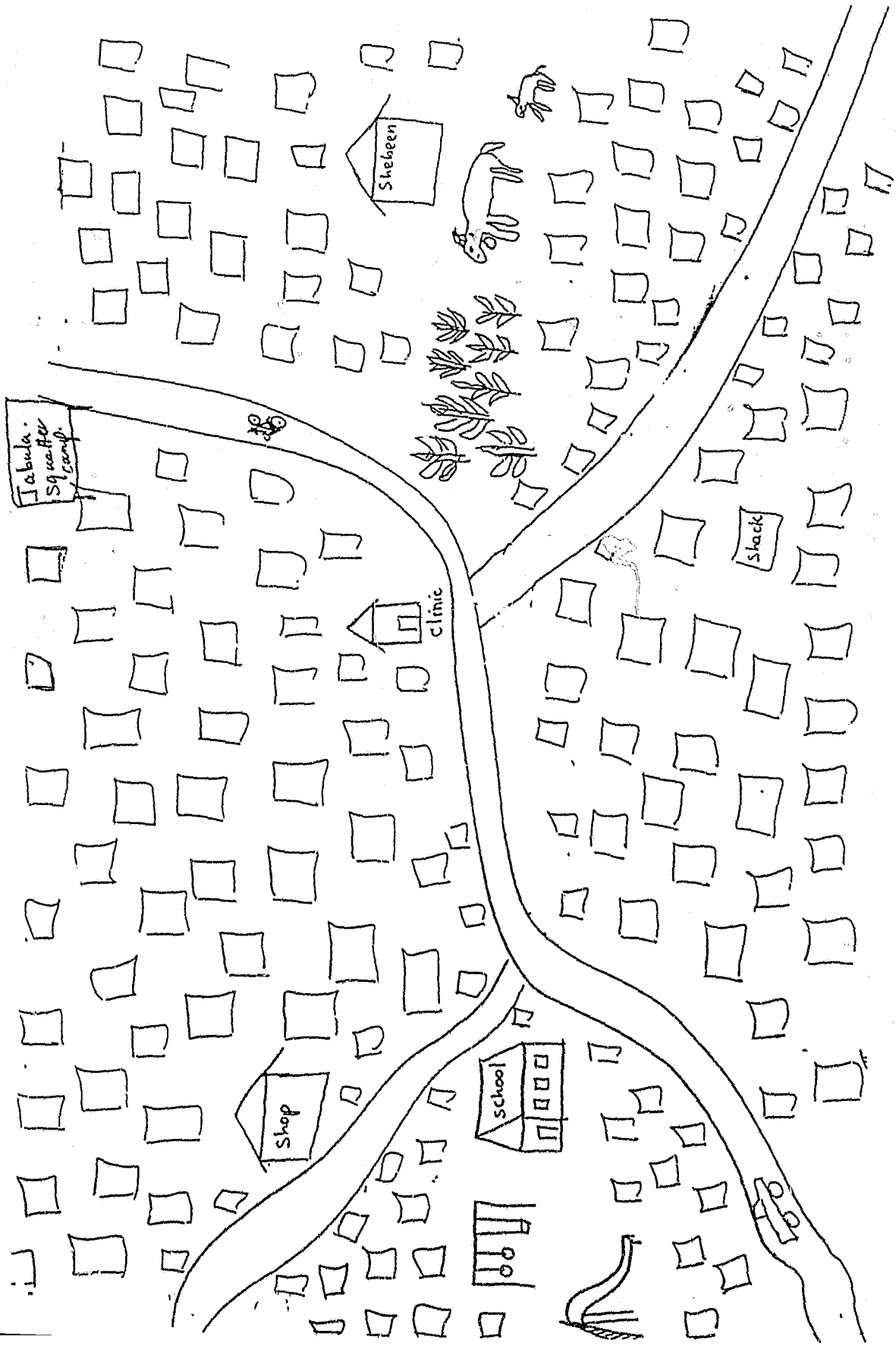
b) _____

9. If all squatter camps in S.A. are to receive adequate water where do you propose that this water comes from?

_____

_____

_____


Sheheen
Tabula squatter camp
clinic
shack
shop
school

water for Jabula Squatter Camp.

1 You have been elected as the local councillor of Jabula Squatter camp. The residents are complaining about the lack of clean water. Draw up a plan for your next council meeting by answering the following questions:

1. Locate 7 taps ~~TF~~ in the squatter camp. The Dept of Water Affairs says that people should not have to travell further than 200m to fetch water.

2. Calculate the daily amount of water for your area. The Dept of Water Affairs says that everyone is entitled to 25 l of clean water daily. Assume an average of 4 people per shack.

165 shacks / 660 people.
16 500 l of water

3. Council building regulations state that people are not allowed to build less than 50 m from a river in case of flooding. Cross out the shacks that would need to be relocated.

3 Residents from the nearby suburbs have made complaints to you that the squatters are freely helping them to water from their garden taps. What are you going to do?
Should have the right to do what they want with them, it is their properties & will will help to keep the neighbours ~~be~~ happy.

4. When it rains sewage from fields around the squatter camp finds its way into the nearby river. What do you propose to do?

Put Easy Loo toilets which will be cleaned every so many days to help the sewage problem to a minimum.

B. To acquaint yourself with the general water situation in SA, read the RDP (section on water + sanitation) and answer the following.

5. How is rainfall distributed in SA?
Uneven rainfall distribution

6. Describe water access to people living in rural areas.
One in every seven ~~people~~ gets clean water

7. List the 3 main goals of water management
Meeting every person's health - functional requirement.
Raising agricultural output
Supporting economic development.

8 How many people do not have access to a) clean drinking water and b) adequate sanitation
a) + 12 million people
b) 21 million people

9. If all squatter camps in SA are to receive adequate water where do you propose that this water comes from?
Neighbouring countries, or water should be evenly distributed in the country.

Lesson 4

Water Consumption

References:

Cloete, D. (1992)."Know Your Environment – Water" in *New Ground*, No. 7, Autumn 1998 (Johannesburg, EDA)

Johnson, S. (1995). Water and Sanitation *EnviroTeach.* vol. 3 (1), (Johannesburg, The Communications Group)

Some figures

1701 per day per person all over South Africa
Whites: 140 cubic metres per capita consumption per year
7 x more than blacks
4 x more than Coloureds and Asians

	Per Capita Consumption
Ciskei	9l
Eastern Cape Townships	19l
Port Elizabeth Townships	80l
Average White Suburbs	200-350l
WHO standard (World Health Organisation)	50l

Source : Going Green

Water and economic growth

* 59% of S.A.'s GDP comes from Gauteng.
* 42% of urban population in Gauteng.
* Vaal catchment area provides only 8% of mean annual run-off.
* 50% of mean annual run-off is already captured in dams.
* one dam per annum lost to siltation.

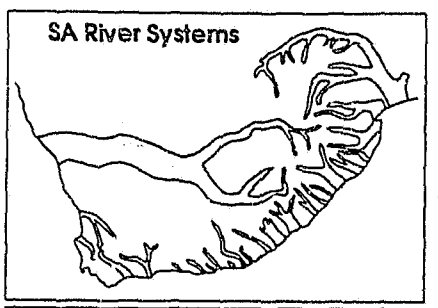
Water consumption

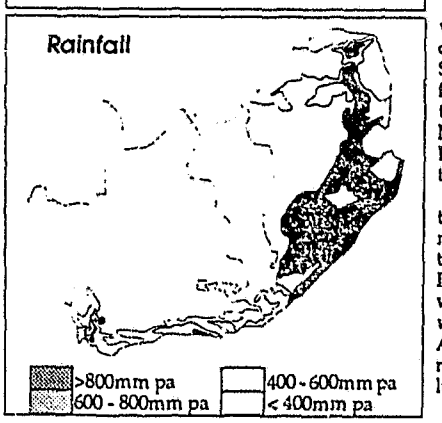
	Daily		Monthly	
Item	**Household**	**You**	**Household**	**You**
Drinking				
Personal Cleaning				
Toilet				
Dishwashing				
Clothes washing				
Garden				
Washing car/bike				
Swimming pool				
Other				
Total				

Fill your water bill in here. Does it correlate with your estimate?

1. Draw a pie chart of your daily household consumption.
2. Draw a bar graph comparing the monthly household consumption totals for your group of four.
3. In your group, explain any differences you find.

Where is South Africa's Water?

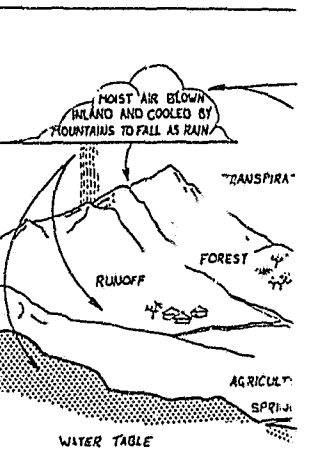




The physical geography and climate of a country largely determine where water is available. Most of South Africa lies on a central plateau which is bounded by an escarpment, with a narrow strip of land leading down towards the sea. The highest rainfall is recorded on the eastern side of the country, and flows along short rivers into the sea. (See maps) With the exceptions of the Southern Cape Coastal Belt, it becomes progressively drier the further west one goes, with Namaqualand recording an average of less than 200 mm of rain per annum.

Historically people have settled close to water supplies. But from the time of the discovery of gold in 1896 this pattern changed in South Africa. The Witwatersrand, 60 kms from the nearest large river, the Vaal, became the major industrial and population centre. More recently the Vaal Triangle on the Vaal River has become the centre for heavy industrial development.

But the Vaal River is small, compared to the major rivers of the world, and the 2 445 million cubic metres of water flowing down the river every year will be too little for the PWV region by about 2010. Projects to bring water from the other side of the Drakensberg will only buy another 30 years of growth. Already the Vaal frequently dries up before it reaches the Orange River and is highly polluted downstream of the Vaal Triangle.



The Water Cycle

All water circulates continuou watertight, no water ever leav Most clouds are formed by the su also evaporates from lakes, dams a it to the air through their leaves. deposit their water as rain, hail or either soaks into the ground to be borehole, spring or well, or it runs

Water for Agriculture

South Africa is a dry country, many areas do not receive enough rainfall for successful agriculture. This is particularly important where imported crops such as maize and exotic animals like cattle are farmed.

The 1970 Commission of Enquiry into Water Matters found that the country has too little water to use all potentially irrigable land, and only projects which make the best use of irrigation water should be encouraged. For the rest, attention must go to increased dryland cropping and use of drought resistant crops.

Irrigation has a negative side. It is a major user of scarce water and is often wasteful.Fertilisers and pesticides can mix with irrigation water, poisoning groundwater. Poor irrigation practices can destroy valuable farmland, concentrating slats in fields until no more crops can grow. Worldwide it is estimated that over 60 million hectares of land have been damaged by poor irrigation methods.

While agriculture is absolutely vital for our continued survival, indsutry can produce greater profits.It is likely that as water resources become more stretched, agriculture will start to lose out, taking food from people's mouths.

Mining as a Water User

The mining industry is a major sector of South Africa's economy and a major water user and polluter. Mining, milling and refining processes use large quantities of water. Often, large reserves of groundwater have to be pumped out to allow mining to take place.

Driven by economic imperatives and the limited water supply in many mining areas the industry has developed ways to conserve and recycle water.

Mine wastes are often highly toxic and mining operations have been implicated in a number of water pollution cases. Examples are the killing of rivers and a dam with arsenic from an exploration project near Barberton, and acidification of rivers in the Witbank area by local mines (see *NG* no4). There is also concern that underground operations could affect the quality of groundwater. This is of special concern in parts of the Witwatersrand, where the mines punch through the dolomite which holds millions of cubic metres of water.

Women and Water

In rural areas and informal settlements, women often spend sev hours a day collecting water from a shared stream, pump or standp This activity removes them from the activities and social life of c munities, maintaining their low status in their communities. R women have therefore been the driving force in many community w projects. Dr Aminata Troare, coordinator of a large UNDP (Un Nations Development Programme) project in Africa sums up the p tion of women with regard to water:

"Women need water, food and firewood and they have to find th resources in ecosystems that are already depleted. Women shoulc given responsibility for managing these resources."

Water and Nature Conservation

Around 15% of the country's water is needed for nature conservat and ecological purposes. This is the water used by game reser and in lakes and estuaries which support valuable ecosystems.

Nature conservation, often seen as a luxury, is emerging as support base for a growing tourist industry. As this industry grow the future its demand for water will increase.

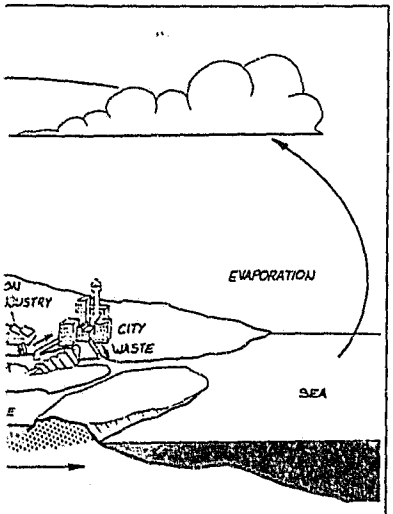
While water used for the maintenance of ecosystems is a const amount, it cannot be undervalued. These ecosystems are part of the which supports the country's ecology. In particular, the role wetla play as natural filters cleaning polluted water is only now beginnin be appreciated. (see story on artificial wetlands)

Water and Forestry

The great tree plantations, sometimes referred to as the wood mine South Africa are major water users. Forests trap water before it reach rivers. The artificial forests of the Eastern Transvaal have redu the flow of many of the rivers which feed the Lowveld. Planting gr lands with forests can reduce the flow of water downstream by ab one fifth. Forests also draw water from the ground, lowering the wa table and disturbing the hydrology of areas.

Many of the areas which have been afforested (planted with tre are natural grasslands, and the afforestation has affected not only water, but also the local ecology. Most of the planted forests are exc pine and eucalyptus trees that do not grow naturally in southern Afri Local plants, animals and insects cannot live in these forests wh therefore represent a loss of habitat for local species.

Wh. Uses South Africa's Water



d cycle — the water cycle. The cycle is
water enters.
he sea, causing water to evaporate. Water
nts take water from the ground and release
transpiration. The clouds drift until they
nostly over the sea. Water falling over land
undwater, which comes to the surface in a
id flows to the sea completing the cycle.

Water for Power

al-fired electricity power stations use vast
quantities of water. Steam drives the tur-
and water is needed for cooling. Recently
oped dry-cooled power stations use far less
, but are less efficient. Increased costs in
consumption and air pollution must be
ied against the water savings. Many see
y, especially cheap energy, as the key to
opment, but the limits set by the water sup-
ust be recognised.
Hydro-electric power does not use any
, merely the energy from falling water.
are limits to hydro-power in a dry country
outh Africa, but some energy researchers
e the country's hydro-power resources are
sly underdeveloped. In addition there are
ber of proposals to co-operate on regional
-schemes such as the one planned on the
River.
Hydro-power has problems. Most schemes
n huge dams which flood large areas of land
cing people, flooding habitats, disrupting
courses, and causing erosion. Many of
Africa's large dams are rapidly filling with
sing their usefulness as an energy resource.
ticle on Lesotho Highlands Water Project)

Develop.. ent in South Africa can only continue if water is conserved and protected. At the present rate of population and industrial growth, demand for water will overtake supply by about 2030. To prevent this, water use must become more efficient, more water must be recycled and we must learn to accept that growth cannot continue for ever. We must learn to live within the limits nature places on us, and accept that wellbeing is not only determined by how much we consume.

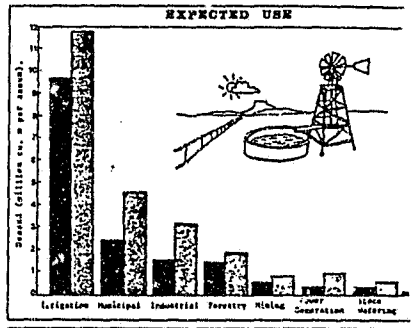
The demands of forestry and ecology on the total water supply are called indirect demands. The ecological demand is the amount of water needed to maintain lake and estuary systems and the wetlands which are vital habitats. Large commercial tree plantations draw on rivers and groundwater, and pass it through the trees to the atmosphere, depleting the supplies of water for downstream users.

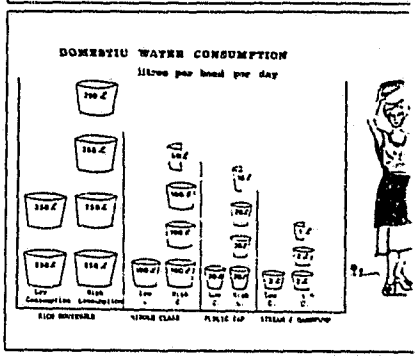
Direct users

The other sectors are direct water users, drawing water from rivers, dams and the ground and using it before passing what is left back into the water system, often depleted and polluted.

As these sectors grow, they place more and more demand on the total water supply, a limited although renewable resource. Development often brings pollution with it. In many developing countries, the perceived need to industrialise has forced governments to relax controls on water pollution, making much of the water unfit for most uses.

Projecting these figures into the future is not an easy task. We must not only predict the gowth rate in the various sectors, but also look at other factors, like the decline in mining, the impact on water resources of greater pollution and degradation of quality by re-use of water. Some uses of water preclude others. For example, development in the southern part of the PWV region has left water so polluted that tobacco, once a valuable local crop, can no longer survive at Parys.





User Demand

The major users of water in South Africa are, in of the number of million cubic metres usec annum: (1 cubic metre = ± 50 x 20 l buckets)

Irrigation	9 695
Ecological uses	2 767
Municipal / Domestic	1 516
Industria	1 448
Forestry	1 427
Mining	511
Power Generation	444
Stock Watering	288
Nature Conservation	182

(Figures from Department of Water Affairs mates for 1990, in *Management of the Water Reso of the Republic of South Africa*, Dept. of Water Aff. 1986)

Domestic and Municipal Water Use

The houses, gardens and factories of the cities all use water, often very inefficiently. Some townships lose up to 30% of their water through leaky pipes.

There is a vast difference in water used in wealthy and poor households. (See graphic)

As more people become urbanised, cities and factories will demand more water. The run-off from the cities and their treated sewage passes back into the rivers, adding to the pollution load. In many cities, Johannesb being a prime example, the return flow en the river downstream of the intake point, luting downstream areas. As a result, w Johannesburg's water generally stays wit South African standards (lower than those many developed countries and in some stances lower than the World Health Orga sation's standards), the water feed downstream towns is often seriously pollu

Solutions

Management of South Africa's scarce water resources presents difficult problems which don't have easy answers. But there are a number of areas to be emphasised.

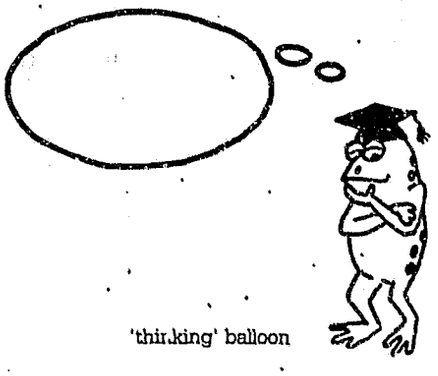
- An adequate supply of good quality water is a basic human right which must be recognised. Present and future governments must make a decent and adequate water supply a priority.
- Water is a limited resource and is quite likely the ultimate limiting factor to economic and population growth in South Africa. Existing water supplies must be conserved and protected. Further recycling and water saving measures must be promoted.
- Water resources must be protected from pollution. Pollution has a serious impact on water quality for downstream users, as industry expands, this situation is likely to worsen. Clean production te niques which minimise pollution must be encouraged.
- Water management, as with all natural resources, must holistic, recognising water as part of the total environment. F example, it is pointless to minimise water pollution by incinerati waste and creating a potentially disastrous air pollution problem

Experience throughout the world has shown that industry a government only take meaningful action to preserve the enviro ment when the people of the country are watchful and concerne All of us need to take action both in our own lives and the life of o country to ensure that there is clean water for all.

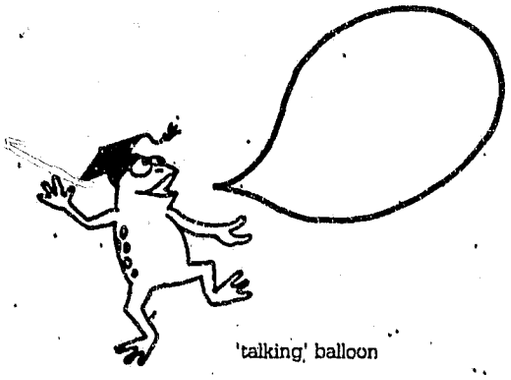


Balloon talk

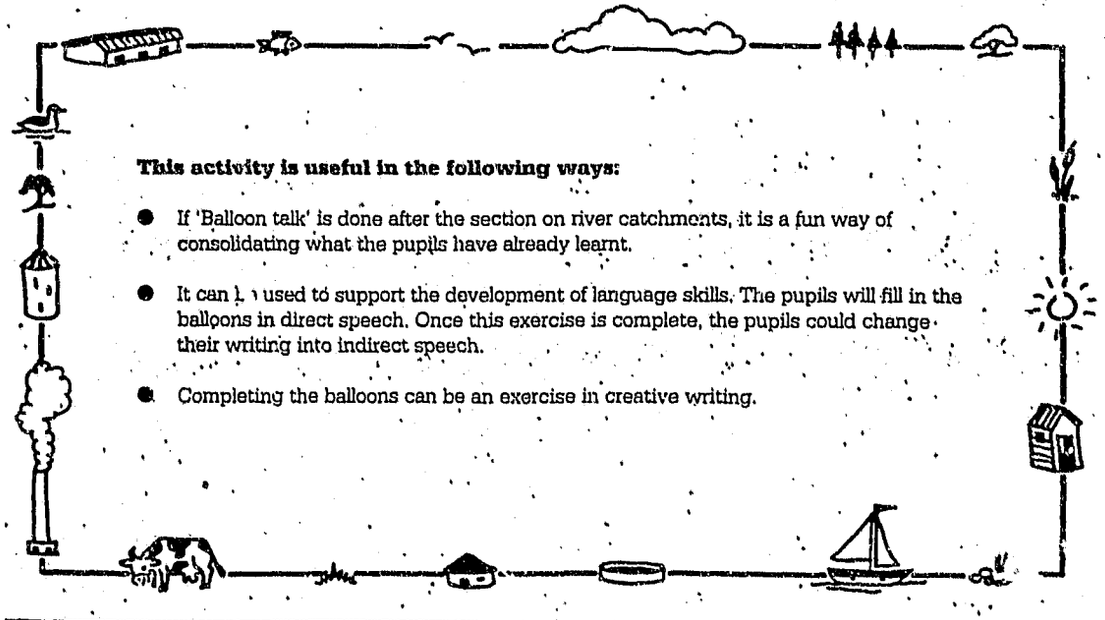
On the following page is a picture of a river catchment. Photocopy one for each child and ask the children to fill in the balloons. Some of the balloons are 'talking' balloons, and others are 'thinking' balloons. You could provide pupils with a list of ten new words learnt in the study of water, and specify that they must use these words when filling in the balloons.



'thinking' balloon

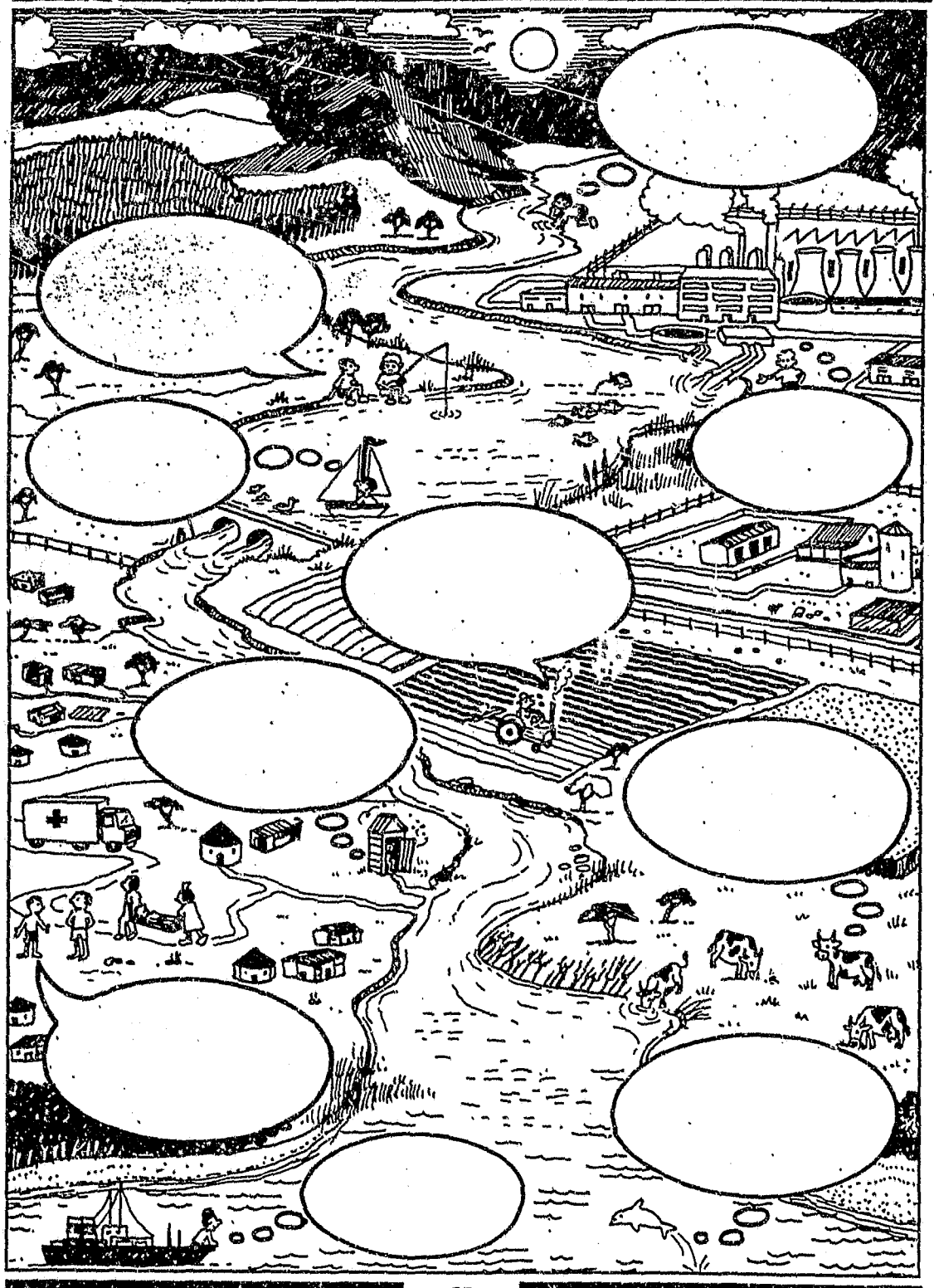


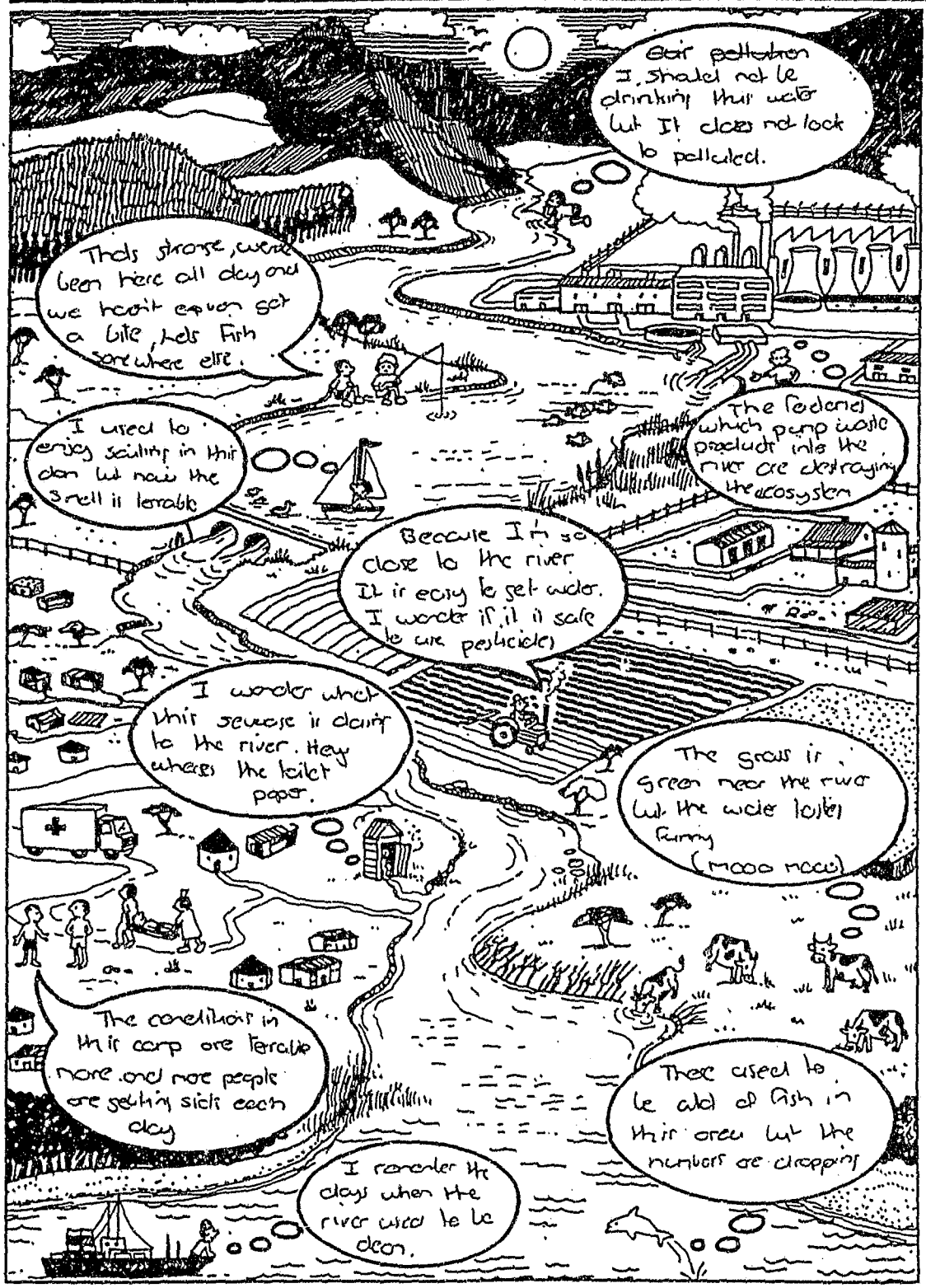
'talking' balloon



This activity is useful in the following ways:

- If 'Balloon talk' is done after the section on river catchments, it is a fun way of consolidating what the pupils have already learnt.
- It can be used to support the development of language skills. The pupils will fill in the balloons in direct speech. Once this exercise is complete, the pupils could change their writing into indirect speech.
- Completing the balloons can be an exercise in creative writing.




Air pollution I should not be drinking this water but it does not look to polluted.
Thats strange, we've been here all day and we haven't even got a bite, lets fish somewhere else.
I used to enjoy sailing in this dam but now the smell is terrable
The federal which pump waste product into the river are destroying the ecosystem
Because I'm so close to the river It is easy to get water. I wonder if it is safe to use pesticides
I wonder what this sewage is doing to the river. Hey where's the toilet paper.
The grass is green near the river but the water toilet funny (mooo mooo)
The condition in this camp are terrable more and more people are getting sick each day
There used to be alot of fish in this area but the numbers are dropping
I remember the days when the river used to be clean.

Lesson 5

Water Transfer Schemes

References

RWB. The Quest for New Supplies video (Johannesburg, RWB)

RWB. The Future video (Johannesburg, RWB)

Author Sadie S
Name of thesis Values Education In A South African Geography Classroom Sadie S 1999

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