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RESEARCH PORTFOLIO

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by
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Some researchers are comparatively self-contained and can work without consistent support from friends and family. I must confess that I am not one of them. I am immeasurably indebted to a number of people for crucial help given in individual and imaginative ways.

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DEDICATION

I dedicate this study to my late father, **Mvuyo “Jacaranda”** who passed away while I was busy with this programme.

RESEARCH PORTFOLIO

CONTENTS.

1. **Situational analysis of my learning environment:** *A critical analysis and evaluation of six different educational institutions in the Grahamstown-Rhini area.*
2. **Analysis of educational research traditions:** *Effects of participation in class activities on children's environmental attitudes and knowledge.*
3. **Research report- Education in t** *A profile of a rural school in the Tsolo district: Assessing possibilities for the introduction of Environmental he formal school curriculum.*
4. **Research paper-** *Socio-cultural factors that have contributed to the decrease of plant species in the Eastern Cape: A case study of the Etyeni village, Tsolo, Transkei.*
5. **Research proposal for the research report in number 3 above.**
6. **Research proposal for the research paper in number 4 above.**

**A SITUATIONAL ANALYSIS OF MY LEARNING ENVIRONMENT:
A CRITICAL ANALYSIS AND EVALUATION OF SIX DIFFERENT
EDUCATIONAL INSTITUTIONS IN THE GRAHAMSTOWN-RHINI AREA**

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**CRITICAL ANALYSIS OF THE SITUATIONAL ANALYSIS OF MY ENVIRONMENT: A
CRITICAL ANALYSIS AND EVALUATION OF SIX DIFFERENT EDUCATIONAL
INSTITUTIONS IN THE GRAHAMSTOWN-RHINI (RHINI or GRAHAMSTOWN-EAT and
WEST) AREA.**

The situational analysis of my environment was the first research I was exposed to in my M.Ed course. Inexperienced as I was in any type of research I had to undertake the investigation. I did not know what was really expected of me in a research. Thirty months after I had written this research I found that the work I had done was not a critical analysis but a description of my environment. The language was poor and at times I did not understand what I wanted to say.

The assignment was tough. I had difficulty in differentiating between an analysis and a description. At the time I was writing this research I relied on what the interviewees told me as the truth. I did not sit down and think about how authentic the data was. I never even bothered to ask for a second opinion about the data I had. I never asked anybody to read and critique my work as it was my work. No one would read it except my tutor. This was my downfall in this endeavour. A research is not the researcher's private entity but is data written for public consumption.

Coming back to the research, if I were asked to write this piece of work again I would have structured it differently.

Firstly, I would have looked at the size of Grahamstown. The town is relatively small but it has about ten schools. This makes it an educational town. Why is Grahamstown small as it is an educational town? What attraction did it have to have so many schools in it?

Secondly, having looked at the number of schools in Grahamstown, the following questions are important

to answer, in the light of the research:

- What type of curriculum do the six chosen schools follow?
- Are all these schools following a specific curriculum?
- On which paradigm is their curriculum based?

At the time of writing this research the new paradigm which encourages skills, knowledge, attitudes and values was and is still advocated by the Government of National Unity. I would have investigated whether these schools were still using the old paradigm that is the traditional method or the socially critical paradigm, with emphasis on knowledge, critical thinking, skills development, problem-solving, decision-making and putting theory to practise and joint effort:

- Are these schools making use of resources from the institutions such as Albany Museum, the J.L.B. Smith, and in particular Rhodes Education Department?
- Of what use is Rhodes University to the schools around Grahamstown?
- Of what benefit are the schools to the community?
- How is the relationship among the chosen schools?
- How is the relationship between the Grahamstown-Rhini area and the chosen schools?

Thirdly, I would have looked at the similarities and differences of these schools, paying particular attention to their physical layout and their internal layout. The internal layout would be based on the academic situation, and extramural activities.

As each of these schools has its own policy, does each individual school's policy allow them to visit each other?

- If so on which ground do they visit each other?
- If not why do they not visit each other?
- Is there any difference in the pass and failure rate among these schools?

The questions would be followed by follow-up questions which I did not have in my questionnaire. Even though that I had, they were poorly structured.

I failed to highlight that in the former Model C schools in this study, the learners have an advantage of starting from grade 1 to 12. In black school such an advantage does not exist. A junior primary school is a separate school independent of a senior secondary.

The composition of teachers in the selected schools should have been looked into. This question would then take me to the historical background of all the six chosen schools.

Looking at the history of apartheid-racial segregation, Graeme College should be commended for having had the courage to be among the first few "white" schools to admit black learners during the apartheid era. I failed to bring this forward in my research yet this is history worth documenting. It would have highlighted the turning point, and the evolution of the South African educational system. Grahamstown schools are rich in South African history which I failed to bring forward. Nyaluza's rugby field called "egazini" "a place of blood" is another remarkable historical event in this area. Mr Nonqane, our once guide from the Albany Museum, narrated the history of this rugby field on our first excursion in February 1997. I failed to use that information when I was writing this research, as I lacked the skill of collating information. Nathaniel Nyaluza, one of the oldest schools in this region, has a very short history in this research. Very little is said about Benjamin Mahlasela, the pioneer of this school.

Fourthly, the type of skills that black students have is different. The predominantly black schools lack some skills to raise funding, yet each learner pays a meagre amount of only R50 per annum towards school fees. This amount is too little for the needs of any school at this point in time. Prices for every commodity have since gone up. Where on earth do they think they will get the money to buy their equipment from? In this regard I have left out some important facts to substantiate my statement. I have left hanging statements and have used sweeping statements. I should have substantiated the fact that relatively speaking St Andrews has little financial constraints compared to other black schools.

The learners from St Andrews and Graeme College are able to fundraise, an element that is lacking in black schools. Parents whose children school at St Andrews and Graeme are on top of fundraising, willing to pay the large sums of money they are asked to pay towards their children's education. This is the reason why these schools are not as ill-equipped as the black schools. At St Cuthbert's where I teach fundraising, is not a welcomed endeavour among the learners as well as their parents. This a practice that I fail to understand among our children. Black learners who are schooling in the so called Model C schools are willing to fundraise, while learners in black schools do not want to embark on that activity. Learners and parents in predominantly black schools are sitting back and expecting "manna" from Heaven to fill their laboratories, libraries and computer centres with equipment.

Sweeping statements like "boys of all races schooling at St Andrews are from well-to-do families", is according to a friend Ken Ngcoza (pers. comm.), questionable. He maintains that not all learners at St Andrews are from well-to-do families. Some boys have been awarded bursaries, that have enabled them to study at St Andrews.

It is interesting that within the same area there is a vast difference in the payment of school fees.

- Why do schools in the Grahamstown East pay only R50.00 per annum when schools in Grahamstown South pay as high as R30 000.00 per annum?

The fact that some of my interviewees said that there are not enough secondary schools in the township is according to Ngcoza (pers. comm.) not true. In fact there is an excess of secondary schools. In the Grahamstown-East there are six secondary schools, and learners can go and study anywhere they wish. About 50% of the staff at Mahlasela, for instance, appears on the redeployment list.

Fifthly, the data I got from certain sources has been poorly referenced. The paper as a whole lacks a logical and systematic arrangement of facts, a problem I have not yet overcome even now. I have not indicated my personal communication with the school principals as (pers. comm.). This takes us to the

poor referencing I referred to earlier on. I have noticed errors like the absence of consistency in the use of terms. "Students" have substituted "pupils". The present jargon refers to students and pupils as learners.

I have paid very little attention to the cultural background of these schools. Yet the different cultural backgrounds would have laid a very fertile soil for me to see why these schools are unique in their own way. At the time of writing this research I had thought that "facilities" and "equipment" meant one and the same thing. Now I know that facilities are the physical structures like buildings, toilets, etc., while equipment refers to the materials like overhead projectors, chalk, chalkboards, computers, maps, etc.

Sixthly, the type of instruments I used in this research were interviews and questionnaires. However, I relied mainly on questionnaires. The way the instruments were structured lack follow-up questions. The questionnaires gave little scope for the interviewee to elaborate and explain explicitly. For instance, in the research I mentioned that Nombulelo was temporarily closed in 1991, and some teachers decided to leave for good. There is no follow-up question as to why these teachers did not come back when the school re-opened. If I had asked as to why these teachers did not come back, I would have got the real reason from the people who were actually there when the school closed.

At the time I was writing this critique, I have decided to interview Ngozo because I noticed and learnt from our conversation that, he was born and bred in Grahamstown. He has worked at various schools around here and is now working as education officer in the Albany district.

Lastly, what I have learnt throughout my M.Ed course is reading intensively and extensively and to be able to undertake a research, difficult as it is. With the knowledge I have gained here at Rhodes I am able to think critically. I have learnt not just to accept any information I get, but to ask why, what, which, and how much is the information authentic. Any piece of information I write, I do not write it for me but I write it for the public. Therefore it should be flawless. Before I pass the information to my supervisor

I need to give it to somebody else for a second opinion. That will help to see how comprehensive the information is. Remember two heads are better than one.

Contents

Contents	1
1 Introduction	2
2 The Preamble to These Six Schools	3
2.1 Analyses of the location of these schools in relation to who they catered for and how they cater for their pupils	4
2.1.1 St. Andrew's College	4
2.1.2 Graeme College	5
2.1.3 Nathaniel Nyaluza High School	6
2.1.4 Mary waters Senior Secondary School ..	7
2.1.5 Ntsika Senior Secondary School and Nombulelo High School	7
3 An Historical Analyses of the Schools	8
4 Analysis of the Biophysical Elements, Their Impact on the Environment, and How in Turn These Have Been and Are Affected by the Historical, Socio- Economic and Political Factors	15
5 Conclusion	21
6 References	23
7 Appendix I	25
8 Appendix II	27

1 Introduction

Education is a weapon to success. Education is the transmission of knowledge from one person to the next. It can be transmitted formally, non-formally or informally. Lifton (1970:13) argues that education may be considered as those activities wherein the learning of one or more persons is being deliberately controlled by others. It may be restrictive (socialisation) or expansive (the encouragement of creativity). It may reflect a variety of strategies including practice, information transmittal, or discussion of thinking itself. It may be formalised or ritualised or informal or sporadic. However, wherever education takes place, there are always two recognisable roles - those of a teacher and student.

Education is found to be paired with travel that broadens the mind, relationships that promote maturity and, experiences that involve significant discovery in respect of one's powers or one's limitations (Walsh, 1993).

The pioneers of the various educational institutions in Grahamstown like Bishop John Armstrong, Mr B.E.N. Mahlasela and Miss Mary Waters wanted to broaden the minds of their people and promote maturity in them. The curriculum that was offered when these schools were initiated in Grahamstown involved even practical subjects like Domestic Science and Carpentry that would give their pupils practical knowledge and skills. They were aware that good education does not mean simply book learning or the acquiring of a greater store of information or a scholarship that has mastered the many branches of learning that are taught in the schools, colleges and universities of this day. It means a store of knowledge and skills that can discern between what is good and useful and ennobling, and that which is a useless accumulation of learning in worldly arts and sciences as Spindler (1987:212) argues.

2 The Preamble to These Six Schools

The missionaries were fulfilling the old injunction, "Go ye therefore and teach all nations, baptising them in the name of the Father, and of the Son, and of the Holy-Ghost." They did not only teach the people spiritually, but even intellectually. They taught them education that was and is needed in the ever changing world. St. Andrew's College in Grahamstown is no exception. It is a missionary founded school, has illuminated the culture of learning in this area. It has been the spring-board of the rest of the other five schools, directly or indirectly.

My focus of critical analysis and evaluation is going to be on six education institutions in Grahamstown mainly, St. Andrew's College, Graeme College, Nathaniel Nyaluza High School, Mary Waters Senior Secondary School, Ntsika Senior Secondary School and Nombulelo High School. I got permission to write about these schools from the headmasters.

2.1 Analyses of the location of these schools in relation to who they are catered for and how they cater for their pupils

All these schools are located in less than 4 kilometres away from the Central Business District (CBD) of Grahamstown. Their school going population comes from Grahamstown-Rhini area, the entire Southern Africa, and as far as Central Africa (Malawi and Zanzibar). Their school official starting time is between 07h30 to 07h45 to 13h30 and 14h00. The teaching staff in all of them is drawn from all racial groups in the world and the syllabi they follows are different. The medium of instruction is English.

2.1.1 *St. Andrew's College*

It is located in a predominantly white suburb south-west of the CBD. It caters for boys from Pre-primary to Standard ten. The VIth form or Post-Matric form is not compulsory, but it has proved itself very useful in helping the young matriculants to bridge the gap between school and freedom of university life. In the course of this year, the VIth former learns to assume leadership and responsibility, has added opportunities to develop academically and in his sport and inevitably grows in self-confidence.

Most importantly he learns to structure his time effectively. While studying for UNISA credits, he is given tutorial help by the staff. An able student can go directly into second year university studies after a VIth form year but this is not the purpose of the year. It caters for boys of all races from very well to do families, from the entire South Africa and across her borders. It has good boarding facilities for those who come from outside Grahamstown. This independent school that stood proud and firm to be independent in 1970 offers the following subjects, Xhosa, French, Latin, Afrikaans, Divinity, English,

Art, Musical Appreciation, Geography, History, Physical Science, Mathematics, Accounting, Economics, Computer Science, Typing, Home Economics, Biblical Studies, Human Movement and Carpentry. The medium of instruction is English. The school curriculum follows the Independence Examinations Board (IEB) syllabus (St. Andrew's Prospectus, 1997).

2.1.2 *Graeme College*

This school which is located on a basin, on the north-west of the CBD is bordered by the Indian suburb on the north and the high income group residential areas on the east, south and west. It is a boys' school from Sub A level to standard ten. It combines a modern progressive education with the standard and values proven by its fine tradition which were built up since its inception. The pupils are both boarders and day-scholars. They come from around Grahamstown and all over South Africa. They are a heterogenous school going population. It is one of the few "white schools" that admitted "black pupils" during the apartheid era.

The pupils at this school come from well to do families, middle income, as well as very poor families. The task of the school is to lay emphasis on commitment, hard work, involvement, sportsmanship and the positive development of all who pass through its doors. The College follows the normal syllabi of the Cape Education Department. It does not only cater for the current boys, but for the staff, the parents, "Old Boys" and friends in a meeting place called the Graemian Centre. This centre is open each school day until 15h30. It provides a relaxed atmosphere and serves light refreshments for boys at breaks and lunch times. Part of the centre is used as the Old Graemian function room which forms the focal point of the Old Graemian Union (Graeme College Prospectus, 1996).

2.3.1 *Nathaniel Nyaluza High School*

This beautiful modernly built school stands prominent in the midst of shacks, and dirty, shabby and old buildings north-east of the CBD. It caters for black pupils mainly from the Rhini townships and the neighbouring farms. The school follows the current Eastern Cape Department of Education, Sport and Culture syllabus, from Standard six to Standard ten.

2.1.4 *Mary Waters Senior Secondary School*

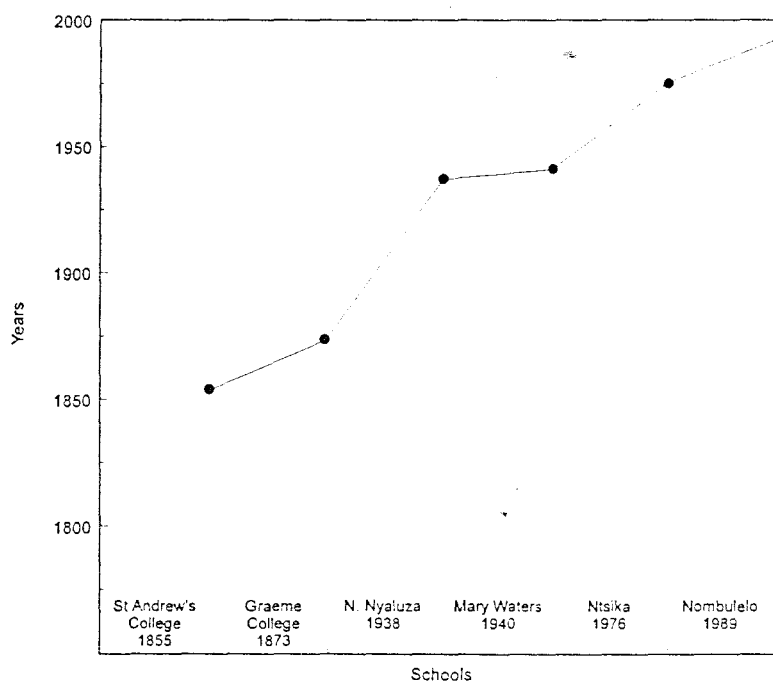
This big Coloured school is located on a free face north of the CBD. It is bordered by middle income group residential areas on the west and north and by two stadiums and shacks on the south and east.

It caters for White, Coloured and Black students from Standard six to Standard ten. The medium of instruction is both English and Afrikaans. English is used to cater for those pupils who have not been exposed to Afrikaans at their primary schools (Wessels, 1997).

2.1.5 Ntsika Senior Secondary School and Nombulelo High School

These two schools are neighbours both located on the north-east of the CBD. they are both bordered by middle and low income group residential areas, a bottle store and shacks. They, like Nyaluza have a homogenous school going population that are Xhosas. They follow the same Eastern Cape Department of education, Sport and Culture syllabus. They cater for black students from the Albany district.

Figure 1: An Historical Analysis to illustrate periods when some of the schools in Grahamstown were established.



The Grahamstown schools were established at different times due to different reasons. In this paper I am going to unfold the reasons for their establishment. This area is generally known as the home of the 1820 Settlers. There was therefore a need for the education of their children. That was why a non-denominational public school, The Graham Public School was established in the 1930s. The need to establish a learning centre for the white children was promoted by Bishop John Armstrong so as "to provide for the youth of the Province and sound Christian education for the sons of the Eastern Cape Settlers" (St Andrew's Prospectus, 1997). With that idea in mind, he on the 2nd December 1854 issued

an appeal for funds which he got and St. Andrew's College for boys was born in 1855. The land on which the College was built was a free offering of A.W. Beck Esquire and the Society for the Promotion of Christian Knowledge made a general benefaction (St. Andrew's Prospectus, 1997).

One of the main aims of establishing this school was "for the glory of God, the furtherance of sound and religious learning and the propagation of the Gospel among the heathen." Until 1904 this Anglican founded school fulfilled a dual function. It was a "College" proper in which young men were prepared for University examinations. There was also the academically more modest function of the St. Andrew's Diocesan School. In 1904 Rhodes University was born from John's foundation. This means that Rhodes University College was first housed and attached to St. Andrew's College, and was fed by the products of this school (St. Andrew's Prospectus, 1997).

From 1904 the school's academic focus has been "secondary education", though its VIth form remains a reminder of its orientation, then as now, towards "tertiary education". The college followed the Cape Education syllabus, then later the Joint Matriculation Board syllabus (JMB) and now the IEB (St. Andrew's Prospectus, 1997).

The other five schools that I am writing about were established later, were community driven projects. The white, coloured, and black communities saw a need of having more schools so as to end illiteracy. This was the influence of the already existing "College".

Through this idea Graeme College was instituted in 1873. It was first housed in the present structures of Victoria High School for Girls. It was a successor of the earlier Graham Public School of the 1830s, but after it became co-educational at the turn of the century, it was changed to Victoria High School. When it reverted back to boys' school in 1938, it adopted the name Graeme College after the founder of Grahamstown, Colonel John Graham. This link between the educational institutions in this area has a long history. Graeme College and Mary Waters were once housed in the University buildings like Drostdy House, Drostdy Barracks and St. Clement's Hall (Graeme College Prospectus, 1996).

The school is proud of having one of the oldest school magazines in the country and has produced prominent leaders like W.P. Schreiner, the Prime Minister of the Cape and Marmaduke, St. John Pattle, the fighter ace who is credited with the highest number of aircraft shot down in the Second World War, to mention a few (Graeme College Prospectus, 1996).

The influence of the white schools in this area, kindled a fire that led to the establishment of Nathaniel

Nyaluza Secondary School for "Natives" in 1938. This idea was greatly opposed by whites that "Natives will not pay fees, this school is not needed, and the Secondary School for the Natives should not be encouraged" (Herald Staff Reporter, 30 May 1938).

Grahamstown had for a long time been famous as an educational centre for "Europeans" but the facilities for the Natives seeking learning had been very restricted. For a long time there had been only the primary mission schools. Several years later a Higher Primary School was established to take children up to Standard VI. The desire from the parents for their children to continue after Standard VI work for a Junior Certificate (JC) grew. In 1937 the Bantu Parents Association raised the matter and collected the funds and this association was assisted by the Joint Council of Europeans and Natives, Joc H, the Rhodes Social Studies Club, and the Training College Social Studies Club (Herald Staff Reporter, 30 May 1938).

The funds collected were handed over to the magistrate who consented to sit on the committee. Unlike Graeme and St. Andrew's Colleges, this school had an overseeing body to monitor its funds. This school, like Graeme started its work in buildings lent to them by the Methodist Mission in 1938 with 41 pupils and one teacher, B.E.N. Mahlasela, its first principal. Like the other secondary schools it was following the Cape Department of Education syllabus until 1954 when the Bantu Education was introduced. Despite the fact that the school had little or no equipment, it survived and continued. The curriculum of the school has not changed from that of 1938, instead commercial subjects have been added to it.

The City Council donated a site where this school now stands. The first buildings were completed in 1939 (Herald, 2 June 1953). It is with great pity that the political struggle, and the environmental unawareness have led to class boycotts, strikes and the burning down of the original buildings of this school. The buildings one sees at this school today are newly erected buildings. At least one or two classrooms should have been preserved as a sort of monument.

The Coloureds did not want to be left behind. In 1940, just three years after the birth of Nyaluza Secondary School, Mary Waters, a Coloured school was born. It offered the Junior Certificate course to Coloureds. It was first known as the Rhodes University College Coloured Practising School (RUCCPS). As this school was accommodated at Rhodes University College, it was used as a teacher training facility for student teachers in the Education Department of the Rhodes University College. There has always been a link between Rhodes University and Grahamstown schools. It followed the Department of Education syllabus like the others (Parsotam, 1988).

The pupils were taught by Rhodes students who were allocated a particular subject for periods of three

weeks at a time. The embryo school had a very poor record of passes from the first group. Only three pupils passed out of sixteen. A permanent full-time teacher was appointed by the Rhodes University College Council (RUCC) and the results improved. Miss Waters later joined the permanent teacher. She was appointed as lecturer in the Education Department of RUC and was assisting with work of the practising school. She established herself as the main teaching force in the school. It was in recognition of her educational influence that the school was named after her.

In 1955 the school was transferred to the Cape Education Department. The funding of the school laid solely on the shoulders of the Department while previously RUC was footing the bill. In 1963 when the long awaited new building was opened, where the school today now stands, the distance between the school and RUC made effective co-operation increasingly difficult. This school was the last school the Cape Education Department built for Coloureds before handing over to the Department of Coloured Affairs. The Coloureds therefore followed their own Coloured syllabus. The curriculum widened, and the school was elevated to the status of a high school.

The staff and pupils, both the past and the present, have succeeded in making Mary Waters an integral institution in the community, not least of all in the educational sphere. To support that the present principal, Mr S.C. Wessels, is an ex-Mary Waters' pupil today (1997) the school is following the current Eastern Cape syllabus like Nyaluza, Ntsika and Nombulelo High Schools (Parshotam, 1988).

There was a growing awareness of the need for education in the area. Parents became concerned about the shortage of black schools as Nyaluza High was the only black school around Rhini. Students who had passed Standard V could not all be admitted at Nyaluza because it would be full to capacity. They were forced to seek admission into schools in the former Transkei and Ciskei areas. Not all the parents were able to send their children to these far away places. Because of the overspill of Nyaluza and the financial constraints at various homes, two schools initiated but the township community came into existence. Ntsika was established by the community and the Bantu Administrative Board (BAB) in 1976. Nombulelo High was established in 1989, but it was purely a government school (Principal - Ntsika Senior Secondary, Ndabeni, N., 1997).

One could even see by the building structures that even though these schools were established with the same motive, in the same locality, they look different. Ntsika Senior Secondary was built from funds collected by the community with no government backup. Nombulelo High was subsidised by the government. It was intended to be a comprehensive school and to have a vocational school status. At its inception it had two Xhosa-speaking teachers out of twenty-six. The rest of the teachers were whites.

Unfortunately after the closure of this school in 1991 due to the 1990 and 1991 class boycotts, white teachers left the school, and the government divorced itself from the school. The departure of the white teachers did not hinder the morale of the school. It still has the highest matric results in the Albany district ranging between 80 and 90% (Ndabeni, N., 1997).

Even though these schools have been conceived at different times, with different motives, by different race groups and following different syllabi, the subjects taught at them are much the same as the initial aim of establishing them was the same. The initial aim being that of educating the child for a brighter future. The common subjects that are taught at these schools are Xhosa, English, Afrikaans, French, Woodwork (Carpentry), Divinity (Religious Education or Biblical Studies), Home Economics, Physical Science, Mathematics, Accounting, Physical Education (in some schools as a practical subject offered extra-murally), Environmental Education (all offering it extra-murally). (This spirit of competition among these schools, despite the difference in facilities, is good and I appreciate it.)

3 Analysis of the Biophysical Elements, Their Impact on the Environment - and how in Turn These Have been and Are Affected by the Historical, Socio-Economic and Political Factors

For the mind to function properly and for it to be healthy in a school situation, the school environment should be conducive to learning. The three high schools that are allocated in the townships, that I have written about are surrounded by shacks, old buildings, new buildings where there is a lot of littering. Along the fence that surrounds the schools cow-dung is not an unusual thing to see. Air pollution is common. Stinking, dirty water that runs in the drains and streets just next to the school, is a common sight. Blocked toilets and the rubbish that the municipality is not attending to is a serious problem that these people have learnt to live with. Nyaluza High, Graeme College and St. Andrew's have neatly kept gardens with flowering trees, evergreen trees, fish ponds and flowers. The gardens are maintained by the agricultural science teachers and some teachers who are keen to beautify their schools. Nombulelo and Mary Waters Senior Secondary schools have a few trees, mainly indigenous, in the background. Ntsika with its shabby grounds, maintains that it has little funds to have extra money to buy flowers.

All these schools have a problem of being next to the busy roads, as a result noise pollution from the traffic sometimes disrupts the pupils' concentration. St. Andrew's and Graeme College have well developed sportsgrounds that are large. Nyaluza, Marty Waters and Ntsika Secondary schools do not even have enough space for the sportsground within the school premises. For their sport activities they rent sports fields from the municipality. Nombulelo High has enough space to develop a sportsfield but it has insufficient funds to develop the grassy area.

The availability of other facilities like the classroom accommodation, toilets, teaching aids, books, teacher-pupil ratio, water, electricity, school machinery, care-taker, labourers and night watchman differ from one school to the other. St. Andrew's college has no financial constraints. This (private) independent school which caters for boys from very well to do families has enough laboratories that are well equipped. It has all the modern teaching aids necessary for a modern school, like computers linked to E-mail, Internet, videos, television sets, overhead projectors, literacy, slide projectors, design and technology centre and enough furniture (Geography teacher, St Andrew's, 1997).

Graeme is a public school but it buys its stationery, textbooks, television sets, videos, sports uniforms, photocopy machine, computers and fax machines from its coffers. It pays electricity and water bills from the school funds. It is not subsidised by the state. The state only pays teachers' salaries. Three teachers who are a necessity to the school but have been identified as teachers in excess and have opted for a severance package, have been re-employed by the school and are paid out of the school funds paid by the parents. The principal of this college even went to the extent of telling me that the school has no teacher librarian, and no guidance teacher, because the state will not employ them. According to the teacher-pupil ratio the government feels that the teaching staff is enough. As the pupils at this school come from both middle and very low income group families, some of the parents cannot afford to pay the required R150.00 per month towards school fees. Pupils from such homes are allowed to pay R50.00 per month, because their parents take home salaries of about R800.00 per month, but there must be evidence to that effect. In spite of all that, it has enough teaching aids and furniture (Principal, Graeme College, 1997).

Mary Waters, Ntsika, Nyaluza and Nombulelo High Schools are poorly facilitated. Nombulelo is a little bit better than the rest although its facilities are not enough. The toilets are few and in a bad state of affairs, more especially at Ntsika. The libraries and laboratories are ill-equipped, and the furniture is insufficient. The Woodwork and Home Economics centres have very little equipment. The broken equipment is not replaced, yet the government claims to be subsidising the schools. The stationery and text books are not delivered in time, that is, early in the academic year.

The money paid by the parents towards school fees is too minimal to suffice. Nyaluza is also better off than the two (Ntsika and Mary Waters) because when the school was rebuilt after the strikes and boycotts, modern facilities like television sets, computer and a video were supplied. The other machines that they have have been bought out of the meagre funds the school has. Other machines that these schools have been donated by private companies (like the fax machine donated by Mobil, MP to Nombulelo). Ntsika and Mary Waters literally do not have libraries and laboratories, they have been converted into classrooms. The reason for this is being the shortage of classrooms. At Mary Waters three classes were

burnt down in 1994 due to an electric short. The science kit therefore is kept in a blue trunk in the principal's office and the books in boxes. The school is now faced with the predicament of having no funds to redevelop the classes. They are patiently waiting for the third year for the government to come to their rescue (Wessels, 1997).

Bad though conditions may be at these schools, they have a way of funding themselves. During the National Arts Festival, which is held in June every year at Grahamstown, the schools rent out chairs, school halls, classrooms and hostels in the case of Graeme College to the organisers of the festival. They get a lot of money out of that. Graeme College yearly gets R50 000.00 and Nombulelo R8 500.00. This is the money that enables these schools to buy and add the needed equipment and apparatus.

All these schools believe in fund raising so that they have enough money for their extra-mural activities. The school activities include both indoor and outdoor activities. These include fishing, angling, cultural clubs, Student Christian Movement/Associations, VCS (Christian movement), sport, debating societies, dramatic societies, music societies, Wild Life clubs (funded by Gold Fields), Junior City clubs for helping the aged, Ibonga society, Art society, hiking, Alchemists and Cornish (literary) societies. In some of the activities, students from all the six schools prepare a social gathering. This cross-cultural interaction helps to promote tolerance, co-operation, responsibility and discipline among themselves.

In the 1970s, 1980s and early 1990s the Coloureds and the Black students joined forces. They joined forces initially during the 1976 riots. Coloureds were against what they called "gutter education" while the Blacks were against the Bantu Education. They boycotted, stoned and burnt classes. Ntsika has for years been known for being notorious. It was the breeding ground for the school boycotts. Both coloured and Black students were killed by the police during the strikes. This did not deter their unity. Between 1978-1980 the resistance of the students led to the closure of Ntsika, to an extent that in 1979 end of the year examinations were held in February 1980. Teachers were demotivated and many pupils dropped out of school at that time. Graeme and St. Andrew's Colleges never experience boycotts and student resistance. After these boycotts in these schools the prefect system (which I still favour) was forced to be replaced by the Student Representative Council (SRC). But Mary Waters has both system (Principal, Ntsika, 1997).

At the beginning the SRC misused their powers by thinking that the schools would be administered as they wanted. They wanted to be involved in the admission of students, controlled and audited the school fees and evicted teachers they felt were not doing their work properly, when in reality they hated them because they were strict and not bending to their demands. But today, those are the things of the past. Instead they

work towards the building of the school. They even want corporal punishment to be restored. About 95% of the big boys at Graeme College have that feeling (Ndabeni, N., Wessels, S.C., Principal, Nyaluza, 1997).

Even though the class boycotts have come to an end, other environmental problems, like littering by school children, overcrowding of classes, septic tanks, rapes of school girls by the school boys (three of such cases have been experienced at Nombulelo in 1996), squatters selling dagga and liquor to school children during school hours, a bottle store next to some of the schools, motor cars moving at a high speed, ignoring crossing pupils causing accidents, squatters that destroy school fences so that their goats can gain access to the grass in the school premises, radios from these surrounding houses switched on to the top of their volumes, gangsters that attack pupils on their way to and from the school and looting of school furniture by the township dwellers, are a cause for concern.

Domestic backgrounds of the pupils, thoughtlessness of pupils, carelessness and inefficiency of the municipality, not enough schools in the townships, unemployment, poor housing planning systems and environmental unawareness are the causes of the above social factors. Something must be done to alleviate the above environmental problems. The schools must shoulder the responsibility of educating the pupils to be proud of their environment, to be made to be environmentally aware, by participating in community projects, their attention be brought to socio-cultural values, continuous reinforcement so that they themselves discover the worth of the environment and make the municipality aware of septic tanks at their schools through their active Junior City Club (JCC). They should engage themselves in cleaning campaigns.

5 Conclusion

I have been able to obtain the information about the six schools I have just discussed by means of interviews and questionnaires and observations that I have made. I have been able to draw information about the historical, socio-economic and political factors that ruled and are ruling these schools. I noticed that the schools that were established by whites like St. Andrew's, Graeme and Nombulelo are better facilitated than those that were established by the black community. St. Andrew's has been able to maintain its old buildings for the past 141 years without changing the architectural style. The modern improvements are inside the rooms, and inside the place it is breathtaking and very neat.

The old Graeme College buildings, now Victoria Girls' High School, are also intact, well kept and attractive. I was disappointed by Nyaluza High School, where the original buildings of the school were

all demolished instead of keeping at least one, that would serve as a monument. But I was pleased that the documents about the history of the school were saved during the strikes when the classrooms were burnt down. Graeme, Nyaluza, Mary Waters and St. Andrew's have the records of their school history neatly filed. That is a white culture, that of preserving the information through writing it. I was not really disappointed when at Ntsika and Nombulelo High Schools the historical background of these schools was orally passed to me. That is typical of an African culture. Very little is written about our history. This shows the difference in cultural values. I commend the elderly people who are able to pass it from one generation to the next orally. This may perhaps lead to the distortion of information.

In spite of all these differences in social background and culture I was happy to hear from the principal of Ntsika and Mary Waters schools that their students are timeously invited to social gatherings to Graeme and St. Andrew's Colleges. The Head boys and girls would be invited to these schools. Three white boys from P.J. Olivier have been admitted at Mary Waters since 1995. The Headboy of Mary Waters is one of these boys. He is communicating well with everyone at the school and is very supportive to the administration. This now shows how political conditions in this area have changed. Thank you to St. Andrew's which kept the fire of education burning. It has served both white and black communities directly or indirectly. By indirect serving I mean, some educationalists from St. Andrew's had gone out to teach in some other schools around. Again this is the indirect serving. These institutions are the babies of "Mother", St. Andrew's and the babies have given birth to their babies, and so on.

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Appendix I

INTERVIEWS THAT I CONDUCTED IN THE SIX SCHOOLS

ESTABLISHMENT OF THE SCHOOLS

- (a) When was this school established?
- (b) Who established it?
- (c) Why was it established?
- (d) If this project was not then a government initiative, how did the government respond to the initiative?
- (e) Are the structures you are using now the original structures?
- (f) Who was responsible for the running out of the school?
- (g) If your school was established before 1954 which syllabus did it follow?
- (h) Is it still following that syllabus even today?
- (i) If no, which syllabus is being followed now?

THE SOCIO-ECONOMIC AND POLITICAL FACTORS THAT HAD AND HAVE AN IMPACT ON THE INSTITUTION

- (a) If the syllabus that your school was following changed after 1954, was the change met with resistance or not?
- (b) How did those who resisted show their resistance?
- (c) If we look at the resistance and political struggle between 1976 and 1994, was your school ever involved in it?
- (d) If yes, how? Explain the legacy of your school with respect to the struggle.
- (e) Did the struggle have any impact on the teachers?
- (f) Your school is bordered by a bottle store and shacks, do these not have an impact on the school situation?
- (g) Does your school have a homogeneous/heterogeneous language?
- (h) If heterogeneous, are there no language clashes among the pupils?
- (i) Is the community around you helpful in the school activities?
- (j) Who was funding the school at its inception?
- (k) Who is funding the school now?
- (l) Do you have enough stationery, prescribed text books, teaching aids, furniture, libraries and

laboratories?

- (m) Are your laboratories and libraries well-equipped or not?
- (n) Do you have care-takers, night-watchmen, labourers and domestic workers?
- (o) If yes, who pays them?
- (p) Who is responsible for the painting of the dirty walls and fixing up of broken windows, furniture, blocked pipes and toilets?
- (q) Do the pupils at your school pay school fees?
- (r) Do you follow the Prefect System or do you have the Student Representative Council system?
- (s) How does it function?

BIOPHYSICAL FACTORS AND RECREATIONAL FACILITIES THAT INFLUENCE EACH OF THESE SCHOOLS

- (a) Do you have sportsfields?
- (b) Who maintains them?
- (c) Who pays for the electricity, water and repairs the tarmac roads in and out of the school premises?
- (d) Who selects the teachers who are responsible for the various activities in the school?
- (e) Are these activities useful to the school? How are they useful?
- (f) If you feel there is still more that you would like to tell me about your school concerning the issues that we have discussed so far, feel free to do so.

Appendix II

A SAMPLE OF SIX GRAHAMSTOWN SCHOOLS

POSSIBILITIES FOR THE INCLUSION OF ENVIRONMENTAL EDUCATION (EE) INTO
THE CURRENT SCHOOL SYSTEM.

N.B. PLEASE ANSWER ALL THE QUESTIONS AS INDICATED. IN THE CASE OF YES
OR NO ANSWERS INDICATE WITH A TICK IN THE BOX YOU THINK IT BEST
ANSWERS THE QUESTION.

SECTION 1(a)

GENERAL INFORMATION ABOUT THE SCHOOL

- 1.1 Does your school community represent a
homogeneous (similar) income group? [Yes] [No]
- 1.2 What impact if any does your student
body have on the environment?
.....
.....
.....
- 1.3 Is EE part of your formal school
curriculum? [Yes] [No]
- 1.4 Is EE offered extramurally? [Yes] [No]
- 1.5 If the answer to 1.4 is Yes please
indicate how it is offered in extramural
curriculum, e.g. through [clubs] [hiking]
[arbour day]
[excursions]

[world environmental day]

[cleaning up campaigns]

[lessons from the community nurses and social workers]

1.6 If the answer to 1.,4 is Yes, how much
time is spent on EE lessons?

.....
.....

1.7 As a Geography teacher what do you
understand by the term EE?

.....
.....
.....

1.8 As a Geography teacher do you think that
EE is important?

[Yes] [No]

1.9 Please support your answer in 1.7

.....
.....
.....

1.10 How are EE and Geography related?

.....
.....

1.11 Are there any environmental facilities
e.g. the garden, where the pupils are
able to do outdoor activities?

[Yes] [No]

- 1.12 If the answer to 1.11 is Yes how are
the facilities used?

.....
.....

-
- 1.13 Are the pupils in your school from the
local community or elsewhere?
-
-

SECTION 1(b)

PLEASE INDICATE:

- 1.1.1 How many teachers there are in your
school?

- 1.1.2 What is your school 1997 enrolment?

.....

.....

- 1.1.3 Please identify problems as regard
to pupil-teacher ratio

.....

.....

.....

- 1.1.4 How many Biology and Geography
teachers are there in your school?

.....

- 1.1.5 Do you consider your school to have
adequate library and laboratory
facilities?

[Yes] [No]

- 1.1.6 Do you consider your school to have
adequate teaching aids?

[Yes] [No]

1.1.7 If the answer to 1.1.6 is Yes list

the most important and the most
valuable teaching aids you have ...

.....

.....

.....

SECTION 2

GENERAL ENVIRONMENTAL EDUCATION INFORMATION

2.1 Do you see any necessity for offering
EE in your school? [Yes] [No]

2.2 Please support your answer to 2.1
.....
.....

2.3 Do you see EE as a subject that is
related to other subjects? [Yes] [No]

2.4 Please support your answer to 2.3.
Mention each subject and the manner in
which that particular subject is related
to Environmental Education
.....
.....
.....
.....
.....
.....
.....
.....

2.5 Please identify the Environmental
Education offered by the home and the
school
.....
.....
.....

.....

.....

3.3 How do you deal with this/these
problem/s?

.....

.....

.....

3.4 Do you think that the inclusion of EE
into the new curriculum would help
alleviate this/these problems?

[Yes] [No]

3.5 Please support your answer to 3.4

.....

.....

.....

SECTION 4

THE LINK BETWEEN ENVIRONMENTAL EDUCATION AND GEOGRAPHY

PLEASE INDICATE:

4.1 Of what importance is Geography to human beings?

.....

.....

.....

4.2 What is the attitude of your students towards Geography?

.....

.....

.....

4.3 How do your Geography students view their school

environment?

.....

.....

.....

- 4.4 Please consider whether there is any link between Environmental Education and Geography.

.....

.....

- 4.5 Please support your answer to 4.4.

.....

.....

.....

- 4.6 What do you consider to be the dissimilarities between Environmental Education and Geography?

.....

.....

.....

- 4.7 Would you as a Geography teacher employ the same method/s to introduce Environmental Education as you do in Geography?

[Yes] [No]

- 4.8 Please give reasons for your answer to 4.7.

.....

.....

.....

- 4.9 Should Environmental Education and Geography be integrated or should they be treated as separate entities?

[Yes] [No]

- 4.10 Please support your answer to 4.9.

.....

SECTION 5

CLASSROOM ISSUES OF ENVIRONMENTAL EDUCATION AND GEOGRAPHY

- 5.1 Do you experience any problems teaching
 Geography in your class?

[Yes] [No]

- 5.2 Please support your answer to 5.1.

.....

- 5.3 Which do you consider to be the most effective method/s
 for teaching Geography?

.....

- 5.4 Please indicate the advantages of this/these method/s.

.....

- 5.5 Which sections of the current Geography syllabus do you
 consider unimportant or irrelevant?

.....

- 5.6 Please motivate your answer to 5.5.

.....

5.7 Which other geographical aspects do you think ought to be included in the school syllabus?

.....
.....
.....

5.8 Please motivate your answer to 5.7.

.....
.....
.....

END

THANK YOU FOR YOUR PARTICIPATION.

"SIFTING POPPY SEEDS AND CORN"

ANALYSIS OF EDUCATIONAL RESEARCH TRADITIONS:

EFFECTS OF PARTICIPATION IN CLASS ACTIVITIES

ON CHILDREN'S ENVIRONMENTAL ATTITUDES AND KNOWLEDGE

by

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INTRODUCTION

Research refers to human activities directed towards development and advancement of organised forms of knowledge and patterns of action. Efforts are often made to either add to the existing repertoire of knowledge in a given area or to solve pressing and immediate social problems. Leeming et al (1997) undertook the research to find out (1) what effect participation in the programme had on children's attitudes on environmental issues and (2) whether children influenced their parents' environmental attitudes and knowledge. The study focuses on pro-environmental crisis over an academic year. It follows a positivistic approach.

RESEARCH TRADITION

The research study by Leeming et al (1997) uses a positivistic paradigm. They used both the experimental and control groups drawn from eleven schools to compare the effect of the programme on the students. They further wanted to see if the programme had the potential to change parents' attitudes, knowledge and behaviour on environmental issues. The researchers of this paper are using education, classing activities as a tool of changing attitudes and empowering school children and the parents with the knowledge about environmental issues. They use the positivistic approach or scientific method in this experimental research where they deliberately control and manipulate the conditions which determine the event in which they are interested. Their interest is both in the pupils and parents of the experimental as well as in order to compare the changes. They embark on this approach as if it is the only way of getting into the minds of the pupils. I think they could have embarked on ethnographic study, to get closer to the pupils and see why some of them show the least interest in the environmental issues, than relying on the teachers' feedback and the questionnaires. The academic year is long enough for an ethnographic research. They could have been participant observers. Doing an experiment having a control and an experimental groups, to describe, assess, conclude and generalise about the findings is characteristic of a positivistic approach. The

researchers have observed the change of the attitudes and the knowledge gained by subject during the programme and assessed the differences between them. The time span allow for the programme to be implemented, and then allows time for it to filter down to the parents and then follows the assessment of the subjects. The quantitative method, the random sampling, and the measurement of the effects of class activities through statistical analysis in pages 35, 36, 37, 38 and 39 clearly show that knowledge in the positivistic tradition is gained scientifically.

METHOD

The choice of participants was not randomised. It was left to the school principals "to select the control classes that were as similar as possible to the experimental classes in terms of teacher and student characteristics". This strategy/approach is problematic, because of the unlimited discretionary powers granted to teachers without any verification of their research knowledge base. Lack of a check-list to eliminate biases further complicates the strategy. The researchers further acknowledge that "the match between experimental and control classes was not perfect" (see table 1 page 35). Such an admission casts doubt on the authenticity and validity of the results. Why use a flawed approach?

SAMPLING

When carrying out research, a series of questions have to be borne in mind. For instance, the size of the sample, methods of selecting the sample and other factors that influence the credibility of the findings. Small samples can lead to loss of potentially valuable results and are equivalent to a loss of power in the test used for analysis (Stevenson 1994). There are also practical considerations that researchers have to contemplate, for instance, accessibility of the sample and costs that are likely to be incurred both financial and timewise. These factors often make researchers employ "opportunity" sampling. This often creates problems when generalisations have to be made from such samples (small). Leeming et al. (1997) used this

sampling technique. This casts doubt on the question of the representativeness of their sample. Researchers need to be cautious in generalising from such samples.

INSTRUMENTATION

The credibility of the results or data relies heavily on the nature of statements and questions that the researchers ask. It is common for researchers to include and provide a list of statements or questions from which the participants have to select, tick or rate as appropriate. The list is often incomplete, not containing all possible reasons associated with the focus of the study. This has the potential to delimit or affect the scope of responses which may well bias the study, by making other criteria appear more important than they truly are (Maddala 1992).

The researchers used the Children's Environmental Attitude and Knowledge Scale (CHEAKS) to obtain both the pre-test and post-test measures of the students' environmental attitudes and knowledge. The attitude scale comprises 36 items that measured attitude towards environmental issues. These were arranged into 3 groups of 12, covering various aspects/concepts. The grading of responses was anchored on a 5-point Likert response format with the most pro-environmental response to each item credited 5 points and the least receiving 1-point credit. The parent scale also comprised a 36-item behaviour checklist, anchored on a 5-point response scale similar to the one described above. The success or otherwise of any research relies inter alia on the nature of the instruments used. A poor choice of instruments would have serious consequences on the data gathered and the result derived thereof. In the research paper the researchers have only given us a description account of the instruments. Whilst one notes the relevance of the content concepts (animals, energy, pollution, etc.) as articulated by the researchers, the descriptive account of the instruments alone is inadequate. The researchers ought to have provided included the specimen (example of the instruments) so that the readers could make candid analysis or evaluation of their suitability, validity and authenticity. This would further enable readers to interpret the results intelligently

without being influenced by the researchers' descriptive repertoire on design and other related issues

PROCEDURE

The researchers have described the procedures they followed in their study adequately. The use of both pre-test and the post-test is an acceptable strategy in experimental designs. They therefore have to be credited. However, one has to be critical of the results gathered through this process. The novelty of doing something different may mislead the researchers regarding findings and the initial positive effect of the design, which might diminish once the intervention becomes routine and old.

It is possible that the pre-test itself may act as a stimulus and consequently influence the research results. In such cases, it may be observed that if the study is repeated on another sample, without using a pre-test, the initial findings may not be replicated. Furthermore, it is stated that "a letter explaining the study and requesting the parents' help, the Weigel and Wiegel questionnaire, the behaviour checklist ..." was sent to parents. This is both delimiting and problematic. The researchers would miss an opportunity to correct any ambiguities that might arise. They may not probe for additional information and clear up misunderstandings as there was a trained interviewer present. Individuals might prove to be making extreme responses on attitude scales, trying to impress the researchers. The possibility of getting duped responses cannot be ruled out. It is not clear what contingency plans the researchers had in anticipation of the issues raised, except their devoted belief in the discretionary capacity of the school teachers.

RESULTS

That researchers have found out that the older experimental group showed little interest in environmental issues compared with the younger group is not surprising. Firstly, their lack of exposure to the programme might have accounted for the disparity. Secondly, the granting of unlimited discretionary power to the

teachers, especially on the selection of the participants and other related issues, cannot be taken for granted.

it is possible that teachers might have used their status to maximize their influence on students. Furthermore it is possible too that the students might have wanted to impress their teachers and publicise their school, especially on environmental issues. Thirdly, the researchers have not provided us with an adequate description of the social background of the participants and their general perceptions on environmental issues before they were exposed to the programme. Their social background might have contributed towards their little or lack of interest in the subject. It suffices to argue that in some countries or regions children as "Only seen but not heard". This complicates the parent-child relationship and indeed the freedom to discuss various issues, including environmental questions. Furthermore, the conceptualisation of environmental issues is relative to place and time and calls for a broad articulation of the situational forces and factors. This is further complicated by the procedures alluded to in my analysis.

CONCLUSION

The style of this research paper has well laid headings which guides the reader quite well and the headings present what one should expect from them. The research paper is scientifically presented with statistical analysis, standard deviation, mean, Likert Scale, and CHEAKS Attitude Scale to obtain the pre-test and post-test measures of the students' environmental attitudes and knowledge. What I have found inadequate in the papers is the descriptive accounts of the instruments. The procedures that the researchers have used namely, the pre-test and post-test strategy is good, but the letter explaining the study and requesting the parents' help was narrowing the opportunity for the researchers to correct any ambiguity that may arise. But the researchers have successfully reached where other researchers have to reach, namely to make observations over a long period and including younger children.

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RHODES UNIVERSITY
DEPARTMENT OF EDUCATION

RESEARCH REPORT

TITLE:

**A PROFILE OF A RURAL SCHOOL IN THE TSOLO DISTRICT: ASSESSING
POSSIBILITIES FOR THE INTRODUCTION OF ENVIRONMENTAL
EDUCATION IN THE FORMAL SCHOOL CURRICULUM.**

Submitted in Partial Fulfilment
of the requirements for the degree of
MASTER OF EDUCATION
of Rhodes University

by

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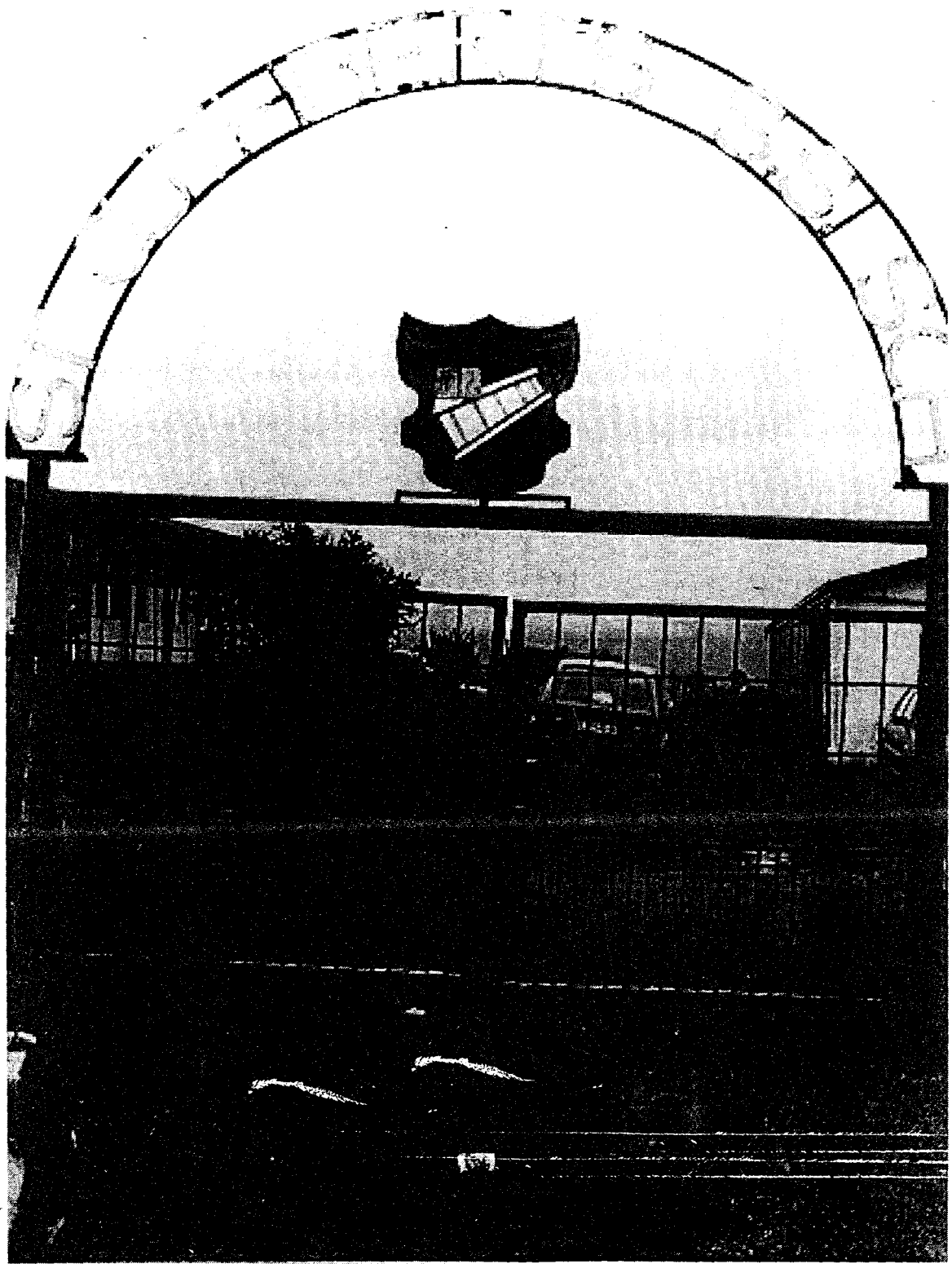


TABLE OF CONTENTS

Page No

1	INTRODUCTION	1
2	ENVIRONMENTAL EDUCATION AND OUTCOMES-BASED	
	EDUCATION: THEORETICAL AND HISTORICAL PERSPECTIVES	4
2.1	Theoretical Overview of the South African Education System Prior to and during The Period of the Government of National Unity	4
2.2	The Relationship between the OBE Approach and the Environmental Education Curriculum	8
2.3	Historical and Theoretical Overview of Environmental Education	9
3	METHODOLOGY	14
3.1	Research Methodology Employed in this Study	14
3.2	Limitations of the Study	19
4	RESEARCH FINDINGS: ST CUTHBERT'S SCHOOL AND ENVIRONS - THE CURRENT SITUATION	21
4.1	RESULT OF DOCUMENT ANALYSIS AND <i>IN SITU</i> OBSERVATION	21
4.1.1	Biophysical Analysis	21
4.1.2	Historical Overview of St Cuthbert's Village	23
4.1.3	Socio-Political Analysis	23
4.2	CURRENT SITUATION OF THE SCHOOL	26
4.2.1	Composition of the School Population	26
4.2.2	Teaching Resources	28
4.2.3	Teaching Facilities and Amenities	29
4.3	RESULT OF THE INTERVIEWS	33
4.3.1	Interviewees' Profiles	33
4.3.2	Interviews and Workshop Results	35
4.3.2.1	The Current Vision of the School: Teachers' and Learners' Responses	35

4.3.2.1.1 Teachers' and Learners' Views of the Relationship between their Subjects and the Environment	36
4.3.2.1.2 Importance of Language	37
4.3.2.1.3 Teaching Learning Procedures	38
4.3.2.1.4 Lack of Teacher Involvement in the planning of the School Syllabi	39
4.3.2.1.5 Teaching and Learning Facilities	40
4.3.2.2 A Future Vision for the School: Teachers' and Learners Responses	42
4.3.2.2.1 Introduction of Environmental Education as a Learning Area	42
4.3.2.2.2 General Problems	45
4.3.2.3 Community Responses	47
4.4 ANALYSIS OF <i>IN SITU</i> OBSERVATION AND RESULTS OF THE INTERVIEWS AND WORKSHOP	50
4.4.1 Possibilities for the Introduction of Environmental Education in the Formal Curriculum	50
4.4.2 Problems that Inhibit the Implementation of Environmental Education in the Formal Curriculum	52
4.4.3 Evaluation of Data	56
5 CONCLUSION AND RECOMMENDATIONS	59
REFERENCES	61
APPENDIX I	
APPENDIX II	
APPENDIX III	

ABSTRACT

This report discusses an interpretive study that is based on the profile of a rural school, St Cuthbert's Senior Secondary, in the Tsolo district in the Eastern Cape Province. The report investigates possibilities for the introduction of environmental education in the formal school curriculum. A number of research instruments including *in situ* observations, interviews and workshopping were used. These research instruments to illuminated the wider population within which St Cuthbert's school operates. The participatory approach used revealed the extent to which St Cuthbert's teachers, learners and community members see possibilities for the introduction of environmental education in their school. The results reveal that despite what appear to be insurmountable problems at St Cuthbert's, this poorly resourced rural school, has a considerable of potential and possibilities for the introduction of environmental education in its formal curriculum. A central issue that emerged in the course of this research was the need for the school and the community to work together to bring about the desired changes.

1 INTRODUCTION

The case study of St Cuthbert's High School profiles a rural school in the Tsolo District of the Eastern Cape. The study was undertaken to investigate the situation of a fairly typical rural school in the former Transkei, facing the introduction of an environmental education programme as part of the new Outcomes-Based Education (OBE) curriculum (Environmental Education Curriculum Initiative, 1998).

The study is a situational analysis of the school and of the community it serves, with the aim of exploring how, through environmental education, the school and the community could be drawn more closely together for their mutual benefit. In order to assess the school's ability to implement environmental education as part of the new curriculum, it was necessary to analyse the existing situation in the context of the current curriculum and its history: "to prepare for the future we need to understand the past" (Van Harmelen, undated). Like any institution, St Cuthbert's is not problem-free, and due attention is given to various problems encountered by teachers, learners and the community, which might impede the implementation of an environmental education course.

St Cuthbert's Senior Secondary, the school at which I teach, has been selected as representative of educational institutions which had their origins in missionary education and were brought under the control of the Department of Education and Training by the Bantu Education Act of 1953. With the granting of independence to Transkei in 1976, St Cuthbert's fell under the Transkei Education Department. The curriculum followed at St Cuthbert's from 1976 until the election of 1994 and the consequent absorption of the Transkei into the Province of the Eastern Cape, was that of the Transkei Education Department. Figure 1(a) illustrates the Eastern Cape Province in the context of Southern Africa. Figure 1(b) shows the location of the regions and districts of the Eastern Cape Province. Figure 1(c) shows the location of Tsolo Magisterial District in which St Cuthbert's Senior Secondary School is situated.

Figure 1(a): Eastern Cape in the context of Southern Africa (Eastern Cape. South Africa Provincial Series 1:800,000. 1st ed. 1998. Mowbray: Chief Directorate Survey and Mapping.)

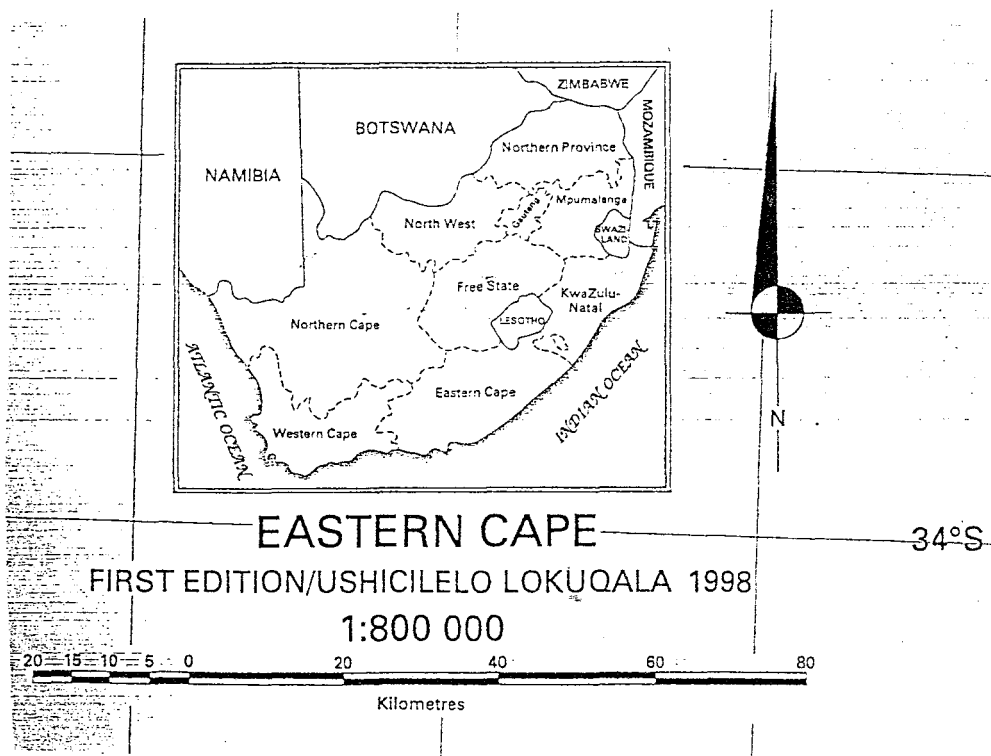
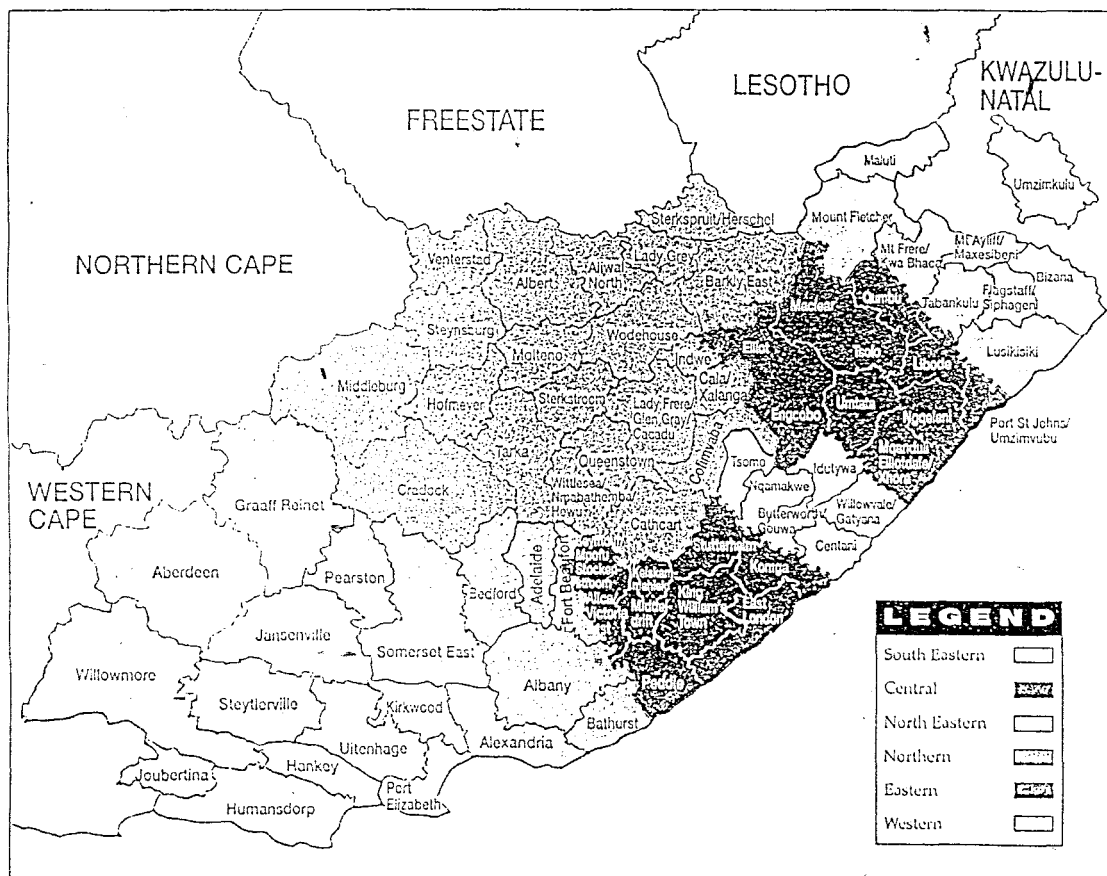


Figure 1(b): Location of regions and districts in the Eastern Province (Eastern Cape. South Africa provincial Series 1:800,000. 1st ed. 1998. Mowbray: Chief Directorate Survey and Mapping.)



The map displays the KwaZulu-Natal province, divided into several districts. Key districts labeled include KwaZulu, Umtata, Engcobo, Maclear, and KwaZulu-Natal. Major towns and cities shown are Durban, Pietermaritzburg, Grahamstown, and Port Natal. The map also indicates the Indian Ocean to the east and the KwaZulu-Natal border to the north. Various smaller towns and localities are marked throughout the province, including Mvumane, Mtata, and Ngwenana. The map is oriented with North at the top.

As a situational analysis and investigation into the possibilities for the implementation of environmental education, this study comprises the following:

3

paradoxically, in South Africa been underpinned by a behavioural theory of education, since 1948 in the form of Christian National Education (CNE). In this study, the scientific approach refers to the behavioural learning theory which underpinned teaching and learning within fundamental pedagogics. This approach owes its origin to the logical empiricism of the Vienna School (Aspin, 1995).

Up to 1983, the various education departments in South Africa functioned, to a large extent, independently of one another. There was no significant indication of a common curriculum followed by all (Kallaway et al, 1997). Education for Blacks within the boundaries of South Africa was regarded as a general affair and was placed under the jurisdiction of the Department of Education and Training. The rest of Black education was organised in four independent homelands and six self-governing territories. The latter were the responsibility of the Department of Co-operation and Development. This fragmentation of South Africa into provinces, homelands and self-governing states created 19 different education departments. Such a fragmented management structure prevented the implementation of a single national policy of any matter (Behr, 1988).

The central problem facing education in South Africa after the 1994 elections was that, due to its inheritance of a CNE-based racially and culturally segregated and differentiated education policy (as stipulated by the National Education Policy Act, no.39 of 1967), the country had never had a truly national system of education (White Paper on Education and Training, 1995). The existing curriculum was perceived as irrelevant to the needs of the learners and left very little room for creativity. The syllabi were prescriptive and detailed, and allowed almost no space for teacher initiative. No provision was made for the participation of teachers or the public with regard to decision-making structures in the curriculum. The compartmentalisation of learning areas restricted the transfer of knowledge from one learning area to the next. Education in this system was examination-driven, not knowledge-driven.

The present government is faced with the challenge of finding solutions to redress the inequalities, disparities and imbalances of the past. Guided by the key principles of equity and quality, it has merged all the education departments into one central body, so as to provide a common education system for "all South Africans" (White Paper on Education and Training, 1995). The process of educational transformation the government has set in motion is informed by a significant paradigm shift in the way people think about learning and how it is organised.

The new education dispensation in South Africa is driven by the National Qualifications Framework (NQF). This statutory body is responsible for the transformation of education in the South African context. Isaacman (1996) identifies 21 principles on which the NQF is based, among which the most important are the integration of learning, life-long learning, redress of inequalities and access to education. The certification and assessment body is the South African Qualifications Authority (SAQA). This body has been commissioned to identify standards and norms which will legitimise the new education dispensation (Ryder, 1996). The model for education that has been adopted by South Africa is that of Outcomes Based Education (OBE), a learner-centred approach theoretically rooted in social constructivism. The primary goals of OBE are described in the mission statement which appears in the NQF document: "A prosperous, truly united, democratic and internationally competitive country with literate, creative, and critical citizens leading productive, self-fulfilled lives in a country free of violence, discrimination and prejudice."

However, the new curriculum, which embodies this paradigm shift, is to be implemented in schools that vary considerably in terms of their facilities and the kinds of communities they serve. Urban schools, especially former White schools, are far better resourced than rural schools. From my personal experience, and as noted in the Transkei Education Act No.36 of 1984, rural schools are usually understaffed, or staffed by pensioners and young people who are not committed to their work. These schools are often far away from national or even secondary roads. Some schools are dilapidated, and most are short of

classrooms, with pupils crammed into the few that there are. In 1990, Dr Van der Merwe, the then Minister of Education and Development Aid, claimed that there was a shortage of 60 343 classrooms in primary schools and 99 506 classrooms in secondary schools (Mncwabe, 1993).

Carl (1995) suggests that a problem that we face in accepting a fundamentally new way of thinking about education is that past successes often cause people and organisations not to question why things are done in a certain way, or done at all. As a result of this we tend to keep doing things which are no longer appropriate, sometimes ignoring new options. Some teachers would cling to the old syllabi and educational practice, submit to the control of time-tables, subject the learners to the customary tests and end-of-year examinations, instead of realising the benefits of learning programmes and a learning-paced approach.

A key idea that underpins the new OBE model is an integrated approach to education. The Environmental Education Curriculum Initiative (EECI), (1998) points out that an integrated approach to learning rejects the rigid division between academic and applied, between theory and practice, and between knowledge and skills. According to the White Paper on Education (1995), integrated approaches towards education and training are now a major international trend in curriculum development and the reform of qualification structures. To develop their common interests in an integrated approach to education and training, the Ministers of Education, Labour and Manpower, and the National Training Board, have formed a working group (White Paper on Education, 1995). The aim of this joint venture is to ensure a fully participatory process of curriculum development and training, in which the teaching profession, teacher educators, subject advisors and other learning practitioners play a leading role, along with academic subject specialists and researchers (DOE, 1996a; 1996b). Teachers are intended to become curriculum developers rather than curriculum receivers.

The involvement of all the stake-holders in curriculum development is intended to ensure full participation

in the processes of problem-solving and decision-making in our education system. This signifies our movement away from a closed, simple, linear system and incremental change, to an open and complex web-like system and transformative change (Higgs, 1995; Doll, 1989).

2.2 The Relationship between the OBE Approach and the Environmental Education Curriculum

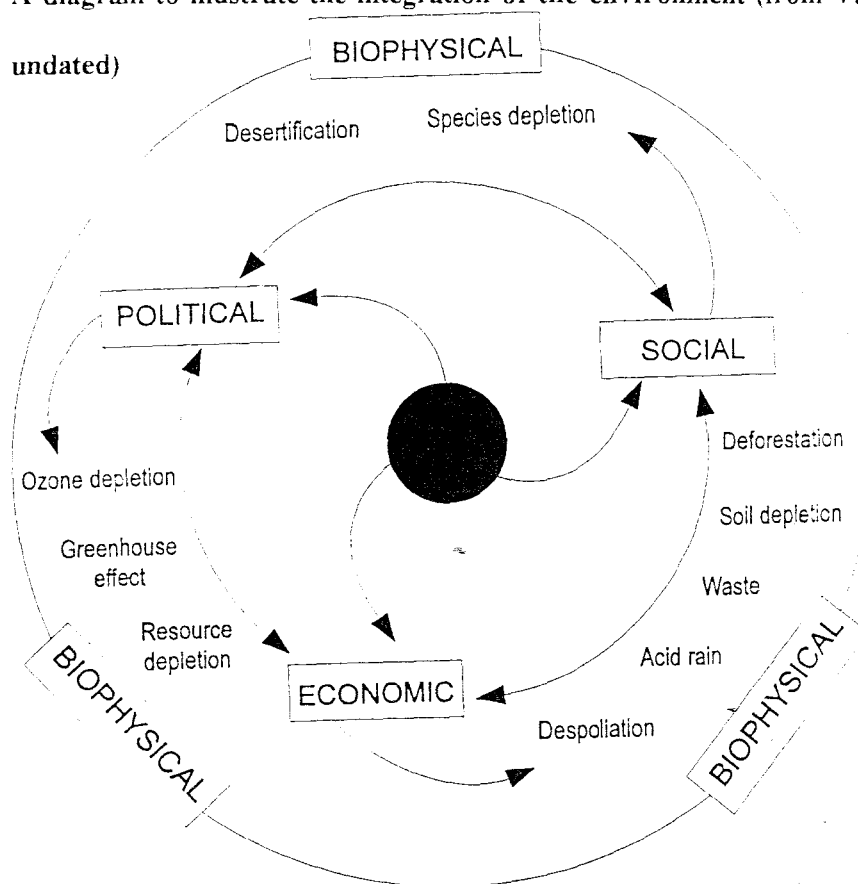
The EECI document of 1997 clearly states that environmental education should be seen as a cross-curricular initiative involving an interactive approach to learning. It is suggested that its cross-curricular nature will help promote responsible action, competence, critical literacy, the mastering of skills, and the full participation of learners in civil society. This section examines a selection of key developments in environmental education and focuses on the approach to environmental education which has been adopted in the South African curriculum. This analysis will provide the background against which to consider the possibilities for environmental education that exist in the school selected in this case study.

The acceptance of environmental education in the new curriculum has its roots in the White Paper on Education of 1995. The focus of environmental education is to be on the development of a learner-centred climate or environment which encourages the development of skills, values, attitudes of assertiveness and self-reliance, critical thinking, problem solving and decision-making. The hope is that empowered environmentally literate communities will act on environmental issues and promote environmental ethics.

These aims can be translated into all learning programmes for all phases at all levels in all learning areas. The reason for infusing environmental education into all learning areas is because it is not solely a social science, nor is it only a natural or economic science. Environmental education is about environmental issues that rest upon biophysical life support systems, and biophysical support-systems are inevitably related to the political, social and economic aspects of human life.

Environmental education is thus based on a holistic and integrated view of the environment, in which the political, social and economic aspects are interconnected with the biophysical aspect, as seen in Figure 2.

Figure 2: A diagram to illustrate the integration of the environment (from Van Harmelen, undated)



Having outlined where we have come from, where we wish to go, and how environmental education is related to OBE, it is appropriate to turn now to a brief overview of environmental education.

2.3 Historical and Theoretical Overview of Environmental Education

Robottom suggests that in many parts of the world, environmental education originally understood as nature study, has traditionally been housed in the field of science education - as a kind of step-child (Robottom, 1991). As such, it has followed the scientific, reductionistic, value-free approach of technocratic rationality. Environmental education was an independent discipline with predefined facts to

be transmitted to the pupils. Nature and ecology formed the core-content of environmental education's top-down, fragmented curriculum, but these only covered the basic ecological principles and were largely theoretical. It was simply assumed that the acquisition of an ecological perspective and an appreciation of the ecosystem concept on the part of learners would make the learners more friendly to their environment and more ecologically literate.

Ecology was transmitted to learners as a series of propositions about the relationship between biotic and abiotic components of nature, formalised in texts that did not discuss these propositions as outcomes of a particular social, cultural and historical context. Ecology was equated with value-free images of the environment detached from human aspects. Ecological principles were treated as a means of perceiving the environment as it "really exists out there" in a purportedly objective sense. In this way, ecology was separated from personal, political and social values (Robottom, 1991). In the South African context, environmental studies as taught at the Junior Primary School continues to be confused with environmental education (Nduna, 1994).

An examination of the development of environmental education strategies in South Africa reveals the following:

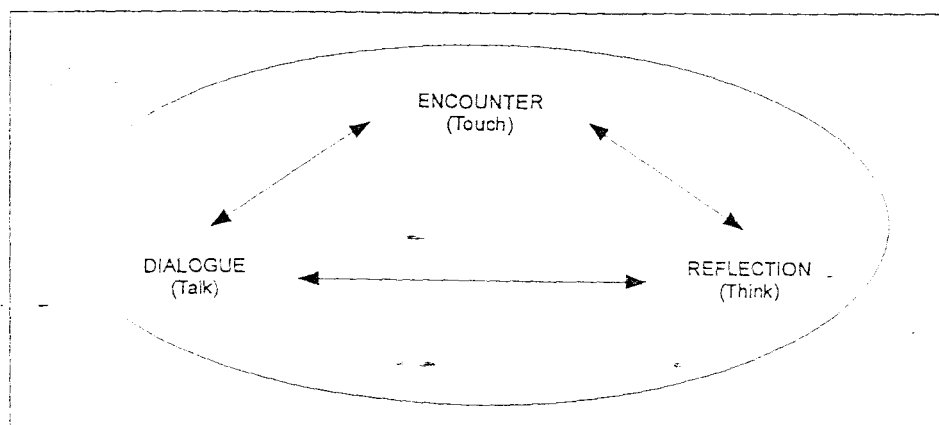
- In the classroom, with the establishment of the environmental education movement, the show-and-tell method of teaching was displaced by encounters where the learner was to discover the mysteries of nature through direct experience (O'Donoghue and Janse van Rensburg, 1995).
- The experiential method (O'Donoghue and Janse van Rensburg, 1995) focused on the outdoor encounter which came to be seen as "real", a back-to-basics experience of holistic learning in nature. This method was characterised by solitary study (time-out and alone) and/or guided questioning. In the guided questioning approach the teacher is still the driver and controller of the action: the encounter is still based on the teacher-active-pupil-responsive model. The teacher

manages and supports learning through questions that focus attention and open up discussion, as participants are guided to use what they know to make sense of what they see and experience. This method is behaviouristic in nature in that it aims at changing attitudes, values and behaviour.

- The experiential method has subsequently given way to an approach which insists that experience of the environment is not enough: the learning process must result in a preparedness to take action to solve environmental problems.

Currently issues-based approaches are popular approaches to the teaching of environmental education. Issues-based environmental education is an action-centred and learner-centred approach. Active learning involves learners in encounter (hands-on), dialogue (discussion) and reflection (thinking), so as to foster greater awareness among them and, ultimately, produce meaningful change. The involvement of learners in questions concerning their local environment directly affects the community. This means that environmental education tends to become a joint venture between the community and the school, fostering awareness among them and, ultimately, producing meaningful change. Figure 3 indicates the process as encapsulated in the notion of active learning:

Figure 3: Active Learning (from O'Donoghue and Janse van Rensburg, 1995)



The action-based approach to environmental education is thus not only education *in* the environment (experiential fieldwork aimed at interpreting and appreciating the environment), but also education *for* or *through* the environment. Education *for* the environment is community-based, action-oriented, participatory research, aimed at challenging the harmful exploitation of aspects of the environment (Fien, 1993; Harris and Blackwell, 1996). The current approach to environmental education is based on an holistic view of education and life in general, which is in sharp contrast to the compartmentalising, reductionistic tendencies of previous approaches. Current environmental education is linked with development education, the concepts of sustainability and life cycles, and analysis of goods and services. The aim of teaching environmental education in this sense is to reconcile the social, economic and political development of man with natural phenomena.

Environmental education aims to increase awareness of environmental issues and problems (and possibilities for their solution), and to lay a foundation for the fully informed and active participation of the individual in the protection of the environment and the prudent use of natural resources (the sustainability debate; see Council of Ministers of the European Community, 1988).

The present government is committed to environmental education as a cross-curricular endeavour, not as a single independent learning area. The Environmental Education Policy Initiative (EEPI) has since 1996 dedicated itself to improving not only the quality of education in South African schools, but also, rapidly evolved from a separate subject into an integrated discipline in the OBE curriculum (EECI, 1998). Teaching environmental education as a cross-curricular initiative will enable the subject matter to be taught in the context of traditionally established subjects. In this way environmental education can penetrate the whole ethos of the school and develop an environmentally literate community.

Current environmental education theory thus promotes an approach to education that encompasses more

than the transmission of mere content about the environment, rather, the emphasis falls on conceptual understanding and the skills and abilities needed for problem-solving and wise decision-making. Classroom practice is marked by dialogue, which introduces elements of critical theory and encourages learners to think critically. Learners are taught how to act democratically with others and to build a new social order (Fien, 1993; Fitzgerald et al, 1995; Higgs, 1995 and Huckle, 1990).

The sheer openness and open-endedness of environmental education leads to uncertainty over how to define it. Teachers who perceive the subject as organised around certain themes would see it as integrating a number of subjects that can be taught easily through one theme or another. On the other hand, those who perceive it as health education because of some of the topics listed in the syllabus, might teach it along the lines of a health education programme. Others yet may perceive environmental education as a subject dealing with nature, as a result, they would tend to concentrate on the natural environment and neglect the social environment. However, in spite of the conceptual flexibility that is a necessary aspect of environmental education, teachers should understand its general goal as being the development of the learner's sense of identity within and with the environment. This in turn reveals the need for education which is functional in terms of the usability of the skills and knowledge it offers within the context of an African setting (Mncwabe, 1993).

Giroux and McLaren (1994) claim that school and classroom practices should somehow be organised around forms of learning which serve to prepare learners for responsible roles as transformative intellectuals, as community members and as critically active citizens outside of school. As Ashley (1989) observes, the failure of education - particularly at the primary level - to serve as the social engine one would like it to be is basically attributable to its structure and content.

I conclude by pointing out that environmental education has never been implemented in the former Transkei

education system. I only became aware of the White Paper on Environmental Education (1989) when I came to Rhodes University in 1997. Efforts in South Africa to implement environmental education, that is, to make learners aware of the environment and instill in them a sense of responsibility towards it, have taken place mainly outside the formal education sector (Schreuder, 1991). There is much work to be done before that situation can be said to have changed.

3 METHODOLOGY

3.1 Research Methodology Employed in this Study

This study was conducted within the interpretive paradigm. Among the central aims of this theoretical approach is the understanding of the subjective world of human experience (Cohen and Manion, 1994). Zuber-Skerritt (1996) asserts that researchers in this paradigm search for an understanding of individual cases rather than sweeping generalisations. Educational researchers in this paradigm utilise their findings to inform the judgment and enlighten the practice of other educationists, as they in turn develop educational processes which assist the self-actualization of others (Cohen and Manion, 1994).

The insights gained from interpretive research reveal how individuals perceive their world, and how they interact socially with and within it. The justification for using this approach lies in its ability to contribute uniquely to our knowledge and understanding of complex individual and social phenomena. It also allows an investigation to retain the holistic and meaningful characteristics of real life events (Yin, 1989). According to Zuber-Skerritt (1996), the interpretive paradigm in education research focuses on teachers making decisions and solving problems along with their students in the complex context of learning. As such, it was particularly appropriate to the way in which I wished to approach the question of the introduction of environmental education in a rural school.

The intended changes in the curriculum involve a change in mindset, a paradigm shift from the logical empiricists' view of knowledge as "out there" (Cohen and Manion, 1989), to that of social constructivism, which identifies knowledge as a human construct. The shift will require changes in teaching methods, approaches and strategies. I have selected St Cuthbert's as a case study so as to establish just how ready my colleagues are for the changes that are to come.

The case study approach in the interpretive paradigm enables the researcher to observe the characteristics of an individual unit. The purpose of such observation is to probe deeply and analyse intensively the multifarious phenomena that constitute the life cycle of the unit, with a view to illuminating the situation within the wider population to which the unit belongs.

Valuable though a case study may be, Anderson (1990) warns that it can be criticised for its lack of reliability, since another researcher might reach quite different conclusions. To guard against this, I have employed multiple sources of data and used various research instruments, including *in situ* observations, interviews (non-scheduled or unstructured interviews) and workshopping.

In keeping with the spirit of interpretive research, I have worked directly with the 20 stakeholders chosen in order to understand their interpretations of the world around them, more specifically of their school and the existing cross-curricular initiative. The selected participants included 10 teachers, 5 learners and 5 community members. Their profiles can be found in section 4.3.1 as Tables 4.4, 4.5 and 4.6.

Schwandt (1997) says that interviewing is the most common method of data collection used by researchers to gain information about social life. The face-to-face interview helps us to understand the closed worlds of individuals, families, organisations, institutions and communities. Interviewers as well as interviewees are actively involved in a meaning-making process and are thus co-constructors of knowledge and not merely conveyers and receivers of it. Interviews are prime sources of case study data (Anderson, 1990).

For this case study, I used non-scheduled standardised interviews (Goetz and Le Compte, 1984). Their flexibility allows for greater interaction between the interviewee and the interviewer than is the case with scheduled interviews (see Appendices I, II, III). For instance, the order in which questions were posed was changed according to how individuals reacted.

Among the shortcomings of interviews are that they are time consuming, expensive and difficult to arrange. Furthermore, the analysis of interview data is less straightforward than that of data elicited by questionnaire. Interviewees may sometimes be deceitful, digressive, too elaborate, or prone to uncontrollable conversation. Interviews also have the disadvantage of being difficult to compare across the various respondents so as to arrive at reliable generalisations. Interviews also limit the number of respondents that can be included in most research projects. Charles (1995) claims that interviewing too few respondents could render the data skewed or biased.

In a case study, multiple research techniques are often needed for investigators to get sufficient data about different aspects of a subject (Zeisel, 1984 and Lincoln and Guba, 1985). I therefore used workshops as a means of augmenting the data I received from the interviews. Workshops, being participatory in structure (Hollingsworth, 1997), helped me to identify the common foci within the participating group.

Furthermore, because the aim of this research was to assess the possibilities that exist at St Cuthbert's for the introduction of environmental education, it was important for me to interact with learners and teachers in as many "natural settings" (normal school activities) as possible. Natural settings offer the researcher the opportunity to observe people engaged in activities which a contrived setting could not recreate. According to Zeisel (1984), natural settings are particularly appropriate for diagnostic studies in which investigators want to find out what is actually going on - what factors, relationships and dynamics are relevant. Cohen and Manion (1989) state that an *in situ* observer "engages in the very activities he sets out to observe". He becomes one of the group.

In situ observation is an attempt to get an inside view of what people are doing in a given situation. Lincoln and Guba (1985) claim that observation provides here and now experiences. It permits the respondent to reconstruct the past, interpret the present and predict the future without leaving a comfortable chair.

Robson (1997) argues that the major advantage of observation as a research technique is its directness and appropriateness for getting at "real life" in the "real world". You do not ask people about their views, feelings or attitudes. You watch what they do and listen to what they say.

While observation is time-consuming, an advantage of being an *in situ* observer is that one can short-circuit a lengthy process of developing a relationship of trust. A possible disadvantage of *in situ* situations is that it may prove difficult for others to see you in your new role as an observer. There may be an artificiality and hesitancy in their attempts to make shared understandings explicit and out in the open. In my school, where there is a strong hierarchical structure, I could see that teachers were not very keen to participate in the workshop. They were reluctant to voice their personal feelings about the school, and this is why the confidential, face-to-face individual interviews were so important for this research.

Saunders and Pinley (1983) point out that a researcher ought to take care to preserve his or her role as researcher. A researcher working in a familiar setting often slips into a secondary role, that of partner or friend, which is disadvantageous to the research. And indeed, I often found myself wanting to help (rather than merely observe) my colleagues. This tendency would seem to support Cohen and Manion's (1989) criticisms of *in situ* observation as subjective, biased, impressionistic, idiosyncratic and lacking in the quantifiable measures that are the hallmark of survey research and experimentation. I sought to minimise subjective bias and verify the validity of information acquired in interviews and workshops with members of the community, teachers and pupils, through recourse to triangulation.

Triangulation is the use of two or more methods of data collection in the study of some aspects of human

behaviour (Cohen and Manion, 1989). According to Grundy and Kemmis (1981), Elliot (1984) and Lather (1986), triangulation is one of the most common methods of determining validity and data trustworthiness. The method brings different kinds of evidence into relationship with each other so that they can be compared and contrasted (Elliot, 1981).

Triangulation techniques can make use of both qualitative and quantitative data to explain human behaviour. Triangulation also eliminates the use of one favoured method, thus helping to solve the problem of "method-boundedness" (Cohen and Manion, 1989). As I was investigating information among people with differing perspectives (Cohen and Manion, 1994), triangulation was very useful to me in order to establish the biases among the group and the extent of divergence in the data I collected from each individual. Checking the extent of data divergence made me feel more confident about the data's validity. It was difficult for me to consolidate the data, but I found the triangulation between methods rewarding, as it involves the use of more than one method in pursuit of a given objective.

I conducted two workshops at different times with the teachers and the learners, which elicited different responses from them. I used the same questions during the two workshops which I conducted in May and September. As a staff member at St Cuthert's Senior Secondary School I made use of multiple observations of the school setting in general. The information I got from the teachers, the learners and the community members enabled me to consolidate my observations of the school practices and activities with theirs. I got a better view of the situation by not looking at it from one direction only as McNeill (1985) puts it. My record was of objective events to which there was multiple access.

The use of multiple note taking devices and multiple observations are what Carspecken (1996) sees as triangulation. The input I received from my informants backed up by my observations of the school, clearly supported the validity of the research I undertook. The information I received from my informants did have

certain contradictions in other aspects because different people have different views points (see sub-sections 4.3.2 to 4.4). Triangulation helped me to consolidate the data from all these stake-holders. I found the consolidation process very difficult as I had obtained the data at different times from diverse people.

Time triangulation (Cohen and Manion, 1994) has allowed me to employ a longitudinal approach so as to avoid or ignore the effects of social change and process. The reason why I used a longitudinal approach to the collection of data to obtain information from the same groups at different points in time. In interpretive research, triangulation is essential to the investigation and comparison of different actors' viewpoints, and in the comparison of these with other kinds of evidence. The triangulation techniques that I employed included both multiple participants and multiple data gathering tools. The information I got from the people was not enough. I had to supplement it with information from written records.

Document analysis has been helpful to strengthen my research. Documents like the official minutes, official publications of the 1991 census records, files, school returns, log books, photos and maps have provided a richer background to the research than I would otherwise have been able to ascertain. All these as Cohen and Manion (1994) suggest, are intentionally or unintentionally, capable of transmitting a first-hand account of an event and are therefore considered as sources of primary data which, in this kind of research, was invaluable.

3.2 Limitations of the Study

Working with colleagues has posed difficulties for me in this study. There was a degree of negativity amongst them. One teacher declined to participate in the interviews as well as the workshops, because he said he would not work for me to obtain my degree. Other teachers were just not keen to participate because they thought the whole exercise was a joke. I started my first workshops with 10 teachers, but by the time

we actually completed the workshops there were only seven left. The first workshop which I conducted in May 1997 was not a success.

In September 1997 I repeated the same workshop, and the response was better than in May. This encouraged me to follow up the start made in the workshops by conducting interviews.

Members of the community were sceptical and suspicious at the beginning of the interviews - even though I had told them that what I was undertaking had nothing to do with the government. Mr MM and Mrs MR became quite open and enthusiastic towards the end of their interviews. Mr MG felt that he had very little to offer, but I proved him wrong because I elicited a lot of information from him.

In sum, in spite of all the negativity that I encountered at first, the interviews and workshops conducted in September 1997 were a success.

4 RESEARCH FINDINGS: ST CUTHBERT'S SCHOOL AND ENVIRONS - THE CURRENT SITUATION

4.1 RESULTS OF DOCUMENT ANALYSIS AND *IN SITU* OBSERVATION

4.1.1 Biophysical Analysis

St Cuthbert's Senior Secondary School is located in hilly terrain in the Tsolo district of the Eastern Cape Province (refer Figures 1b and 1c). It lies in a basin between two perennial rivers, *Mqunya* and *Ngcolosi*. The Tsolo district is in the central region of the former Transkei, now known as the eastern region of the Eastern Cape. Despite its rural setting, the school has the advantage of being served by a tarred road running from Tsolo to St Lucy's hospital, which enables students to travel freely to and from school. The school's accessibility, as well as its good reputation, is, however, somewhat undermined by overcrowding.

St Cuthbert's is a nucleated rehabilitated village, about 16 km away from Tsolo and 56 km away from Umtata. The school lies about 150m from the St Cuthbert's Post Office and about 300m from a government hospital called St Lucy's. About 600m distant from the school is a convent and an Anglican Mission Station. The village is surrounded by *Bele* mountain, a mesa on the south-east which is covered by gum tree plantations and indigenous forests, and *Nkwankca* mountain, a butte on the west. The village lies above the flood plain of a perennial river.

St Cuthbert's village is fortunate to have been electrified as far back as 1988, through the help of the Transkei Electricity Supply Co-operation (TESCO). Unfortunately, the school was overlooked when electricity was installed in the mission buildings, post office and hospital in 1988 and in 1996 when the Rural Development Programme was introduced in the village. The school used to draw power from a

generator, but this was stolen when thieves broke into the administration building in June 1996, and was never replaced due to a lack of funds.

The community, the school and the hospital are faced with a number of environmental issues. The community, including the school, supplements its living by subsistence farming. Biophysical problems like soil erosion, poor produce, veld fires, the poor quality of livestock, the necessity to fetch wood from the forest for fuel, and floods, are common in this area. It is unfortunate that, in an area where subsistence farming is practised, veld fires occur unabated. Veld fires result in air pollution and the death of plants and animals, with an eventual decline in biodiversity. The removal of topsoil due to veld fires later results in soil erosion, and every year tons and tons of fertile topsoil are washed away by the rivers to the sea (Swanevelder et al, 1987). The removal of the top soil also leads to environmental degradation. The reduction of soil fertility results in poor land production, and poor land production results in poor vegetation and very little food for the animals, both wild and domestic.

The school's grounds are enclosed, so there tends to be long grass which is attractive to livestock and in short supply elsewhere. Livestock therefore break into the school premises to graze on the grass. These premises are too small to accommodate herds of cattle and horses, or flocks of sheep and goats. This invasion of livestock makes it impossible for the school to grow crops in the school garden.

The school garden is so big that the produce could be sold to the hospital and to the community, but because there is no liaison between the community, the hospital and the school this does not happen in practice. This issue is not addressed. The school could benefit from gardening and the resultant sale of produce. The community and the hospital also lose on account of the unavailability of fresh produce in the vicinity. Fresh produce from the school could make things easier for the entire St Cuthbert's community as they could buy the produce cheaply and also save on transport costs. In sum, there is clearly a need to

bridge the gap between the community and the school, so that environmental problems can be alleviated and opportunities explored through their working together.

4.1.2 Historical Overview of St Cuthbert's Village

St Cuthbert's High School is named after St Cuthbert's village, which was founded in 1862 by two Anglican missionaries, Rev. Father Cuthbert and Rev. Barnard. A primary school was established by the missionaries in 1882. This later developed into a junior secondary school (Ngwane, 1992), which in 1977 was upgraded to a high school. The school moved from its original nineteenth-century site to its current location in 1979, when the Transkei Department of Education erected new buildings. Between 1973 and 1998 the school has been headed by four principals: Mr Mbanga from 1971 to 1979, Mr C.M. Madala from September 1979 to January 1992, Mr G.C. Adonis from January 1992 to December 1993, and Mrs N.N. Lubenye from January 1994 to date.

St Cuthbert's is essentially an Anglican community, although other religious dominations - such as the Faith Apostles Church, the Zionist Church, and the Assembly of God - have made their appearance. The presence of many denominations within the village is a factor that has tended to fragment the unity of the community.

The political institution of chieftainship is still present, but only nominally so. People seem to have aligned themselves with political parties, which they consider better placed to address their socio-economic needs than the chief.

4.1.3 Socio-Political Analysis

According to the 1991 census the village had 4321 people. A small percentage of this population is

employed at the hospital as professional nurses, tutors, assistant nurses, domestic workers, drivers and labourers. Among the economically active residents who are not employed at the hospital, some are employed outside St Cuthbert's in government departments, some in the private sectors, some at the St Cuthbert's mission, church offices and convent, while others work as domestics in and around the village. Some are self-employed as hawkers who sell fruit in front of the schools' and hospital gates, and others as owners of shops in the village. The average level of education is standard six. The interview sample reveals that (see Table 4.6 and Appendix III).

Whether or not they have other sources of income, the vast majority of the district's inhabitants are subsistence farmers who grow maize, beans and vegetables on land which they own. For fuel they use wood and cow dung. Livestock plays a part in the economic life of these people, but this appears to be diminishing. Animals are sometimes sold, but they are mainly kept for prestige. All in all, this is a poor rural population whose way of life is generally conservative.

Many of the social problems in the village are reflected also in the situation at the school. St Cuthbert's School is overcrowded and has a poor culture of learning. There is a high drop-out rate at secondary school level, evidenced by the number of teenagers loitering around the location. There is also a high teenage pregnancy rate, with infants often being abandoned by their mothers. The hospital has the burden of caring for the abandoned infants.

The low standard of living in the village is mainly attributable to the lack of employment. More and more young men roam the area for lack of something constructive to do. The hospital and a few other areas of work do help part of the population, but only a very small part. The resultant situation is that young men are becoming more and more unruly and the crime rate is steadily rising. Though crime is of course unjustifiable, its high incidence becomes more understandable in the light of the increasingly untenable

economic conditions.

Due to the high rate of unemployment, many men and women have opened shebeens in order to make ends meet. Although this alleviates their own poverty, it has a negative impact on social values. These places are steadily becoming centres of uncontrollable crime and immorality. Community leaders and even church leaders visit these places to discourage their activities, but to no effect. It seems as if nothing can be done to eliminate them.

It is a matter of regret to note that these centres also have a detrimental effect on the school-going population. Boys who are supposed to be attending school use these shebeens as places to hide from their parents and guardians. Girls, too, are becoming regular visitors to these shebeens, and this is undoubtedly contributing towards the growth of crime and immorality and the many cases of smuggling, stabbing and unwanted pregnancy. Home life is steadily declining, as even mothers whose husbands are away patronise these shebeens and offer sex to men who are able to stand them a drink. Patients and members of staff sneak away from the hospital to have a drink.

There is a very little sense of ownership of the school on the part of the community. The school, the convent, the hospital, the post office and also the community at large all benefit from the water that is pumped from the two rivers to the reservoir and from there to the community taps. The irony of the situation is that there is no working together among these institutions, despite the fact that water has laid a physical foundation for such a link.

Members of the community are not bothered by the fact that, because their livestock rub themselves against the fence around the school, it is falling down. They do not even attempt to keep their livestock away from the school. The school, on the other hand, seldom involves itself in community matters or projects, like the

clean-up campaigns organised by the hospital staff.

When a parents' meeting is called, it is not unusual to get a 35% attendance. Most of the parents at our school are seen only at the beginning of the year when they seek admission for their children. We might see some of them again during the course of the year when they visit their children, or when they respond (the few that do respond) after being informed that their children have misbehaved. It is by no means unusual for learners to go through secondary school without their parents ever having visited the teachers to check on their performance or discuss their future careers.

4.2 CURRENT SITUATION OF THE SCHOOL

4.2.1 Composition of the School Population

St Cuthbert's High School is a senior secondary school providing tuition for grades 10, 11 and 12. The school has 23 teachers, ranging in age between 22 and 64, nine of them males and 14 females. Their teaching experience ranges between 2 and 40 years. 20 of the 23 teachers have degrees, two have a Senior Secondary Teachers' Diploma (SSTD), and one has a Primary Teachers' Certificate (PTC).

There is one principal, a deputy principal and two heads of division (HOD), one for languages and the other for humanities. There were about 756 learners enrolled at the beginning of 1997. There is one expatriate teacher from India. Seven of the teachers live in St Cuthbert's village. The rest live in Tsolo and Umtata. Umtata is about 56 kilometres away from the school.

The school curriculum is divided into three streams, the academic stream, the general stream and the commercial stream (see Table 4.2). There are three grade 12 classes, three grade 11 and four grade ten

classes. Table 4.1, below, offers a statistical profile of the learners in this school:

Table 4.1 Group Populations (from a quarterly return EMMIS, 1997)

BOYS				GIRLS			
AGES	STD 8	STD 9	STD 10	STD 8	STD 9	STD 10	TOTAL
14	8	2	0	19	14	0	33
15	18	11	3	22	12	6	72
16	22	15	15	29	33	25	139
17	19	19	13	30	25	19	116
18	13	7	28	32	10	28	118
19	23	6	16	25	23	32	225
20	16	15	13	19	22	16	101
21+	6	7	10	5	12	12	52
TOTAL	125	73	98	181	141	138	756

Table 4.1 above reveals the considerable age range of learners in each of the senior secondary classes. Boys usually go to the mines to work for their families and come back later to continue their education. Girls get married by choice or because they have to. Normally after they have given birth to one or two children they are released by their husbands to go back to school and continue their education. In this way husbands seek to make sure that their wives are committed to their new homes. This disruption, an indirect result of the socio-economic situation, is a common occurrence in rural schools. Another notable feature is that in the grades 10 and 11 females are younger than their male peers. The education of younger boys is more often disrupted than that of girls because they have to help with the cattle-herding.

The school is fortunate in having three streams. The academic stream is the most popular, but learners are screened on admission according to their grade 9 performance. This poses problems, because in grade 11 they can shift back to the streams they originally wanted to join in grade 10. Table 4.2 shows the curricula

of the three streams.

Table 4.2 Classification of St Cuthbert's Curriculum

Academic Stream	General Stream	Commercial Stream
Physical Science	Xhosa	Xhosa
Biology	English	English
Mathematics	History	Economics
Xhosa	Biology	Business Economics
English	Biblical Studies/	Accounting
Agricultural Science	Geography/	Mathematics
	Agricultural Science/	
	Home Economics	
any six subjects		

4.2.2 Teaching Resources

Resources are by definition all the media or aids that make the didactic activity situation effective.

Resources consist of all facilities that enhance or make learning and teaching easier, such as models, libraries, computers, overhead projectors, maps, globes, textbooks, cheques, postal orders, and quarterly bulletins.

Table 4.3 Physical Resources

Resources	No	Currently used
Library	1	as a classroom
Science Laboratory	1	as a classroom
Typing Pool	1	as a classroom
Overhead Projector	1	no longer in use
Globe	2	in use
Microscope	2	in use
Television set	1	no longer in use
Photocopier	1	in use
Duplicating machine	1	in use
Desks	400	in use
Chairs	800	in use
Text books	very few	in use
Stationery	very little	in use
Generator	nil	stolen
Maps	sufficient	in use

The above table reveals a shortage of physical resources at this school. There is also poor use made of some of the resources, particularly as noted the laboratory, library and the typing pool, which have to be used as classrooms, because of the shortage of classrooms. Further to this, resources such as the overhead projector and the television set cannot be used because there is no electricity, since the theft of the generator.

4.2.3 Teaching Facilities and Amenities

The school is surrounded by two fences. An outer fence surrounds the entire school and the sports fields and an inner fence encloses the classrooms and the gardens. The latter was necessitated by the problem of

marauding domestic animals which feed on the crops grown by learners, dirty the walls and spoil the entire surroundings.

The school has three horizontal blocks of single-storied buildings. The first has four classrooms and a Home Economics centre. The middle one is the administration building with three offices, the former laboratory, library and typing pool. All these rooms are currently used as classrooms. There is also a staff-room and a science kit room, which is used as another staff-room and a tool-room. The third block has five classrooms. (Refer Figure 4a)

Figure 4. The Physical layout of St Cuthbert's Senior Secondary School

Fig 4(a) The illustration of the three horizontal, single-storied buildings

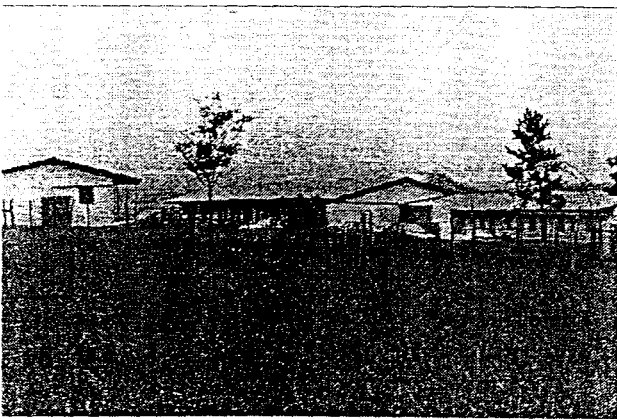


Fig 4(b) A toilet in a dilapidated state

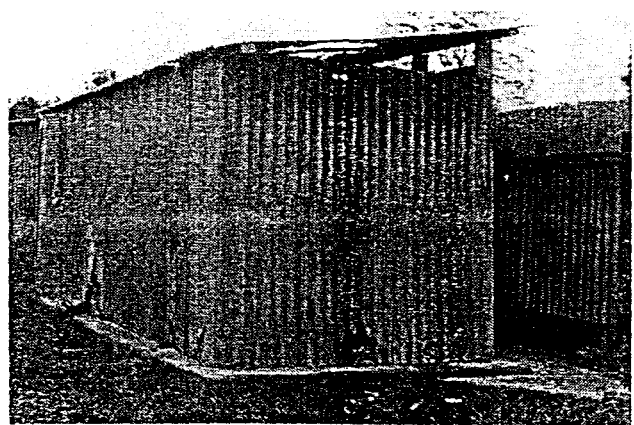


Fig 4(c) A rusted and leaking tank

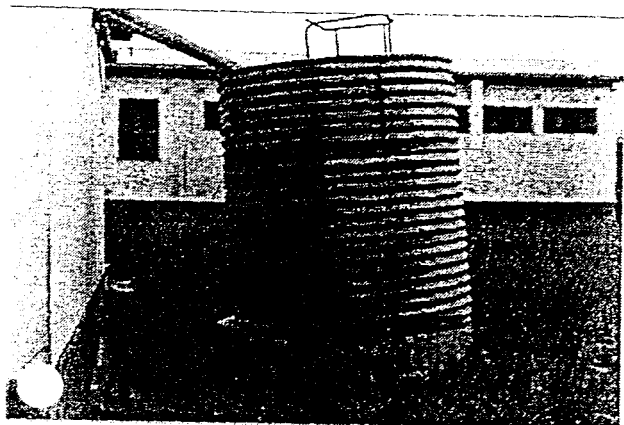


Fig 4(d) The library used as a classroom as well as a store-room



Each block has two water tanks, but two of these have rusted and are leaking (see Figure 4c). There is a tap next to the gate, which is very useful in winter when the water tanks dry up. The tap water, drawn from a community reservoir, is used for watering plants, drinking and cleaning. There are five pit latrines for the boys, seven for the girls and four for the teachers (see Figure 4b), but some of the latrines are full and the girls share the teachers' toilets. The latrines are made of corrugated iron and creosoted poles. The iron sheets are sometimes blown away by the strong south westerly winds in July or August. These winds have also caused damage to other parts of the school.

The classrooms are dirty and need to be painted inside and outside, but the government has not provided the renovations promised in 1996. The wooden floors are broken and a danger to both learners and teachers. One teacher has in fact broken a leg falling through a hole in the floor. The school does not have enough funds to repair anything except for broken windows. The school administration has made many submissions to the government for the school to be repaired, to no avail.

Figure 5: Patched floors with holes



There is very little storage space. The storeroom is used for storing not only books but also garden implements and sports kit. It is a very crowded room. The library and the laboratory are used for ordinary class teaching because there is a shortage of classroom space (see Figure 4d). Five teachers are accommodated in the science room, together with all the chemicals - a hazardous situation indeed (see figure 6).

Figure 6: Teachers accommodated in the science kit room



4.3 RESULTS OF THE INTERVIEWS AND WORKSHOP

The research results presented in this section arise from the interviews and workshops that were conducted in May and September, 1997. This section begins with a brief account of the composition and backgrounds of those who were interviewed. Both the interviews and the workshops raised a number of issues with implications for the implementation of environmental education. These will be focused on in the second part of this section.

4.3.1 Interviewees' Profiles

The teachers are designated by letters of the alphabet and the learners by numerals. Community members have been given references such as Mrs RS 1997 (pers. comm.). To personalise their quotes they are identified by gender. Tables 4.4, 4.5 and 4.6 offer summaries of interviewees' profiles.

Summary of the Interviewees' Profiles

Table 4.4 Learners' Profiles

Code	Stream	Gender	Grade	No. of Years in the school
1	Academic	F	10	3
2	Academic	M	10	3
3	General	M	10	4
4	General	F	10	3
5	General	F	10	3

Table 4.5 Teachers' Profiles

Code	Area of Study	Gender	Teaching Experience	Academic and Professional Qualifications	Institution where s/he qualified
A	English	F	24 years	BA; JSTC	Unitra; Cicirha College
B	Biology	F	5 years	BA; HDE	Unitra
C	Geography	M	9 years	BA; HDE	Unitra
D	Mathematics	M	2 years	BSc; HDE	Unitra
E	Physical Science	M	4 years	MSc	India
F	Business Economics	F	7 years	BCom; HDE	Unitra
G	Economics	F	15 years	BCom; HDE	Unitra
H	Xhosa	F	14 years	BA; JSTC	Unisa; Butterworth College
I	History	F	4 years	BA; HDE	Unitra
J	Accounting	F	15 years	Bcom; HDE	Unisa, Unitra

Table 4.6 Community Members' Profiles

Code	Highest Academic Qualifications	Institution	Age	Occupation	Place of Occupation
Mr DD	JC	St Cuthbert's	55	Postmaster	St Cuthbert's Post office
Mr MG	Std 6	St Cuthbert's	76	Retired Nurse	Formerly at St Lucy's Hospital
Mrs NS	B.Cur	St Cuthbert's; St Johns College; Unisa	54	Matron	St Lucy's Hospital
Mrs MM	Attempted Std 6 but did not complete	St Cuthbert's	69	Housewife	
Mrs MR	None - has never been to school		63	Labourer	Convent of St John the Baptist (CSJB), St Cuthbert's mission Station.

4.3.2 Interview and Workshop Results

The data gathered from the interviews exhibited both similarities and differences, the latter doubtless reflective of the specificities of individual experience. The data was not always directly related to the question of environmental education, so I have selected for discussion themes relevant to this study.

4.3.2.1 The Current Vision of the School: Teachers' and Learners' Responses

The sub-sections below reveal a particular reality with regard to the teaching and learning situation of this

particular case study. These dimensions are included in the presentation of the data as a means to illustrate how radical the changes will need to be in order to adopt a learner-centred social constructivistic approach to teaching and learning as advocated both by current thinking in environmental education and by Curriculum 2005. These results form the basis of the analysis on page 50.

4.3.2.1.1. Teachers' and Learners' Views of the Relationship between their Subjects and the Environment

The teaching experience of the teacher interviewees ranged between two and twenty-four years. This diverse group held diverse views and opinions on the subject of the school and its future. All the teachers interviewed seemed happy to be teaching the subjects that they were teaching, maintaining that their subjects had personal value and meaning for them. The teachers also felt that their subject areas had considerable relevance to environmental education. Teachers B, C, D, E, F, G and J offered a similar description of their subjects as being about people and the environment. They maintained that their subjects provided forms of understanding the causes and results of observable changes in the environment. Examples given by teachers C, F, G and J were: "the rise of the dollar and weakness of the rand"; "El Nino processes"; "increases of crime and unemployment rates"; "change in weather processes"; "population dynamics".

Teachers J, G and F claimed that their subjects helped them to successfully manage their family financial matters. Teacher J felt that wise financial planning leads to maximum satisfaction of one's needs. The three teachers considered that their subjects - accounting, economics and business economics helped to develop interest in and insight into socio-economic and socio-political issues.

The interview results highlighted the fact that environmental education is not a generally shared construct

as depicted in current literature. The analysis of the results further examines the perceptions that are held of environmental education (see page 50).

4.3.2.1.2. Importance of Language

Teachers A, H and I felt that English and Xhosa serve as media of interaction between teachers and learners. Learners 3 and 5 claimed that English facilitates their understanding of other subjects. Furthermore, English helps them to communicate with other people. Learners 1, 2 and 4 liked English, but felt inhibited in expressing their views in class, claiming not to be fluent in the language. The teachers also had a language problem, admitting that they spent most of their time teaching in Xhosa rather than English. The teachers would then prepare notes in English which the learners would have to memorise and regurgitate without necessarily understanding them. Learners 3 and 5 voiced their resentment of rote learning. They want to think and do, rather than have somebody else think and do for them.

The teachers claimed that the quality and preparedness of learners moving up from the junior secondary schools were unsatisfactory, possibly a part result of the scrapping of the standard seven external examinations. On the other hand, the learners (with the exception of learner 3) complained that when they came to do standard 8 (grade 10), the teachers went too fast for them to follow and understand subjects like mathematics, geography, physical science, accounting and English. All the teachers complained about the poor background of students in certain subjects. Teacher E found it difficult to deal with grade 10 learners as they were new to the high school situation, where English was supposed to be the medium of instruction. Grade 10 learners come from the junior secondary school where teaching in Xhosa is predominant. Teacher E claimed that he only began really communicating with his learners in July, when examinations were at the door. He then had to hasten to finish the syllabus before examinations start in the middle of October. Both teachers and pupils felt that the lack of English language competence was one of the reasons for the

high failure rate in Black schools, especially rural ones. Examinations and textbooks are written in English, of which they have only a limited understanding.

4.3.2.1.3 Teaching and Learning Procedures

All 10 teachers claimed still to be using the scientific or traditional transmission approach to teaching and learning. Their most popular teaching methods are the telling and textbook methods. Question and answer and discussion methods are used sparingly. In certain sections (which they unfortunately did not specify) they give learners assignments to prepare and present in class. Individually, learners rely on their textbooks to prepare and complete new assignments.

Learners 3 and 5 reported that they disliked the scientific approach because it required them to memorise only what they were given by the teacher. Learners 1 and 4 felt that they could not start any piece of work unless the teacher introduced it to them. Learner 2 expressed the wish to be able to read ahead on her own, even before the teacher had introduced the subject; but she would never admit this to her friends, as she was unsure of her ability to comprehend and might not be able to answer questions they might pose. Learners 1 and 4 are thus teacher-dependent and passive participants in the learning process.

Learners 3 and 5 felt that they were not given opportunities to explore and revisit familiar topics, re-shaping their existing knowledge of matters they sometimes knew more about than their teachers. By way of example, learner 3 recalled that they had been given an essay to write about "A car park". He described how "unsure" one of his teachers "somewhere" was about the description of a "car park", and she as a learner knew a lot about a car park and had even seen it. The teacher sold himself in his description of a car park as someone who has never seen it.

Learner 5 provided a similar instance of the uncertainty of one of her teachers, in this case concerning a description of a grain pit. She felt she knew more than the teacher did about the grain pit, but could not share the information as the teacher talked until the end of his lesson and did not give her an opportunity to share and express her knowledge with the entire class. Learner 5 felt she was not given the opportunity to develop her existing knowledge.

4.3.2.1.4 Lack of Teacher Involvement in the Planning of the School Syllabi

All the teachers felt disempowered by not being involved in the planning of their school syllabi. The syllabi the teachers use to plan their lessons are taken word-for-word in their entirety from the syllabus guides. This rigidity eliminates any opportunity for teachers to initiate or suggest any changes to the syllabus. Because of the lack of communication between teachers and education planners, the work prescribed for the 40-week teaching year is too extensive. Moreover, the time allocated to each period is inadequate. During the short period teachers are given, they rush through topics with some memory work, writing of lines, and copying from the textbooks verbatim, especially in sections that the teachers dislike or do not know well. The syllabi are examination-orientated.

Teachers B, F, J and C claim that there is no continuity between the syllabi for grades 11 and 12 in biology, accounting, business economics and geography. The grade 11 syllabi do not link the grade 10 syllabi with those of grade 12.

All the teachers pointed out that the grade 12 examiners are outsiders. They are either university lecturers who have never taught grade 12 or education planners who left the classroom situation years ago. They are not in contact with learners' current reality and know them only theoretically. They are usually highly qualified people whose language is out of the learners' reach. Teachers A, B, C, H and J said that while

they neither disapproved of external examiners nor wanted education standards to be lowered, they needed "communication and understanding" from their examiners because they were the ones who dealt directly with the learners. All the learners complained that they did not feel comfortable about being examined by an outsider who did not know them.

The fact that external examination is disliked by teachers and learners has more to do with their sense of isolation and disempowerment than with the principle of external assessment itself. I consider it desirable for an outside expert to set and mark questions from time to time in order to gauge progress and establish equal standards of education throughout the entire country.

4.3.2.1.5. Teaching and Learning Facilities

All the teachers and learners understood the term "resource" to mean any man-made material that can be used to make teaching and learning easier. They did not seem to regard natural resources as teaching facilities. All the teachers interviewed mentioned the lack of teaching resources and equipment as one of the most important constraints affecting their teaching activity. The teaching aids the school has are listed in Table 4.3. These are all supplied by the government. All the teachers claimed that the paucity of teaching aids made some of the concepts and sections that they were not familiar with difficult to understand. They felt that the Education Department, which is supposed to supply the school with resources, had not fulfilled its promise of free education for all. They said that the government was dragging its feet in supplying even the most basic resources like chalk, dusters and attendance registers.

A generator, a television set and a video machine had been bought by the school out of school funds because the Education Department could not supply them.

Teachers of commerce subjects, teachers J, F and G, obtained their teaching aids from banks, post offices and bookshops. The geography teacher, teacher C, mentioned that aerial photographs, ortho-photos and topographic and other maps were supplied by the government through the circuit office during examination times. All the teachers bought newspapers with their own money to augment their resources.

Both teachers and learners complained of not having a safe place to lock their books away, as the classrooms and the administration offices are periodically vandalised, despite the burglar bars that have been fitted.

Teachers B, C, D and E pointed out that the chemicals in stock were old and not very effective in experiments. They said it was difficult even to borrow a science kit from a neighbouring school, because resources were inadequate everywhere. The science laboratory is ill-equipped and has no electricity. As a result the teachers and the learners are unable to conduct many of the required experiments in biology and physical science. In the absence of any alternatives, learners are obliged to read about and memorise the experiments.

All the teachers and learners claimed that a lack of funds prevents the school from taking learners on educational tours. Many parents are unable to afford the relatively large sums of money involved. The result is that either a small number of learners go on a trip or the planned trip is cancelled altogether. Mrs MM and Mrs RM, on their side, claimed that they had very little money to contribute towards expenses that were not strictly necessary, like the tours. Mr MG claimed that his children had enough time to visit educational places during the holidays, so he saw no need for them to make additional visits during the year. Teachers C, F, G, I and J complained that the lack of funds limited the learners' acquisition of knowledge, in that it prevented them from travelling to other places and comparing their environment with others.

To try to compensate for the shortage of resources, science teachers, learners 1, 2 and 5, and the school principal at my school, claimed that every year they organised trips to the laboratories in Umtata either at Inset or the Eastern Cape Technikon or the University of Transkei, where some experiments were conducted for the benefit of learners. But of course not all the learners could enjoy this opportunity, as they had no money to spare for "extra school requirements".

All the teachers felt that problems arising from the shortage of resources could be solved if the government supplied the school with resources, as it used to do during the time of the Transkei government.

4.3.2.2 A Future Vision for the School: Teachers' and Learners' Responses

4.3.2.2.1 Introduction of Environmental Education as a Learning Area

The ten teachers I interviewed gave me seven different definitions of environmental education, which they insisted were their own and not derived from any particular source. According to them, environmental education

- deals with the understanding of and caring for one's environment.
- is individualised education whereby teaching and learning activity is flexible for both learners and teachers.
- is a consciousness of one's environment and of effectively applying it in a learning situation.
- is the place where we live.
- is concerned with the preservation of natural resources.
- involves teaching and fostering a sense of conservation for life whether it is on land, fresh water or the sea.
- is learning more about our environment, getting to know more about certain aspects of the

environment and how they function.

Seven of the ten teachers and all the learners were excited about the introduction of "something they did not know". The seven teachers said the introduction of environmental education would be a challenge to their school. Teachers A, H and I were rather sceptical about the implementation of this cross-curricular endeavour, since they had neither appropriate facilities nor any training in environmental education.

All the teachers except for Teacher D claimed to have no knowledge of environmental education, and thought they would acquire it by attending courses and workshops, going on tours and excursions, having in-service training, reading books, and from the environment itself. Teacher D claimed to know about environmental education because he studied environmental science at university.

All the teachers thought that they could acquire knowledge about environmental education from centres that the government would establish, from further training, and through observation of the environment. If environmental education is to be introduced in schools, teachers felt that the government should take the initiative in equipping them with the requisite information to enable them to teach it, by arranging courses for them to attend and by supplying reading material on the subject.

Teachers C, D, G and J felt that knowledge about environmental education ought to be acquired as soon as the subject was introduced in schools. Teacher F indicated a determination to find out more about environmental education as soon as she got the opportunity to do so. Teacher B said that she could acquire sufficient information over a period of six weeks, from reading and observation. Teachers A and E could not say when they might find the time, as they envisaged that it would involve being away from work and home for long periods.

Teacher H was not sure whether or not she wanted to attend an in-service course in order to acquire information about environmental education, but she claimed to admire people who showed an interest in protecting the environment. She, together with the learner respondents, felt that environmental education could present an interesting variation to the boredom of typical classroom learning and teaching. Teachers C and D regarded themselves as ready for the introduction of environmental education, being possessed of sufficient knowledge. Both claimed to have gained this knowledge at tertiary institutions while studying environmental science.

All the teachers felt that environmental education would teach people to value nature. Teachers C, D and G made the point that environmental awareness could preserve life for future generations.

Mrs NS, Mr MG, and all the learners and teachers felt that the introduction of environmental education could break the monotony of studying only the traditional school subjects, subjects which often provided school-leavers with very little in the way of useful knowledge for their future lives. Mrs NS suggested that students who had been unfortunate in not gaining admission to tertiary institutions, could put the environmental knowledge acquired at school to good use by planting community gardens or helping nurses and other influential people in educating the community.

Learners 1, 2, 3 and 4 understood environmental education to mean education about the environment, dealing with their immediate surroundings and circumstances and how these affected them. Environmental education was concerned with how they lived in an area, and it concentrated on learning outside the classroom, that is studying natural things. They felt that the introduction of environmental education might induce those who had left school for no good reason to return, in anticipation of a great deal of outdoor education and travelling. Learner 5 and teacher C wanted to see the implementation of this learning area because they felt it might help to reduce crime.

The respondents were unanimous in their desire for more knowledge about their environment. They expected to learn more about the physical surroundings of the school, the mountains, hills and rivers. They also all felt that it would be better to learn through observation than by rote, claiming that it was easier to remember something that you had seen, touched and experienced than something that you had only heard about. Learner 5 said that environmental education would increase their knowledge about possible careers and hobbies, such as mountain climbing.

The teachers and the community respondents wanted to be involved in the introduction of environmental education because they saw themselves as being in a position to impart valuable information to the learners. Their involvement would in turn empower them by broadening their knowledge base.

4.3.2.2.2. General Problems

At the time of the study in 1997, problems in the education system were driving schools to the brink of crisis. These included a generally poor understanding of the aims of education, including the important new vision for education set out in the Education Act. The teachers, learners and community members interviewed claimed that St Cuthbert's had pervasive problems such as poor punctuality, a poor culture of teaching and learning, and low motivation, even defiance, amongst learners. Specifically environmental problems that were mentioned included littering and burning in the school yard.

All the teachers interviewed claimed to be receiving low salaries and paying high income tax. The government no longer treated teaching as a noble profession because there was no security for teachers, who were hit by students or chased with guns and knives. Ever since the government prohibited corporal punishment, the culture of learning had virtually disappeared in the school. The government had not given teachers an effective alternative means of disciplining learners, and teachers felt disarmed without corporal

punishment. These negative sentiments were exacerbated by apprehension about the right-sizing and redeployment processes that were about to impact on the teaching fraternity.

It was thus not surprising that teachers reported feelings of *demotivation*, *despondency* and *uncertainty*.

Teacher C, for example, explained:

I feel frustrated because of the problems at our own school. Our school is vandalized. The faction fights that take place in villages from which our school draws its school-going population affect the smooth running of the school. There is a shortage of books and lack of the culture of learning. The school climate at the moment, is very negative. There are also problems with the coming retrenchments, right-sizing, and no replacement of dead, retired, promoted and transferred teachers by the department. In-service courses that help us to refresh our knowledge are scarcely held or held by presenters who are less knowledgeable. Teachers, therefore, do not feel like being innovative and start new projects.

However, despite the despondency prevailing amongst some teachers, an agricultural science teacher (who was not one of the interviewees) held the positive view that there was still room for improving the *status quo*. But he voiced the concern that:

Teachers feel that the extra outside of school time arrangement is often at the cost of the teachers' personal commitment. It is seen as a sacrifice offered by the teachers to the "unappreciating department". Some of our students stay far away from the school. They travel long distances on foot or by taxis to and from the school. If they have to stay behind for extra classes after school they will miss their only transport back home. For those who travel on foot, it will not be safe for them to travel through mealie-fields and forests late in the afternoon. He resented the fact that boarding hostels are in most school a thing of the past.

He felt that if the teachers were willing to make time for "the extra outside of school time", they could come together and be of service to the learners. For example, teachers could talk to Mother Superior about leasing to the school unused convent accommodation.

That there are conflicts amongst learners themselves, all the learners agreed. Conflict can arise from a range of issues, such as not wearing the school uniform, littering, or noise making in the classroom. From

my observation, I would say that most of the conflict ultimately emanates from the wide age difference among the learners. Some are too young or too old to be at senior secondary school (refer to Table 4.1).

4.3.2.3 Community Responses

The diversity of the interviewees' educational backgrounds, experience and occupations resulted in diverse responses. All the interviewees were born and bred in the vicinity of St Cuthbert's. Four of them had been to school at St Cuthbert's. Their children had attended or were attending school at St Cuthbert's Junior Secondary and St Cuthbert's High Schools. They unanimously believed that these schools belonged to their great-grandfathers, and therefore deserved their support. They could not "kill" them (Mr DD and Mrs MM pers comm. 1997) by moving their children to other schools.

The interviewees differed in their opinions on attending school and community meetings (*imbizo*). Community meetings are held at the headman's kraal. The interviewees all agreed that the general meetings held at St Cuthbert's High School were attended mainly by women, because learners in their culture were seen as women's responsibility. Moreover, while numbers of women were not working, many men were at work in faraway places, and these meetings were held during working hours. Mr DD, Mr MG, and Mrs MM felt that, other than "supplying" the school with their children, they were not part of the school. The three of them claimed that the missionaries who were their teachers at St Cuthbert's in the olden days never convened meetings with the village people. The missionaries simply imposed decisions on them; so should their successors, current the school principals.

Mrs MR stated emphatically that she would never attend meetings at the St Cuthbert's High School because the teachers and some of the parents used "big English words" which she did not understand. This understandably discouraged her from taking part in the discussion. The fact that she was discouraged from

attending the meetings worried her, as she would have liked to take part in the decision-making of the school.

Mrs MR sometimes wanted to ask the teachers about her children's progress, but to her, the school was a very "high" place to which to go. She was scared of disturbing the teachers in their work. After school, she maintained, teachers were always in a hurry to go home. They did not remain at school until late in the afternoon as teachers in the "olden days" used to do. Many of them do not even live in the village.

Mrs NS considered the procedure used by the principal, the governing council and the staff for drawing up the agenda for meetings to be unfair. She felt that the agenda should not be prepared by these three groups of people only, as they tended to prioritise immediate matters and not "long-term-goal" endeavours, like dealing with the loitering of learners in the hospital grounds. She felt that the presence of learners in the hospital grounds was not welcomed by the hospital staff. This seemed to her a typical instance of the lack of communication and co-operation between the school and the community. The fact that parents were not free to come to school and check on their children's progress needed to be addressed. Parents should not only go to school when they are called to do so, after their children had misbehaved; they should be encouraged by the warmth of the teachers to come and get or give help in any way they can.

Mrs NS and Mr DD said that they gave their children assistance with their school tasks whenever they could. Mr MG stated that his children did not ask him a thing because they felt that because he was a nurse and an old man, he would not have any answers. Mrs MM and Mrs MR said that they could not help their children with their school work because Mrs MM knew very little and Mrs RM was illiterate.

Not all the parents participated in fund-raising for the school. Those who do participate sell fruit and drinks and bake cakes and fat-kookies. Some parents assisted the school by buying pencils, pens, dictionaries and

text-books when there was a shortage, but would do so only for as long as their children were still attending school. The parents who were interviewed felt that they were paying a lot of tax to the government, and that the government must therefore assist its school and its people. They were not happy that they were compelled to assist the school, more especially since the school was not doing anything for them as a community.

Mr MG and Mr DD reported that they had never seen St Cuthbert's teachers attending *imbizo*. They had heard that the principal only called the headman to school when there was a crisis between the school and the village. Alternatively, the headman went to the school to report to the principal if learners were misbehaving in the village. The issue was then discussed privately between the school principal and the headman: it was never openly discussed by the school and the community.

Mrs NS, Mrs MM and Mrs MR reported that according to the *Mpondomise* culture women were not encouraged to discuss and debate with men. Men were the decision-makers for the entire village. The issues discussed at the meetings were sometimes very sensitive and needed to be kept secret. Women are regarded as less discreet than men, so they are not encouraged to take part in a man's domain. Furthermore the *imbizo* is held next to the cattle-kraal. Women, according to Xhosa culture, are not to go near, let alone into, the cattle-kraal. That is taboo, because it is believed that the ancestors and the elders of everyone stay in and around the cattle-kraal. Women ought to respect them, not trample on them. Even the graves of family heads are placed next to the kraal entrance. Women are encouraged to stay away from the cattle kraal as much as they can.

Women go to the *imbizo* only when they are summoned to go there. For instance, when the children of a single mother have misbehaved, or when the woman herself has committed an offence, then she may be permitted to attend the *imbizo*. Mrs NS sometimes attended the *imbizo* when there was a burning issue

between the village and the hospital, for instance, sometimes naughty boys broke in and stole the hospital vehicles, but even then Mrs NS would leave the *imbizo* immediately after her item had been dealt with.

4.4 ANALYSIS OF *IN SITU* OBSERVATIONS AND RESULTS OF THE INTERVIEWS AND WORKSHOP

Analysis of the research results has revealed a number of possibilities for the implementation of environmental education which may be explored. There are, however, several problems that have been identified which will militate against the introduction of environmental education. This analysis will be followed by an evaluation of the situation.

4.4.1 Possibilities for the Introduction of Environmental Education in the Formal School Curriculum

The site and location of St Cuthbert's provide a rich source of possibilities for ecological field investigation. When these are linked to social, economic and political dimensions, they provide distinct possibilities for a holistic issues-based approach.

Secondly, the history of this area is a rich resource for studying the shifting socio-political dimensions that have shaped South African society, and the impact that these shifts have had on the biophysical domain. The third possibility highlighted by this study involves the socio-economic and political dimensions of the community that surrounds St Cuthbert's. These reflect the wider issues of this nature facing South African society, and can provide opportunities for learners, through environmental education, to reach an understanding of the issues and work towards finding solutions.

Fourthly, the considerable variety offered by the curriculum at St Cuthbert's is unusual, for most rural schools are severely limited in the curriculum they are able to offer. This variety holds possibilities for the implementation of environmental education, as it allows for team-teaching and a cross-curricular approach.

The teachers' understanding and knowledge of environmental issues (even though they did not know that they were talking about environmental issues) constitutes a useful beginning for the promotion of teaching and learning within an issues-based approach.

According to Khan (1991), problem-solving learning is central to the didactic approach of environmental education. This aspect therefore lends itself to a youth-oriented, socially relevant programme of action. The problem of environmental poverty in rural schools, including mine, is an ideal arena for environmentally sensitive, socially responsible action. By taking concrete steps to enrich and transform their environment through, for example, a community greening programme, young people are enabled to act as agents for change, instead of reacting as "passive victims" (Stevenson, 1987). A community greening programme could help create a healthy environment, which is a precondition for one of the human rights recognised in the Constitution.

The teachers' and learners' responses to environmental education showed that they were interested in and willing to adopt environmental education. For instance, they were all aware that knowledge acquired from the environment could be used in the teaching and/or learning situation, which is what environmental education advocates. The respondents saw environmental education as being flexible. Their view is that the introduction of environmental education would widen the school curriculum and open doors for learners when they matriculate, so that they would not aimlessly linger at home if they did not gain admission to tertiary institutions. If the younger generation could be presented with an opportunity to acquire knowledge of environmental education, they might later conduct workshops on aspects of environmental education,

such as recycling, reforestation and building up of anti-erosion wells. This could create possibilities for self-employment.

4.4.2 Problems that Inhibit the Implementation of Environmental Education in the Formal School Curriculum

The teachers interviewed tended to see the viability of introducing environmental education as dependent on the availability of knowledgeable teachers. Teachers should be well-informed and, in their values and attitude towards the environment, should act as role models for their learners. The results of the interviews and the workshops continually highlighted the fact that terms such as "environment" and "environmental education" have different meanings for different people. One of the challenges faced in this school community and others is the need for a shared vision, understanding and construct of these terms.

This raises the problem that the majority of teachers teaching at St Cuthbert's live outside the community and are seldom available for extra-mural activities after normal school hours. More importantly, teachers who live in this community do not identify with the community and its needs. The successful implementation of environmental education requires a strong link between the school and the local community and such a link does not at this stage exist.

A second problem that could affect the implementation of environmental education is the considerable age range of the learners, and the fact that many of the female learners have homes and children of their own to look after. These circumstances could create difficulties in the identification of shared interests between older and young learners.

Thirdly, the lack of resources in the school is attributable in part to poor communication between the school

and the community, especially the seeming unwillingness of the school to seek assistance from a community rich in resources. But more important is the typical overcrowding and lack of physical teaching resources. It is well documented that teachers in black South African schools have been working in wretched physical conditions, in overcrowded and poorly equipped classrooms (Klein, 1997). The lack of resources is considered by the teachers and learners at St Cuthbert's as an important constraint to the implementation of environmental education.

From my personal observations and from the teachers' and learners' responses, the overcrowding of classrooms is indeed a problem in this school. The official teacher/learner ratio of 1:32 is not a true reflection of the situation, as there are in fact more than fifty learners per class at St Cuthbert's. (The ratio is obtained by simply dividing the total number of learners by the number of teachers.) Figure 7 illustrates one of the overcrowded classrooms.

Figure 7: An illustration of an overcrowded classroom



Overcrowding in this particular school is caused by the fact that there are only 11 rooms which can be used as classrooms per period, which means that 12 teachers are not in the classes. They are sitting in their staff-rooms. Overcrowding is thus due to a lack of physical accommodation. The number of teachers employed reflects of the number of pupils enrolled. However, the limited facilities have resulted in teachers having

to share classes and classrooms, which is unsatisfactory, both from the point of view of the quality of teaching and in relation to the professional standing of the teachers, who are underemployed.

Overcrowding results in a tendency for the teachers to ignore the dull ones and move with the good ones. This leads to a large number of drop-outs, as learners get frustrated with being left behind. With little job satisfaction to be had, the tendency is for teachers to go to work solely for their salaries, whilst the pupils seem to come to school only because there is nothing else they can do, having been forced by their parents to attend. Hence standards are dropping as the years go by.

Lack of competence in the English language seems to be another impediment to the implementation of environmental education. English competence, on the part of both learners and teachers, is essential to the successful introduction of environmental education. Learners in particular need to be sufficiently confident in English in order to participate in discussion and interpret and analyse questions.

Use of the vernacular language cannot be totally discouraged if learners are given thought-provoking questions. Using their home language will help them to think deeply and clearly; they can translate their thoughts into English later. Learners should be allowed to use the vernacular in their group discussions while collecting data as this will allow free communication, but when they write reports they should be encouraged to use English.

The "scientific" approach currently utilised by teachers is a problem for both teachers and learners. This approach encourages the fragmentation and compartmentalisation of subjects and information. It is teacher-centred, and encourages the learner to become dependent on the teacher. The teacher has sole authority for the learning process and knows all. The scientific approach relies on top-down methods of teaching which are at odds with environmental education's policy of encouraging independence in thinking and practice.

The postmodern paradigm shift, from rote learning to social constructivism, needs to be recognised and implemented. Tyldesley (1990) argues that the former Transkeian education system, like the South African education system as a whole, has laid emphasis on science, on the compartmentalisation of subjects and on the isolation of man from the environment. According to the EECI document (1998), it is hoped that with the implementation of environmental education in the present school curriculum, this isolation will be replaced by the knowledge, awareness, skills, attitudes and values appropriate to the right relationship between man and his environment, so as to enable him to utilise resources wisely and in a sustainable fashion.

Knamiller (1987) suggests that those participatory skills which are basic to the issues-based approach of environmental education need to be developed. Good participation therefore goes hand in hand with a well-developed language competence. Even though the issues-based approach is time-consuming, it is essential to practise what you theorise. The participatory approach to curriculum development is favoured by recent trends in environmental education. O'Donoghue and McNaught (1991) further argue that team-teaching enables teachers to contribute to a collaborative process of developing strategies to deal with environmental education issues, and to develop their own resource centres and environmental education projects.

Unemployment in and around St Cuthbert's village deprives our learners of opportunities to see and experience activities in their own setting. The fact that only a handful of learners are able to visit places of educational interest and join excursions to various educational centres is a clear indication that many parents do not have the money to pay for the trips. Even though one parent was convinced that educational trips are a waste of time and money, his child did go on one of the trips I organised. She obtained the money from a relative. The fact that a learner would thus go out of her way to obtain the necessary funds would seem to indicate that learners are keen to learn, but can be prevented from doing so by financial constraints.

It was disappointing to note that some parents regard tours as a waste of time and money. Environmental education information should be disseminated to all, including parents, so that they can be made to see outdoor activities as part of the education process.

Having highlighted the problems that will militate against the implementation of environmental education, I now turn to an evaluation of the results.

4.4.3 Evaluation of Data

The analysis of the results revealed a number of possibilities and problems. In evaluating the data my intention is to identify how a number of these problems may be overcome.

Amongst the problems that this school experiences is the problem of resources. Even though the teachers complained about a lack of resources, I feel that they have enough resources to kick-start the introduction of environmental education. The problem of resources can be overcome if one realises that one does not have to have every conceivable resource to start teaching. Even one's own back yard, or garden, constitutes a resource. This reflects an important finding - the prevalence of the belief that in order to practise environmental education one has to have access to expensive resources. It corresponds to the belief that environmental education only involves studies in nature and that costly excursions are therefore not a prerequisite. I shared this notion myself, until I attended the Environmental Education Association of Southern Africa (EEASA) Conference in 1997, where I was exposed to the view that environmental education could be "practised anywhere with anything". This means that one does not have to travel to faraway places to study environmental education, nor does one need to have expensive resources. Environmental education cannot be taught from a podium, but needs to be experienced and practised anywhere (Dr Chiepe's speech in 1998: EEASA Conference).

Complaints about the lack of teaching facilities and amenities, such as space for storage and display, can be viewed as in a sense manifesting a lack of initiative, accountability and creativity among the teachers. The old furniture that is piling up behind the classrooms could be used to make prefabricated structures which could be used as store-rooms. If we as teachers are to develop in our learners a respect for the natural, physical, social and political environments, it is imperative to start with the learner's own environment. And this environment must be one which is conducive to learning and teaching.

In order to encourage pupils rather than bore them, one needs an approach that will create optimal learning conditions, and which will encourage the simultaneous development of a holistic conceptual understanding and of highly differentiated sensory awareness of the learners' environment (Gough, 1996). Environmental education teaching should seek to identify materials, tools and settings which will enable learners to search their environments, using their own perceptual systems instead of the scientific approach. environmental education teaching will enable teachers and learners to "share and do" rather than "show and tell".

The learners will be participants in and co-owners of the education enterprise, in a co-operative relationship with teachers, who will be facilitators rather than figures of authority. In other words, there will be a more equitable distribution of power in the learning process (Lewin, 1990).

Environmental education is achieved through the adoption of a practical approach rather than a theoretical one. Huckle (1995) suggests that the goals and objectives of socially critical environmental education are concerned with action rather than the passive absorption of information. There should be monitors or facilitators for these programmes so as to ensure progress in learning situations. The facilitator's role is to steer, develop and encourage the use of faculties and thinking skills. Developing thinking skills in learners is a basic goal of education, and environmental education has the ability to develop such skills in abundance (Howe and Dissinger, 1992). Learners should be helped to become decision-makers.

The data collected suggests that all the respondents see the desirability of co-operating and acting as one body for the good of their village, the school and the hospital. Unfortunately, they seem to have little idea of how to set about this. Stiles (1995) and Ngwane (1998) maintain that the involvement of parents in the school is vital to the interests of both. The participation of parents would help nurture the ailing culture of learning at school and also give them a sense of being stakeholders and therefore willing contributors of whatever resources they are able to provide. Regrettably, the idea that the community helps provide the school with resources is virtually unknown in the rural areas.

According to the teachers, the government is not giving them the support they need. But this situation, given the teachers' manifest thirst for new knowledge, can be seen as providing a challenging opportunity to introduce environmental education. By introducing environmental education, teachers would be initiating change and improvement, rather than sitting back and waiting for somebody to come and do something for them. The teachers showed solidarity and a common desire to tackle something new. Environmental education will empower them, as it aims to create problem-solvers (Huckle, 1995) and empower people by endowing them with useful skills (Carl, 1995).

On the other hand, teachers are so demotivated that several of them devote their time to studying courses which are irrelevant to their work, with the aim of switching over to other professions. Clearly, this negative attitude towards the teaching profession has had a detrimental effect on the smooth running of the school, and overall productivity has been affected. Although the focus of my research was on assessing possibilities for the introduction of environmental education into the formal school curriculum, I found it interesting that when teachers were bemoaning the lack of discipline, they only mentioned learners: the fact is that many teachers lack discipline too, and are defiant of authority.

Environmental education could help to turn this situation around. Demotivated teachers and poorly

disciplined learners could find new purpose in devoting their spare time and energy to environmental projects and clubs. Learners, after all, are the future of the world. They are capable of changing the world. It has happened in South Africa before, when young people challenged the educational system in 1976 and inaugurated a whole new phase of political struggle against the apartheid state.

5 CONCLUSION AND RECOMMENDATIONS

In conclusion, this study has revealed that the potential for the introduction of environmental education exists in this rural school, despite the many problems and obstacles that are present. What I found particularly interesting was the willingness on the part of teachers to seriously consider implementing environmental education. The other noteworthy dimension was the revelation that learners wanted to be involved in the development of their curriculum. This was evinced in their confidence that they knew more about aspects of their community contexts than their teachers, and their desire to disseminate this knowledge to their fellow students. Another exciting discovery was the teachers' recognition of possibilities for collaboration in their teaching and teaching across subject divisions, and their willingness to try this. Also encouraging was the desire of a number of community members to work with the school, although some persisted in seeing the school as detached from the community.

There are several key issues that need to be addressed if environmental education is to be implemented in the school and the surrounding community. These include:

- the serious lack of resources and facilities;
- the need to bring about change in teaching strategies;
- the need to have in-service training courses for the teachers.

Some of the problems and issues are going to be extremely difficult to overcome, for example, the fact that

many of the teachers do not stay in the community and are never available at the school after hours.

On the basis of this situational analysis, the following recommendations are made. First, a spirit of collegiality must be developed among the staff members through staff development programmes at the school. Secondly, teachers should be given every encouragement to attend in-service training courses in and for environmental education. Thirdly, our school and community need to link up with the already existing environmental education networks in the province. Finally, I believe that in the short term we need to capitalise on the willingness of the teachers and learners to make a difference by establishing school and community environmental clubs. In this way we might begin to develop a foundation for medium and long term strategies, that will emerge from greater unity among the staff and increased expertise.

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APPENDIX I

A WORKSHOP CONDUCTED FOR ST CUTHBERT'S SENIOR SECONDARY SCHOOL TEACHERS IN THE TSOLO DISTRICT ON 23 MAY 1997

Topic: A profile of rural schools: assessing possibilities for the introduction of Environmental Education in the formal school curriculum.

1 PROFESSIONAL HISTORY

- (a) What is your teaching experience?
- (b) For how long have you been a teacher at St Cuthbert's?
- (c) Which subjects do you offer?
- (d) For how long have you offered them?
- (e) In which classes?
- (f) Of what value are they (subjects) to you as a person?
- (g) Do you wish to continue with the teaching of these subjects or not? Please explain fully.

2 TEACHING PROCEDURES

- (a) Which teaching methods do you use when teaching?
- (b) Why do you prefer them?
- (c) What is the response of pupils towards these methods?
- (d) Are there other methods you would recommend for these subjects?
- (e) Why would you recommend these methods?
- (f) What do you understand about team teaching?
- (g) Are you in favour of team teaching?
- (h) How much as a teacher are you involved in the planning of syllabi for your subject?
- (i) Do you feel empowered as a teacher?
If yes, how? If no, how?

3 TEACHING FACILITIES AND AMENITIES

- (a) What do you understand about the term resources or facilities of a school?
- (b) Do you consider that you have enough facilities or resources in your school?
- (c) Name all the facilities you have in your school.
- (d) Why do you think you have enough or less resources?
- (e) Do you have enough access to the facilities?
- (f) Where do you buy or get them?
- (g) Does the government play any role to avail the facilities for the school?
- (h) If yes, how?

4 IMPLEMENTATION OF ENVIRONMENTAL EDUCATION AS A LEARNING AREA

- (a) What do you understand about Environmental Education?
- (b) What does it entail?
- (c) How does it correlate with other subjects?
- (d) What facilities do you have for the implementation of this learning area?
- (e) What facilities do you think you need most to successfully implement it?
- (f) How do you access knowledge as a teacher?
- (g) Do you consider yourself as a teacher to have enough knowledge for this implementation?

- (h) If no, how do you think you will acquire the necessary knowledge for teaching environmental Education?
- (i) Where do you think you can acquire the necessary knowledge for the implementation?
- (j) When do you think you will acquire the necessary knowledge?
- (k) How much time do you think you need to acquire the knowledge?
- (l) If the answer to (g) is yes, what is it that you know about Environmental Education?
- (m) Where did you get it?
- (n) How did you get it?
- (o) When did you get it?
- (p) Are you interested in this implementation?
- (q) Why are you interested?
- (r) Are you ready for the implementation?
- (s) Why do you consider yourself ready for the implementation?
- (t) To what extent will your involvement be in this implementation?
- (u) If the answer to (r) is no, when do you think you will be ready?
- (v) Make your own comments on how you see the viability of this implementation.

5 GENERAL PROBLEMS

- (a) Do you experience any problems in your teaching profession?
- (b) If yes, what are they?
- (c) If yes, what effect or influence do they have on you as a teacher and on the pupils in general and on the entire school?
- (d) How do you solve them?

APPENDIX II

WORKSHOP CONDUCTED ON 25 MAY 1997 AT ST CUTHBERT'S SENIOR SECONDARY SCHOOL (FOR THE STUDENTS)

1 ACADEMIC HISTORY

- (a) In which standard are you?
- (b) For how long have you been a student at St Cuthbert's Senior Secondary School?
- (c) Which stream are you following, i.e academic, general, commercial?
- (d) Which subject do you like most?
- (e) Please explain why.
- (f) Which section/s do you enjoy most from this subject?
- (g) Please explain why.
- (h) Do you like the methods your teacher uses to teach?
- (i) If no, why?
- (j) If yes, why?
- (k) What are these method/s your teachers use?
- (l) What were other method/s that you would like your teachers to use when teaching?
- (m) How often do you get home?
- (n) Do your parents help you with it?
- (o) Are the answers often right?

2 TEACHING FACILITIES AND RESOURCES

- (a) What do you understand about the term resources or facilities of a school?
- (b) Do you consider that you have enough facilities or resource materials?
- (c) Name all the facilities you have in your school.
- (d) Do you think you should get more resources for your school or have you enough?
- (e) Who should supply you with them?
- (f) Please explain why.
- (g) If the government is not supplying you with the necessary equipment, why do you not make them yourself?
- (h) Where do you keep your books?
- (i) Have you ever recycled any material at your school, namely paper, cans or glass? Why?

3 IMPLEMENTATION OF ENVIRONMENTAL EDUCATION AS A LEARNING AREA IN YOUR SCHOOL

- (a) What do you understand about Environmental Education?
- (b) If you understand it, what do you think should be done before it is implemented in your school?
- (c) Do you think you have enough facilities for the implementation?
- (d) Are you interested in this implementation?
- (e) If the answer to (d) is yes, what interests you in this implementation?
- (f) If the answer to (d) is no, why are you not interested in this implementation?
- (g) How do you think it should be implemented in your school?
- (h) Are you ready for the implementation of this subject?
- (i) If the answer to (h) is yes, what makes you think you are ready?
- (j) Make your own comments on the implementation of this subject in your school.

4 GENERAL SCHOOL PROBLEMS

- (a) Do you experience any problems at your school as a student?
- (b) If yes, what are they?
- (c) If yes, do they affect your school work?
- (d) If yes, how?
- (e) Are these problems from the students or from other bodies?
- (f) Mention these problems and sort them out as problems from the students and problems from the teachers or the community.
- (g) How do you solve them, please explain fully.
- (h) Do you like wearing uniform? Why?

APPENDIX III

INTERVIEW SCHEDULE FOR THE COMMUNITY CONDUCTED IN MAY 1997

1 INTERVIEWEE'S BACKGROUND

- (a) For how long have you lived in this village?
- (b) Where did you do your primary, secondary, high school and tertiary education?
- (c) Why did you do it there?
- (d) Have you ever worked before?
- (e) Where did/do you work?
- (f) What were you doing?
- (g) For how long did you work there?
- (h) For how long did you stay at St Cuthbert's during your annual leave?
- (i) What did you do during that time?
- (j) Are you married?
- (k) How many children do you have?
- (l) Where were/are they schooling?
- (m) Why did they attend school there?

2 INTERVIEWEE'S INVOLVEMENT IN THE SCHOOL'S COMMUNITY WELFARE

- (a) Do you attend the weekly gatherings (*imbizo*) that are always held at the headman's place?
- (b) Why do you attend them?
- (c) Are you forced to attend them?
- (d) Do you attend meetings that are normally held at St Cuthbert's Senior Secondary School?
- (e) If the answer to (d) is yes, why?
- (f) If the answer to (d) is no, why not?
- (g) Do you often meet with the St Cuthbert's Senior Secondary School teachers?
- (h) If the answer is yes, where do you meet them?
- (i) If the answer is no, why not?
- (j) In the meetings that you attended at St Cuthbert's Senior Secondary School how many people attend/usually attend?
- (k) What do you think is the reason for the attendance mentioned in (j)?
- (l) Are you as parents/community members given any chance to discuss and decide the matters/issues or are they imposed on you?
- (m) If they are imposed, who imposes them?
- (n) Have you ever visited the school when there is no meeting?
- (o) If yes, why did/do you visit the school?
- (p) If not, why not?

3 INTERVIEWEE'S PARTICIPATION IN HIS/HER CHILD'S LEARNING PROCESS

- (a) In which class is your child?
- (b) Do you help him/her with her projects, assignments, homework and other school work activities?
- (c) If the answer is yes, why?
- (d) If the answer is no, why not?
- (e) Do you buy any educational facilities for your child or for the school? If yes, why?
- (f) If no, why not?
- (g) Have you ever been asked to give any assistance to the school?
- (h) How did you respond?

- (i) Are there any problems that you see in the school?
- (j) If there are problems, what are they?
- (k) How do you think you could overcome and solve them?
- (l) Have you ever taken any decision at the school or community meetings?
- (m) If yes, why? Were you supported or were you discouraged?
- (n) If no, why?

4 FUTURE PLANS ABOUT THE SCHOOL PROCESS

- (a) Are you satisfied with your school's current situation?
- (b) How would you like your school to be?

RHODES UNIVERSITY
DEPARTMENT OF EDUCATION

RESEARCH PAPER

TITLE:

SOCIO-CULTURAL FACTORS THAT HAVE CONTRIBUTED TO THE DECREASE
OF PLANT SPECIES IN THE EASTERN CAPE : A CASE STUDY OF THE ETYENI
VILLAGE, TSOLO, TRANSKEI.

Submitted in Partial Fulfilment
of the requirements for the degree of

MASTER OF EDUCATION

of Rhodes University

by

Mandisa S. Ngwane

Supervisor: Dr. Eureta Janse van Rensburg

February 1999

TABLES OF CONTENTS

	Page No.
1. Introduction	1
2. Context	2
3. Research Methodology	2
4. Research Findings	5
4.1 Knowledge of Plants, Related to Age, Education and Gender	5
4.2 Respondents' Views on Changes Related to Plants	6
4.3 Socio-Cultural Factors Related to a Decrease in Indigenous Plants	9
4.3.1 Loss of Oral Knowledge	9
4.3.2 Poor Law Enforcement	9
4.3.3 Opening up o Residential Sites on Grazing Land	11
4.3.4 Betterment and Rehabilitation Strategies	11
4.3.5 Unemployment	12
4.3.6 Encroachment	12
4.3.7 Modern Technology	12
4.3.8 Shifting of Values	13
5. Summary and Recommendations	14
References	19
Appendix I	
Appendix II	
Appendix III	
Addendum I	

ABSTRACT

This paper discusses an interpretive research on socio-cultural factors associated with the decrease of indigenous plants around Tye village, in the Tso district. The paper illustrates a mixture of research styles namely, focus groups, interviews, and the researcher's experiential observations of a closely known environment as a means of sharing knowledge. The aim of using these research styles was to see if the villagers have experienced changes in the surrounding plant life and their thoughts on what might contribute to such changes. The paper also involves deliberations about how to address issues. These seemingly impoverished areas of Tso are still rich with the knowledge of the elderly villagers about plants and their uses. The paper shares some of that wealth of knowledge, and reviews the socio-cultural processes that threaten both the knowledge of the elders and the contrived existence of plants. Recommendations and suggestions that teachers should make links between school- and community-learning environments to address these issues and developments have been made. The school curriculum should be structured such that it applies an environmental approach rather than a scientific approach. This approach will make the school curriculum more relevant to the life of the learners, since their learning experiences will be related to their real world.

1. INTRODUCTION

The aim of this project was to explore socio-cultural factors that have contributed to the decrease of indigenous plants in general around my home area, the Etyeni village in the district of Tsolo. I was born and bred in this village. I have an attachment to it and I became interested in learning about the decrease of certain plant species around my area because I like wild plants. I think my geography background has stimulated this love for nature further. But whereas in geography I was just taught about the environment and related issues, it was environmental education that inspired me to the root cause of global environmental issues, their nature and solutions to them.

The decrease of plant species relates to the general loss of biodiversity, which dates as far back as the nomadic era (Huxley: 1984). During earlier times the exploitation of plants and other species was not severe, however, because of smaller populations and fewer industries and technologies. Fuggle and Rabie (1992) argue that damage to the environment is seldom the deliberate act of evil man, nor is it the inevitable by-product of advancing technology. It is very much due to human lack of restraint and demand for resources far in excess of our biological needs, omitting to plan for the side effects of our actions, and placing our own short-term interests ahead of our broader responsibilities.

Other environmental problems are more insidious. A problem arises from the collective impact of many small actions like discarding cans, a smoking chimney, picking wild flowers, getting firewood, use of quickest means of transport, the aircraft, catching under-sized fish, damming a river, the loss of one or two hectares of farmland. In themselves these may be insignificant, but they become serious if multiplied several thousand times.

Fuggle and Rabie (1992) further say that other reasons for many environmental problems are, paradoxically, the present-day emphasis on specialization. In professional and technical training we are schooled in dissecting problems to study detail and we are taught reductionist methods of approaching specific problems. As specialists, we are often ignorant of, or insensitive to, elements of the total problem outside our sphere of expertise. But human-land relationships require a holistic perspective, an ability to appreciate the many aspects that make up the real problem, economic, technical, biological, social, legal and moral.

Research reveals the very important role of indigenous plants in ecosystems and our social lives. The IUCN/UNEP/WWF (1991) document, *Caring for the Earth: A Strategy for Sustainable Living*, outlines how the plants and animals have made the planet fit for the forms of life we know. This document further describes the different benefits of the diversity of nature as source of beauty, enjoyment, understanding and knowledge, a source of food, raw materials and genetic material for agriculture and medicine. Plants provide us with firewood, clean water, building material, and attract other animals, birds and plant species, and wild relatives have a potential to improve crop if crossed (WWF, undated). A focus on the socio-cultural factors involved in the loss of plant species can be linked to many motivations for studying the social dimensions of environmental problems, amongst them the Tbilisi Principles of Environmental Education (UNESCO/UNEP: 1978) which recommend that cultural and historical perspectives should be considered in environmental issues.

2. CONTEXT

The Etyeni village is about seven kilometres south-west of Tsolo in the former Transkei region. It is located in a basin with mountains of Karoo dolerite, sandstone and shale on the south and west. It is divided into four sub-villages by three perennial rivers which run through it. It receives most of its rains in summer, and above 500mm overall per annum (600-800mm) (Harvey: 1951; Steyn, et al: 1986). This rainfall gives the potential for dense vegetation. Summer temperatures range between 20 and 25 degrees Celcius; winters are very cold with high incidence of frost and snowfall quite common. The mixed natural vegetation of grass, big and small trees, shrubs and succulent plants falls under the forest and shrub type.

According to the 1951 rehabilitation report, the population of this village was 1 420 with a density of 131 people per square mile. The 1991 census estimated the population of Etyeni location at about 3 343 (Central Report: 1991). The bulk of the population is employed outside Tsolo, namely in the mines and industries in the major towns of South Africa. Some are employed as domestic workers in and around the village and some as professionals in private sectors and government departments. Villagers keep cattle, sheep, goats, poultry, horses and occasionally donkeys. The rate of unemployment has increased from the mid-1980s due to retrenchment in the South African manufacturing and mining industries. Some of the families are therefore poor. Many males die young, which results in a high number of widowed women. There is also a high birth rate, especially for the youth between 14 and 19 years, the school-going population. The population is predominantly young, with very few elderly people. The formal education status of the elderly is low and the adult group aged 45 and 60 years, is fairly well educated, many having gone beyond the Junior Certificate.

Etyeni is faced with the same problems as other rural areas: poverty, poor yields, overstocking, overgrazing, overutilization of land, and soil erosion. Most of the youth who matriculated do not get jobs or enrol in tertiary institutions. They stay at home. Brain drain through the emigration of academics for better pay and conditions is another problem. Academics from this area are employed in the towns and cities. Consequently they do not plough back into their community information they have gathered from schools and universities.

3. RESEARCH METHODOLOGY

I have used a non-positivist, the interpretive paradigm to suit the kind of information I needed, that is, personal knowledge about the environment. This type of research necessitates a qualitative approach to the collection, analysis and presentation of data (Patton: 1990). I am not going to generalise from this case to explain the Eastern Cape situation. I wanted to know about the situation at Etyeni.

Interpretive research is concerned with life experiences as it is felt and lived, and it requires the researchers to work in material settings using a flexible approach to interviewing (Guba and Lincoln: 1981; Cohen and Manion: 1989; Kincheloe: 1991). It enabled me to record the points of few of the informants without predetermining those points of view through prior selection of questionnaire categories. However, it should be noted that the information generated by qualitative research has enabled some quantifiable results to be obtained.

I used dimensional sampling. It involves identifying factors of interest in a population and obtaining at least one respondent of every combination of those factors (Cohen and Manion: 1994). A selection of 15 respondents of both males and females, educated and uneducated, who had lived in the area for a period of between 17 and above 70 years was chosen from three age group categories, five from each age group: between 17 and 40 years (young people), 40 to 60 years (middle aged), and 60 years and above (older people). (Figure 1 shows some of the interviewees that participated in the research). I wanted to know if people of different ages had the same knowledge about the decrease of plant species around their area. I chose villagers I knew, because I wanted people who would give information freely.

I used the same interview questions to all my respondents. The aim was to gain information about their social life. (Refer Appendix 1- Interview schedule). The primary data was collected through semi-structured and structured interviews based on open-ended questions from a prepared interview schedule (refer Appendix 1), and direct observations. Other information was obtained through books, minutes of previous meetings, maps, census statistics of the Tsolo villages compiled by the Central Statistics Services and from the former Transkei government departments of Roads and Works, Agriculture and Forestry, and Local government and Land Tenure. Structured interviews were used to get specific responses to make the situation open, flexible and free (Cohen and Manion: 1994; Saunders and Pinley: 1983). The detailed pattern of the interview schedule which I followed is in Appendix 1.

In a research like this, multiple research techniques to determine the validity of the data and to get sufficient data about different aspects of all the respondents were inevitable.

I did experience some problems with some of my respondents. Some were not at home for our appointments: I visited them three times without success and ultimately I managed to get them. The elderly women were at first reluctant to respond because they thought I was joking. Some people said they would respond only if the interviews would make them get jobs. At some stage it was difficult for me to understand my own language, because the uneducated female respondents could not mention the common names for the plants where a syllable or two from the name bore the in-laws' names. This system is called to respect the elderly, both the living and the dead (*ukuhlonipha*). For instance, for a plant called *amanzi amnyama*, literally translated as black water, they would not pronounce that and then a translator would be called. They would say *invoto* for *amanzi* (water) and *imtsama* for *imnyama* (black). *Umlungu mabele*, literally translated as a white's breast, *umlungu* (a white), would pronounce as *umnyepha*. I will use my informants' names because they allowed me to do so.

Figure 1: Some of the informants that took part in the interviews.

Figure 1a : Young and middle-aged informants



Figure 1b : Male and female informants above 60years



4. RESEARCH FINDINGS

4.1 Knowledge of Plants, Related to Age, Education and Gender

All the respondents I talked to had some knowledge about the use of plants and their importance, even though the middle and young educated groups had less knowledge than the elderly. This is not surprising, because they had spent most of their youth in boarding schools and working in places far away from the rural areas.

I found that the elderly educated people had a richer knowledge about plants than the elderly uneducated. Even though the elderly uneducated were less knowledgeable, their knowledge was wide because they had closer contact with the natural environment during their almost daily activities like hunting, fetching firewood from the forest, collecting dry cow dung, digging *muti*, picking wild spinach and fruit; they showed the intimate understanding noted by Knight (1980), Howes (1980), Fox and Young (1982) and Roberts (1990), who maintain that rural African societies are often rooted within and dependent upon the environment.

Mr. Dazana, a retired teacher of over 80 years of age, and Rev. B.T. Songca, a retired inspector of schools, and Rev. G.T. Vika, a former minister of Agriculture and Forestry in the former Transkei government, both above 70 years of age, were among the double advantaged respondents who could draw on both natural and formal education.

Among the elderly, women seemed to know more about plants than the men, but Mr. Dazana was as knowledgeable as the women were. He alone mentioned 27 plants and their uses. The rest of the plants that everybody knew are recorded in Addendum 1. I recorded a higher number of identified wild fruit and spinach from females than males. Mtshali (1994) and Fox and Young (1983) support my findings of women being more knowledgeable about wild plants in general and wild spinach in particular. But males appeared to be more knowledgeable than females in herbs used for curing serious ailments among people and domestic animals.

Even though I did not go to the veld or forest with my respondents, I found that they had common knowledge about plants used for food, medicine, rituals, sticks for fighting, perfumes and cosmetics, and other general uses like hardwood for making wagons, sledges and garden and kraal poles. They identified 95 types of plants around their area (see Addendum 1). Researchers have noted that of the earth's 265 000 types of plants, only 1 000 have been thoroughly studied by Western science, but as many as 40 000 are already used by traditional healers and many have medicinal or undiscovered nutritional value (Linden: 1991).

It is generally accepted that local people have a wider knowledge of the eco-system they live in and that their knowledge has considerable potential for the sustainable use of natural resources (Ulluwishewa: 1993). In theory, sustainable development means that kind of development which meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development: 1987). In 1991 the World Conservation Strategy (WCS), International Union for the Conservation of Nature and Natural Resources (IUCN: 1980), United Nations Environment Programme and World Life Fund for Nature (1991:10) define sustainable development as "improving the quality of human life while living within the carrying capacity of supporting systems".

4.2 Respondents' Views on Changes Related to Plants

Those who had been in the village between 40 and 70 years reported that it used to be rich in grass such as *umngcele* which was obtained from the fields and *umthala* and *umqungu* from the veld and from the forest, but these days *umthala* and *umqungu* are very rare. The area was densely vegetated, lush and full of beautiful ornamental wild plants (refer Appendix II). The edible plants and those used as herbs were also in abundance. The plants, especially tall grass and trees, were among the homesteads and served as hiding places or mischievous rendezvous for the young people. Trees like *umsintsi* were located all over the place and would bloom in deep pink flowers in September, the Xhosa name for September is *Eyomsintsi*. These days you rarely find them. One could travel a distance of over ten kilometres from one tree to the next (Madosini, Ncinci, Tolo and Mr. Dazana). This tree was chopped down because it was used as brake pads for the wagons and the wheels. The reason why they chose this tree was because of its spongy nature. Today its use is no longer taken into account. It is mercilessly harvested to be replanted as decoration to urban areas.

Plants were and are still used for various purposes in this village, not only as food and medicines but also for spiritual value. Trees such as *umnqayi*, *umnquma*, *ugqonci*, *umqaqoba*, *umlungu mabele*, *umfutho*, *umzani*, *umthathi*, *umvumvu*, *amasethole*, *umthunzi*, *umcheba*, *umsimbithi*, *umdakana*, *umnyamanzi*, and *umkhangiso* are very strong woods, do not break easily and are used for fighting as well as walking sticks. Shepherds use bamboo and *umsibithi* as they are light but strong and pliable.

The *ntembuzane* tree, which formed much of the then bushy areas, had its thread-like cortex used for threads to sew coats and blankets. A type of grass called *isibande* that would grow up to 2,5 metres high was used for roof thatching, chewed to stop halitosis, used for acne, used as syringes because it had hard stalks, used to make a musical instrument called *umrhube*, and as bows for the hunting boys when looking after the cattle in the veld. Today it is only found deep inside the forest. The area was rich in grass, and milk and meat were in abundance so that everyone from the village would share them without buying. *Uluchwe*, *ityeba*, *iziqutsu* and *pelim pekulane* are very useful to dress the wounds of circumsized boys. They are faster healing than the pharmaceutical medicines.

One plant could be used to treat more than one ailment. Krige (1965) somehow doubts the medicinal value of a herb which is used for many diverse ailments, but I fail to understand him because even in Western medicine permanganate of potash is used for headaches, stomach aches, to promote nervous energy and appetite, and for the reduction of temperature, for burns and wounds. Brewer's yeast treats a variety of illness such as alcoholism, anaemia, burns, cold and 'flu (Nutriway Marketing, undated).

Different clans use the branches of the following trees to bring the spirit of the dead home: *umnquma*, *urhafu*, *umnqayi*, *umqungu*, *umngcele*, *umphafa*, *isifutho*, *umthunze*, *unyenye*. These beliefs are strongly found more especially among the Nxuba, Mlunguwana, and Mthembu clans. Their effects are still prevailing (Rev. B.T. Songca and Rev. G.T. Vika). Worship under a tree or using a branch of a tree to worship is associated with the ancestors who dwell under a tree. It is a belief that God is nearer to the tree because He spoke to Moses from a tree. Some plants are treated with reverence among certain clans, as they are their totems.

Forests and rivers are generally revered among my people because it is believed that ancestors live both in the forests and rivers. To prove this, Madosini a diviner, said that she graduated in a forest before she qualified to be a diviner. In that ceremony, which she attended alone in the thicket (as rest of group had to strictly remain in the entrance of the forest so as not to disturb the ancestors who are believed to be shy people), her dead great-great-grand-father who dwells in the thicket of the forest was the chancellor who anointed her with a white cream and dressed her with tree branches and white beads. Vegetated areas especially thick forests, are good places for burying chiefs and kings as they are special: it is not like burying anywhere which is for the commoners. The reason for burying them in the middle of a thicket where only a few loyal and trustworthy men are assigned that duty, is because if his skull and certain parts of his body could be found by his enemy, his tribe would be weak and be defeated in battle by the enemy armed with strong parts of his body. Again, the fires should not interfere with dead people. Fire is a bad omen. If the grave of a chief or a king catches fire, bad luck would befall on the tribe of that dead chief or king.

The establishment of nearby clinics and the hospital has had an effect on how villagers use plants for medicine. The educated ones have very little belief in the plants, but there are a few that believe they are effective. Most of the least educated ones and the educated old people still believe that plants are effective and still use them. For example, the educated old men believe that there are plants that should be given to cows when they are barren to stimulate their fertility.

Some of the uneducated elderly who live on a pension grant opt for plants to cure their ailments because they say that they are too far away from the hospital to travel on foot, the doctors are expensive and they cannot afford the R80 consultation fee. The clinics are ill equipped, they usually do not get medicines, and the doctors do not cure the ailment, they only make it subside. These old people opt for diviners who charge very little, money and those who have knowledge of medicinal plants just get them from the forest or veld. They believe that the natural medical aid at their disposal is cheap and effective.

Gorman (1992), who writes that most of the world's population receives its health care from traditional systems that are outside the formal health services, supports the belief that the informants have about the effectiveness of the *muti*. He also believes that no matter how scientific the origin of the traditional medical knowledge can be, it is a treasure, which cannot be ignored. Bryant (1970:16) admits that a "native doctor does sometimes work a cure ... where the efforts of European physicians have proved utterly unavailing".

The older people, especially those above 40 years of age and those who are not employed by the government, are not happy with the present state of their environment. The educated ones do not only attach aesthetic value to nature but also know that forests give us rain and retain water (Mr. Mazibu, Mr. and Mrs. Tembani, Miss Ndlwana, Mrs. Ngwane).

People in the old days saw a necessity to protect their environment; their biophysical world, as their wealth (cultural wealth), that feeds the goats, and sheep, horses and cattle. Because of the value they attached to nature, they had a lot of livestock. They used to increase their wealth with the *lobola* (bride price) they received. The young men who used to work in the mines "before these unhappy times of retrenchment, low morals, and lack of respect emerged" (Mr.

Dazana) showed their manhood and prosperity by not keeping their money in the bank but by buying livestock. Even though there was a lot of livestock, the area was rich in grass and there was no pressure on the land. There was a lot of wide-open grazing land, for there were very few people compared to now (Mr. Mazibu, Nofezile and Nosamkele). Today every piece of land is either developed as a residential site, or is a mealie-field, or is a used or an abandoned road, or a donga. To address the problem of environmental degradation, meetings (*imbizo*) have been called but with poor response, especially among the young those below 30 and the newly wed.

There was no rehabilitation of the land that, according to Rev. B.T. Songca, had limitations. Thobeka quoted that when she was a young girl of seven or eight in about 1960, her grandfather, Mayihlabane, had 200 of sheep, 100 goats, 50 head of cattle and six horses. She reported that due to the rehabilitation they were forced to leave their big areas and reduce the number of livestock. Some were stolen, some were sold and some died of red water (*umbendeni*) and starvation because the grass for the livestock was inadequate and residential sites were opened on grazing land.

Women between 20 and 40 years of age whose husbands are working in cities seem not really perturbed by the situation. They have money to buy food if they produce less from the fields. Thobeka claims that she is financially stable by her standards because her husband is still working in the mines, but she misses the wild fruit and vegetables that they used to supplement the stamped mealies with when she was young, about 30 years ago. They used to eat wild vegetables like *umsobo*, *unomdlomboyi*, *umhlabangubo*, *umbikicane*, *umkhoba*, *amagontsi*, *ububazi* or *iselwa lentaka*, *intebe* or wild lily, *ugagadu*, wild carrots, *isagoni* and *irhwabe* (generally known as African lettuce). In some areas *ingwenye*, wild berries and wild figs do not grow any more. Other wild fruit that are rare now include wild grenadilla, wild berries, *intlolokotshane* and *umqokolo*. Most villagers believe that the reason they are suffering from high blood pressure, diabetes, cardiac diseases, oedema of the legs, women dying during delivery, and cancer which they believe is curable, is that they do not get the wild food that was rich in food nutrients direct from the soil, and not spoilt and infested with fertilizers.

All the respondents were aware of the changes but their attitudes towards the change vary. All the elderly respondents voiced their concern with the decline in quantity and quality of plants which impacted on the stock and land in general. For example, Mr. Dazana cited general environmental degradation, particularly soil erosion, thinly vegetated grazing land and the increase in residential sites as a possible cause. His main fear was that these changes are irreversible. One of the general concern was that nothing seems to be done about the problem instead the problem seems to be gaining momentum.

Some respondents mentioned a few advantages they are missing with the disappearance of certain fruit, vegetables and medicinal plants. Another concern was that the population is now forced to buy plant products like firewood and herbs from the urban areas. The youth was noticeably lacking in of concern about the change. They do not regard themselves as being reliant on natural vegetation in any way because of the economic status of their parents, and husbands. Their parents and husbands are able to buy power and fuel for them. They have money to buy food if they produce less from the fields or sometimes without having to grow it in fields. Nevertheless, a number of people showed concern about the environmental

change and voiced their wish to see something done to stop the environmental degeneration of their area.

4.3 Socio-Cultural Factors Related to a Decrease in Indigenous Plants

I have found that plants have been over-exploitation and not protected and as a result the plant species are decreasing around Etyeni. They also no longer occur in abundance, are stunted and occur in very few selected patches. This decrease is due to a number of social and cultural factors including the loss of oral knowledge, poor law enforcement, and opening up of residential sites in grazing land, betterment and rehabilitation strategies, unemployment, encroachment, modern technology, and shifting of values.

4.3.1 Loss of Oral Knowledge

Orally transmitted knowledge about the importance of certain plants to man is losing its value or status; people are being detached from their environment because they only read about its importance in papers. They do not see themselves directly involved in nature and as a result they take more from nature than nature can replenish. Knowledge of the interrelationship between man and nature and the promotion of a sustainable style of life are thus not encouraged. The fact that elderly rural people have a lot of knowledge about their immediate environment that is not transmitted to the younger generation is noted by Mtshali (1994) who maintains that the poor knowledge of the younger generation about their immediate environment is cause for concern. The present diet which consists of rice and food that is bought from the shops does not encourage children to collect food from the veld or forest, thus limiting the association between man and his environment, as is advocated in environmental education.

Another factor might be the exposure of the youth to electronic media, which provides an alternative form of recreation. About nine out of ten homesteads have battery-operated radios which broadcast the whole day long. Television sets are becoming very popular. Another activity, which takes much of the boys' leisure time, is sport: rugby, soccer and boxing. All these factors were non-existent during the older generation's childhood.

It is a pity that knowledge about wild plants, which form part of our supplement food, is ignored. Cunningham (1985) argues that wild spinach has a dietary value: from the plants he recovered important nutrients including proteins, calcium, riboflavin, nicotine and vitamin C and thiamin. The younger generation has wrongly been deprived of this knowledge about their immediate environment by modern "development".

4.3.2 Poor Law Enforcement

Law enforcement during the 1980s became notably lax. This caused people to chop the trees at random, dig their *muti* as they wished. The village rangers did not control veld fires which became the order of the day. Since then, the community has seemed to care less about the veld fires to help the rangers. Village rangers are scared to arrest the boys who mischievously burn the veld or even a forest as happened in the 1994 Cheka incident of a forest inferno. They fear for their safety as the boys would probably kill them and the law does nothing to the culprits or gives only very light sentences. It is said that during the old days if the veld caught fire all the

boys in the village would receive five lashes on the rear because it was known that they were usually the cause. The elderly man did not have to identify the culprit. This helped a lot because the boys would always guard the veld and report a law-breaker as they knew that they would pay the price. These days parents are very protective of their children. The result is that children like some of their parents act irresponsibly towards nature because they fear no one. Children no longer respect elderly people because they have knives and guns to remove any obstacle in their way.

Veld fires and fire belts are no longer controlled or done in alternate years. The burning of the veld year after year leads to poor germination of plants. Poorly germinating vegetation has a very low water-holding capacity. Most of the water that is received during the rainy season is lost as run-off. This then causes sweet grass and herbs to dry up in winter. Veld fires inevitably destroy their roots. The poor environmental management is due to the laxity of the government because it does not deal with the culprits. Very little power is vested in the chiefs and headmen. The government employees like rangers, foresters, guards and the headmen are not enforcing the law as a result of lawlessness and veld fires are the order of the day. Because flora are carelessly handled, animals like jackals, hares, wild cats, *iimbila*, *imidlankuku*, and buck that men used to hunt are dying out. Foresters and guards who are government employees from elsewhere, usually stay for over five in the same post. Through their lengthy stay with the village people, some of the foresters and guards socialise with them. It then becomes very easy for them to accept bribes from the villagers. Furthermore, it becomes a problem for them to arrest their friends when fetching firewood or chopping down trees for garden poles and roof trusses.

To conserve nature during the olden days, certain forests were declared mature enough by the government before they were chopped down. There were severe penalties for anyone seen tampering with young trees. Nowadays people do as they wish. Due to poor environmental management and lawlessness, some plants have become extinct (Mr. Dazana, Mrs. Ngwane, Rev. G.T. Vika and Madosini). The *ingqwane* tree was one of those useful trees that were very good for fuel. Its ashes would burn the whole night until the next morning. *Isihihi* is also believed to be extinct. I myself have never seen these trees, yet I have been around the area for about 35 years (1997). Though I have never seen these trees I can not be sure that they have gone extinct because there is no documented proof to that claim. Maybe they can be found in the middle of the forest.

The statutes that forbid anyone to cut, damage, remove or destroy any tree or other plant are well enforced in protected areas (Joubert, et al: 1996). Unfortunately my village does not fall into that category, which I think is one the reason for the decline of plants there and unfortunately, not all plants are fully protected by the provincial nature conservation ordinances. The protection of plants depends on their status: indigenous plants on or along public roads may not be picked without the permission of the landowner but those far from the public road as in my home area have less protection. In fact, many people from the urban areas around us, namely Maclear, Tsolo and Umtata, come to our area to cut and pick up ornamental trees and plants, especially the water lily and *ntozana* for decorating their homes, and for *muti*, particularly *intelezi*, *impepho*, *iqwili* and *ummezi* for cosmetics.

4.3.3 Opening up of Residential Sites on Grazing Land

To cater for population increase, the local authority and the government have opened residential sites and cultivated areas in areas that used to be grazing land. According to the magisterial correspondence of 1951 the village had 195 sites, 1 562 cattle, 143 horses, 3 872 sheep and 203 goats. In 1990 there were 372 sites, 437 in 1992 and 525 in 1993. More demarcation was done again in 1995. This clearly indicates a lot of pressure on the land, which unfortunately does not stretch. The number of livestock is rising with the population, while the grazing land is being decreased. At the moment there are three grazing camps, instead of six. Rotational grazing is seldom practised, and the livestock graze over one camp for about five months before moving to the next one. The grass is cropped to the roots (refer Appendix III). Milk and meat quality has decreased due to the poor quality of stock. There is no way nowadays where one of the camps could be closed for a year while five others rotate over a three month period as it was before.

Cultivated lands are also overused. There is no way that they could be allowed to rest for a minimum of one year, let alone five years as before. Villagers are subsistence farmers who till the land even though the plots have been reduced for the sake of others. Certain fruits and edible plants such as *inongwe*, the African potato, used to grow in the veld and in the cultivated lands because the soil was rich. Due to overgrazing they are no longer grow in abundance as they used to. The cultivated lands are reduced of their topsoil. Sledges, a common means of transport to and from the mealie lands, cause serious soil erosion. The horse carts and the wagons which have less effect on soil erosion are no longer used.

4.3.4 Betterment and Rehabilitation Strategies

Our modern technology has resulted in environmental degradation because we ignore the intimacy of human dependence on the earth and the need for adequate planning, restraint and responsibility towards others in our private, corporate and state actions.

In South Africa there is a legacy of a wide discrepancy between theory/policy and practice, between the stated objectives of government plans and their actual implementation. Conservation of the 'reserve territories' is no exception. Indeed, despite recurring announcements of ambitious schemes to meet the situation in the reserves and 'save the grass', precious little was really conserved. Hendricks (1989) argues that in the three decades following the first 'Betterment' proclamation of 1939, the government did not seriously undertake the development of reserves at all even if a local arm of the state such as the Transkei Chief Magistracy was driven by an improving and conservationist ethic in the 1930s and 1940s, its plans and programmes founded on the rocks of unanimous opposition, hopelessly inadequate funding and a host of administrative and technical problems.

Why were the policies of Betterment and Rehabilitation were not implemented as initially envisaged? The answer lies partly in the introduction of Bantu Authorities in the 1950s, when the government's priority shifted dramatically in the direction of elevating the chiefs and headmen by granting them greater authority over the local affairs. It was a policy fostered at the expense of the crusading enthusiasm of local officials in the Transkei and their conservationist ideals. Both the abandonment of stock culling and the disbandment of the Transkei Planning Committee, set up in 1945, hint at how the conservation principles in the Betterment and

Rehabilitation programmes were modified and eclipsed even at the level of policy by a much more coercive system of ad hoc planning, removal and control of the population and manipulation of the land. Thus, the ideals of the agricultural officers, other local officials and their planning committee were superseded by the practical advantage of giving as many Africans as possible the impression of having a stake in the land of the reserves. A distorted system of communal land tenure administered by chiefs and headmen in the Bantu Authorities system suited this project admirably.

I feel that communal land ownership has posed a problem of a carefree attitude towards the environment. People care less for the little pieces of land they have, and environmental problems like the pressure on land, soil erosion, and over-exploitation of resources are reaching crisis point. The Betterment and Rehabilitation strategies, which forced many people to live on small pieces of land, have aggravated the situation. This strategy needs people with know-how about conservation. Every individual should have a thorough knowledge about his/her environment in all natural, built, social or cultural, political and economic dimensions. As Principle 1 of the Tbilisi Declaration (1977) declared: *To be able to gain knowledge, the people should know what social, political, economic and biophysical aspects entail.* What these aspects entail will be gained from the study of environmental education, and people's critical reflections on their life experiences. Environmental education enables one to identify environmental issues.

4.3.5 Unemployment

This issue seems to be the root cause of the merciless harvesting of the natural vegetation. As breadwinners have been retrenched they depend on their environment to make ends meet. They dig *muti* and chop down trees and sell them or use them for building up kraals. They keep as much livestock as they can afford to, so that they can sell them at a later stage. Keeping livestock beyond the earth's carrying capacity leads to overgrazing. As unemployment is linked to lack of money and goes hand in glove with poverty, people have no alternative but to depend entirely on wild edible plants to supplement their staple diets. This reduces the plants tremendously. In these ways, people are driven by need to abuse the landscape. The issue of unemployment is thus a very thorny one for conservation.

4.3.6 Encroachment

The government has taken the initiative to effect plantations that encroach on the indigenous plants. These plantations have been set on land that used to be flat residential sites. Plantations use more water than indigenous plants. Because indigenous plants receive less water, some of them become stunted and some disappear altogether. Other less useful plants like mimosa take advantage and encroach onto indigenous plants. Mimosa is very destructive to grass for grazing. Livestock dung is needed by the soil to enrich its humus content, which allows plants to flourish.

4.3.7 Modern Technology

The society we live in today has, through modern technology, exploited natural resources in order to improve standards of living. This is done regardless of levels of social, political and scientific development of South Africa's population. Ignorance, lack of responsibility, the drive to have many industries whose raw materials include plants, the need to clear the vegetation for

settlement sites and cultivation, and the acquisition of food and medicine from plants have caused us to over-exploit plants. The environmental crisis is not only situated within the biophysical world, but also in the social, economic and political spheres (O'Donoghue: 1993).

As forests are a source of economic growth, industrialists build their sawmills there. In my village sawmill sites next to the plantation have been shifting from one site to the next as far back as I can remember. There are more than seven abandoned sawmill sites around the plantations in my area, where the owners have had to clear the land to build roads and prefabricated houses. The trucks that convey the timber from the plantations damage the roads. Air and water pollution and land despoliation are inevitable around this area, where very important plant species have been removed.

4.3.8 Shifting of Values

People these days are lazy to walk longer distances to fetch firewood. Those with the skills of making wagons, yokes and *izingqusho* are now very few because very few people need yokes and *izingqusho*, and the few who do usually buy them from the hardware stores. The result is that yellowwood, one of the strongest trees around the village which was used to make these items, is multiplying again but it is in the middle of the forest.

It was evident that knowledge about medicinal plants is not just confined to practising traditional healers, but has also been shared by the ordinary members of the community. This knowledge has been inherited from parents through practical involvement in the gathering of plants and oral tradition. But today the youth spend most of their time at boarding school and then depart for the cities. There they are not in direct contact with nature and have little time with their parents to learn from them. The fact that the younger generation has very little interest in plants compared to their parents and grandparents is also supported by Mtshali (1994) and Matowanyika (1991) who argue that the loss of interest in wild plants can be attributed to constraints in the recognition and promotion of indigenous knowledge as a valuable resource. Even agricultural advisers in their programmes promote the cultivation of cash crops to the total exclusion of wild plants. Community gardens contain only domesticated vegetables.

Awareness of the overriding value of conservation is being lost by the uninformed, unconcerned new generation. The youth do not see themselves as being reliant on natural vegetation. They do not care because they think that their parents are financially stable and can provide food and power, thus ignoring the importance of the natural environment. I fail to understand them because subjects like biology, agricultural science, geography and home economics, emphasize the importance of the natural vegetation. If the people can recognise the importance and value attached to plants they can see it as their responsibility to respect them, by so doing conserving our natural world.

Exotic trees imperil the indigenous plants because they use a lot of water. Diviners, out of greed and desperation for money, dig more *muti* plants than required in order to sell them. Previously people would dig the medicinal plants but know that seed is needed for re-germination. They would also know that certain trees from this area, *umthathi* (sneezewood or *Ptaeroxylon obliquum*), *umnquma* (wild olive or *Olea europae subsp. Africana*) and ubulawu (*Dianthus thumbergii*) were not to be chopped down except for ritual purposes.

5. SUMMARY AND RECOMMENDATIONS

Many of the older people around this village are aware of the ecological value of plants, even though they do not mention the word ecology. They say that plants anchor the soil firmly in the ground and prevent soil erosion. They are aware of the fact that in the forest it is cool, even though they do not mention that trees maintain low levels of carbon dioxide, thus reducing the greenhouse effect that makes the earth uncomfortably warm. They have voiced the fact that wild animals like the jackals, monkeys, springbok, and birds which used to roam and fly around are rare now. They attribute this to the thinning of the forests, which used to provide fauna with food and nest sites. Honey that was usually common in big, dead trees, is also rare because trees no longer grow to reach maturity but are chopped down.

As the biophysical world deteriorates, concerned citizens should call meetings to address the issues. This environmental crisis needs to shift towards participatory management of natural vegetation in order to achieve the goal of sustainable living. This then would involve local plans appropriate to the needs and aspirations of my community: to ensure the preservation of biodiversity, monitoring of sustainable harvesting is necessary; to fight erosion, anti-erosion walls should be built; indigenous forests should be encouraged to grow, livestock reduced and veld fires monitored. Cooper and Swart (1992) who recommend that rural development projects should be initiated in Transkei villages also support this notion. Only this approach will provide for the ever-increasing human population, and stop people plundering the forests for medicinal plants and bark or grazing their cattle and stock through the forests. If people abstain from this practice, growth of natural vegetation will take place.

The many roads leading to Nkonkile plantation where the big trucks fetch pine and gum trees from, should be reduced to one well developed, well constructed, and well maintained road. Use of sledges should be replaced by ox-wagons which have less erosive effect on the land.

The old foresters and guards should be replaced by young and energetic ones. Even the young ones should regularly be replaced by new ones to avoid too much socialisation with the village people. Every villager should share responsibility for the village. If a villager is not willing to abide by the rules then she/he must be brought to court. Retired people from the village or even any knowledgeable villager should contribute towards sustainable living and environmental upgrading and give voluntary lectures on plants to the school at times that could be arranged by the educators. The involvement of the members of the community will ensure shared responsibility between the school and the home. It will ensure that the theory that is learnt at school is practised both at school and at home.

It worries me to find that the indigenous or local knowledge of plants is getting lost. I think the reason for this is that it is passed orally from one generation to the next. It is not written down. Mtshali (1994) argues that this knowledge and the wisdom it accompanies are kept in the people's minds. It needs to be retrieved, documented and disseminated before it disappears so that it can be included with the moral usual scientific knowledge in all types of education. It is hoped that educators will consider giving indigenous knowledge of the environment its rightful place in the curriculum and help learners incorporate environmental knowledge into the different strata of their lives. If it is incorporated in the curriculum, the learners will get "education for environment" (Fien: 1993) as they will be bringing along their experiences,

analysing and looking critically at the subject matter relating it to their everyday lives, including the entire community. Some of the information they gather at school will be drawn from the community, as the community is rich in indigenous knowledge.

Since the focus of this study was the finding out about underlying socio-cultural factors that contributed to the decrease of plants around Etyeni village, an action to try to alleviate the problem and change the entire community's mind was essential. The solution emerged through an analysis of currently revised curriculum, Curriculum 2005, and accepted literature which included the ecological paradigm in the curriculum, the Tbilisi Principles for environmental education and Fien's (1993) guiding principles for education, which inform both education for the environment and a socially critical learning theory.

Environmental problems have created the need for assimilating the principles environmental education in formal education. Environmental education addresses our various, but familiar, contexts of home, family and leisure situations, post-school education and training, work and local community. Smyth (1988) suggests that environmental teaching be used about things that are familiar and issues that are topical and not too abstract. The reason why learners are not at home with plants around them is because their education is based on other people's contexts. In schools they are taught about coniferous forests and must memorize trees and plants found in other regions of the world instead of introducing issues around them in context. Vulliamy (1988) warns that where environmental issues are taught in school, school knowledge must not conflict with indigenous knowledge and needs. He, for example, notes that the Kaduwangans of New Guinea know more about local growing conditions than the experts who are sent in to help them.

The diverse structure of environmental education gained from formal and informal institutions has the capacity to empower people with knowledge and build the conceptual bridges between environmentalism and other ways of knowing the world. As environmental education aims at producing a citizenry that understands the biophysical environment and its associated problems, and knows how to solve these problems and is motivated to work towards their solution (Wilke: 1993), it should target the local people and be promoted emphatically by the state so that rural dwellers once more gain the values, attitudes, commitment and skills needed to protect and improve the environment and create new patterns of behaviour of individuals, groups and society as a whole towards the environment (UNESCO: 1978).

I strongly believe that if the Etyeni community could collaborate with the three schools the village has, on a campaign of change towards its environment, the existing environmental problems could be resolved. The use of teachers as the facilitators in this campaign could be very useful, as teachers are agents of change.

The three schools around this village could be useful in this manner:

These three schools should include environmental education as a cross-curricula initiative in their school curricula. The school curriculum should be taught on the bases of environmental education objectives and socially critical approach. The curriculum should aim at achieving environmental education aims: reconciling the social, economic and political development of man with natural environment; increase awareness of environmental issues and problems (and

possibilities for their solutions); lay a foundation for the fully informed and active participation of the environment; the prudent use of natural resources (Council of Ministers of the European Community); and that of contributing to a shift in the learners' perspective so that they become aware of the need to solve their environmental problems. In achieving the aims of environmental education, particularly within the current environmental educational theory, the schools are achieving the aims of our current education system, and conversely, if the teachers teach the learning areas in the light of the ecological paradigm which underpins the critical and specific outcomes of Curriculum 2005, they are achieving the aims of environmental education.

The inclusion of environmental education in these school curricula would ensure a shift from the transmission style of teaching. A variety of participatory teaching strategies which develop skills necessary for sustainable living will have to be employed. This entails a shift from teaching *about* the environment, *in* the environment, to teaching *for* the environment. Through participation, learners will in a way be encouraged and given opportunities for active learning, critical thinking and problem solving which will make them to be capable of taking responsibility of their own degraded environment. Active-learning will encourage an action-centred and learner-centred approach to education. Active learning involves encounter, dialogue, and reflection, so as to foster greater awareness among them and, ultimately, produce change (O'Donoghue and Janse van Rensburg: 1995), which is desperately needed in this village. This action-centred and learner-centred approach is called issues-based approach to environmental education.

Current environmental education theory promotes an approach to education that encompasses more than transmission of mere content about the environment, rather, the emphasis falls on conceptual understanding and skills and abilities needed for the problem-solving and wise decision-making. Classroom practice is marked by dialogue, which introduces elements of critical theory and encourages critical learning. Environmental education is achieved through the adoption of a practical approach rather theoretical one.

Huckle (1995) suggests that the goals and objectives of socially critical environmental education are concerned with action rather than the absorption of information.

The introduction of environmental education in the current education system will make our education to be more than relevant to the life of the learners since their learning experiences will be related to their real world. The learners' hands-on experiences would be encouraged, rather than encourage learners to memorize concepts that are out of their context.

Teachers from these schools would be encouraged to meet more often to share their expertise, make workshops and constantly seek the services of experts from organizations active in environmental matters and other highly qualified advisers who have the expertise of implementing the socially critical environmental education approach. Constant meeting with other stake-holders would broaden their horizons about general environmental problems and their solutions. Currently in-service centres at national and local levels are concentrating more on teaching strategies, including the development of skills among the learners than on ways of improving examinations. An environment such as that of Etyeni needs youth that can think, initiate, do, solve problems and make sound decisions.

Teachers should encourage school and local environmental projects based on the learners' environmental issues. For, instance, as learners seem to attach very little value to plants, a school nursery where a series of indigenous plant species are planted, could be established. A healing centre where only indigenous plants are used to heal different ailments could be attached to the nursery. Learners should be encouraged to learn that certain ingredients of the pharmaceutical medicines are derived from the indigenous plants. Reflexive learning can be promoted through the setting of environmental projects which place emphasis on the local environment, and development of resources. The study and resolutions of a local environment concern is more clearly practical than taking on a national or international issue. It is more likely to be familiar to the learners, thus enable the mobilization of non-scientific experiential knowledge. By focussing on local environmental issues, learners will be encouraged to work with members of their own community. This might foster group concern and remedial action in the community. The hope is that empowered environmentally literate community will act on environmental issues and promote environmental ethics.

Again, the community members together with the teachers could establish centres with gardens where wild fruit and vegetables are grown. They could sell the vegetables raw or as cooked African food. By so doing they would be encouraging the youth to see indigenous plants as of significant importance. All these centres could be places of aesthetic value and a village pride. They could be places of tourist attraction which could offer job opportunities to the poverty-stricken villagers.

The project design should encourage and support learners in developing solutions to their environmental problems. Veld fires which seem to a problem around this area could be controlled by appointing trustworthy learners to help the village ranger in looking after the fields and veld. Learners know who are the mischievous ones among themselves. This approach recognizes the value of local knowledge and solutions and does not assume that externally located 'expert' knows the required solution. Social change seem probable if people 'on the ground' participate in developing and implementing solutions to environmental problems, rather than the change being imposed from outside. Furthermore, learning and understanding would be enhanced through action-taking associated with the attempted resolutions of real problems. The learners with the entire community could embark on numerous solutions through trial and error than wait for an outside to confuse them.

The teachers and learners around this village should form environmental clubs that will later work with the community to bridge the gap between the villagers and the school population. The educated youth should plough their knowledge back into their community by embarking on educating the community about environmental policies and how to manage natural vegetation in general. This management could encourage replanting of degraded land as a contribution to improving the environment. If people could initiate replanting projects in their own areas they would prick the government's, conscience which claims to be committed in development through Reconstruction and Development Programme, to make it lend a hand.

Lastly, seeing how poorly the plants I knew in childhood have survived, it seems that the residents of my home area are doing nothing to protect the plants they mostly benefit from. In general, there seems to be very little to address the deteriorating state of the natural environment. I think it is our responsibility to safeguard the plants, which Walters and

Hamilton (1993:6) call our "precious inheritance". Plants are not there "as a bundle of resources for our consumption" (WWF, undated), they are resources that we together must value and protect for our lifestyles and for the following generation. We can equip people with the knowledge but we must seek ways to motivate the villagers beyond seeing.

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APPENDIX 1

INTERVIEW SCHEDULE

The aim of this section is to find out from the local people if they have a general knowledge of indigenous plants and if they have observed any changes in their environment. I will elicit this from them by asking them questions that will make them think back to their childhood days.

1. KNOWLEDGE OF PLANTS

1. For how long have you been living in the Tsolo district?
2. From your personal experience and observations and from what you have heard from the elderly people, how did your area look like about sixty years ago?
3. Does it look like what it was sixty years ago?
4. How did the people enjoy themselves about sixty years ago?
5. How did they enjoy themselves about thirty, forty years ago?
6. How do they enjoy themselves now?
7. What were the home chores that the people were engaged at?
8. What are the home chores that the people are engaged at?
9. Did people have a lot of livestock about sixty years ago than now?
10. If yes, what do you think was the reason?
11. If no, what is the reason?
12. What is your staple food?
13. Do you buy it or do you grow it in your garden and field?
14. Do you supplement your food with any form of vegetables?
15. If yes, do you supplement it with wild or domesticated plants?
16. Mention the types of these supplementary foodstuffs.
17. Where do you get them?
18. What did the people use to build their houses?

19. What do people use to build their houses today?
20. If the people are using different building materials from what they used about fifty or sixty years ago, what do you think is the reason for the difference?

USE OF PLANTS

CLINICS AROUND YOU ARE A NEW DEVELOPMENT

1. For how long have they been around your area?
2. Of what use are they to you as the community of Tsolo?
3. Before the establishment of the clinics how did the people cure their ailments?
4. What do you think was the reason for that?
5. How were/are plants used as a means of medication?
6. Did/do they have an effective effect to the ailments?
7. Do you still have enough plants around your area?
8. Do you have an attachment to them?
9. Explain how.

NOTICE ABOUT THE CHANGE

1. Is the forest and the veld next to you as thick as it was when you were a child?
2. If the answer is no, what do you think is the reason?
3. What are the people doing about the deterioration?
4. What makes you think that there is a deterioration?
5. Is the deterioration a problem?
6. What makes you think that it is a problem?
7. What is it that you actually notice about the deterioration of the environment?
8. What do you think is the reason for the deterioration?

9. What do you think is the solution to the deteriorating environment?

RESPECT OF PLANTS

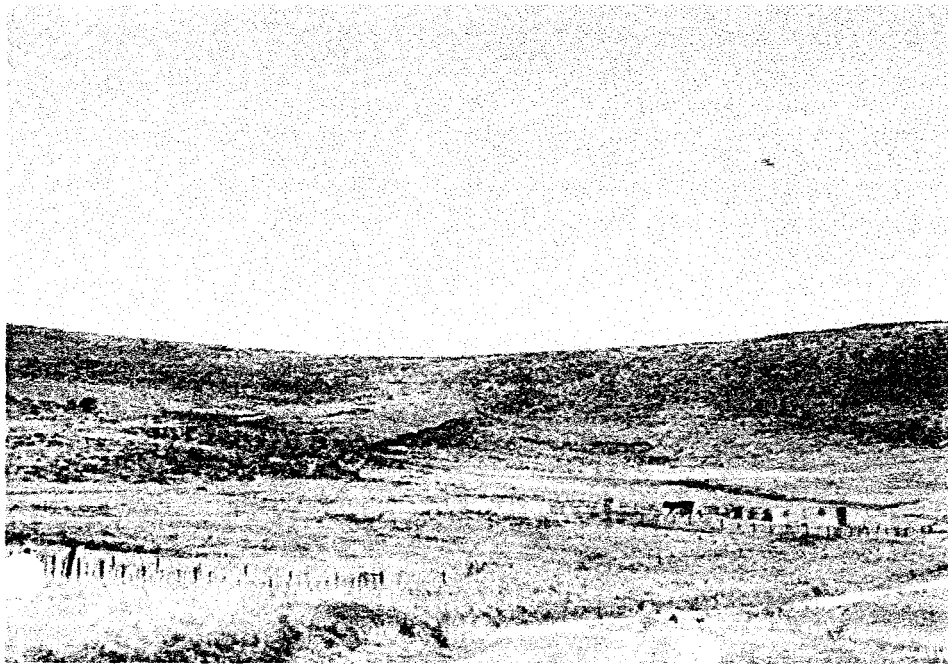
1. From which trees do boys get their sticks?
2. Why?
3. From which trees do shepherds and old men get their walking sticks?
4. Why?
5. What do men use to dress up the wound of a circumcised boy?
6. Tell me briefly which trees were seldom chopped down and why.
7. Is that still a strong practice?
8. Please support your answer.
9. Why was it necessary to worship under a tree?
10. Why was it necessary to bury a chief or a king in the middle of the forest?
11. Is that practice still common?
12. Of what value are plants to human life.

THANK YOU A MILLION TIMES FOR YOUR TIME, GOOD PARTICIPANT.

Appendix II
Few Remains of Lush Densely Vegetated Areas at Etyeni Village



Appendix III
Overgrazed and Thinly Vegetated Enviroment



ADDENDUM I: VARIETY OF PLANTS FOUND AROUND MY HOME AREA

Xhosa Name	Common Name	Botanical Name	Uses and Importance
Amakhiwane	Brown cluster fig	Ficus capensis	Edible fruit.
Ingwenye	Wild plum	Harpephyllum caffrum	Edible fruit.
Umsobo	Deadly nightshade	Solanum nigrum	Medicine used for curing ringworm.
Umsobosobo	Fruit berries of deadly nightshade	Fruit of Solanum nigrum	Fruit that is edible.
Ugqonci	Underbush	Tirchocladus elliptus	For making strong stick.
Umgwenye	Kaffir plum tree	Harpephyllum caffrum	Fruit - when it is ripe it is time to plant kaffir corn.
Umthombothi	Sandalwood	Excoecaria africana	Applied to infants for rash, relieves headaches.
Umqokolo	Kei apple	Genus dovyalis	Edible fruit.
Umnquma	Wild olive	Olea europeae subsp. africana	For making strong stick for fighting, rituals, for tapeworms.
Umsintsi	Coral tree	Erythrina caffra	For dressing wounds.
Isindiyandiya	Glossy white ash	Bersama lucens	For barrenness and impotence, relieves menstrual pains. Leaves are cooked and eaten.
Umsenge	Cabbage wood tree	Cussonia spicata	For backache - Roots are eaten as food.
Umlungu mabele	Adelaide spice tree	Fagara capensis	Leaves are used to heal sores; taken in doses of one cupful as purgative parasiticides.
Umbomvane	Saffronwood	Elacodredon groceum	Bark is used as purgative.
Isicakathi	Kaffir ragwort	Senecio junperinus	Cooked and cooled to be given to newborn to open bowels; given to women at childbirth.
Itshungu	Burrweed	Xanthium spinosum	Used for fuel during drought.

Xhosa Name	Common Name	Botanical Name	Uses and Importance
Umhlakothi	Dune taaibos; Wild currant	<i>Rhus laevigata</i>	Milk infusions of leaves are administered as enemas for abdominal upsets in children.
Umchakuva	Not identified	Not identified	To heal boils.
Umkhanzi	Cape bulrush	<i>Typha latifolia</i>	Used for making mats.
Unonyongwane	Pennywort; Water-navel	<i>Centella coriacea</i>	For skin complaints, ground leaves are topically applied to the skin; for fever; for tuberculosis; as purgative.
Umhlabangubo	Black jack	<i>Bidens pilosa</i>	Edible leaves. Root infusions as enemas; for external complaints. Powder from unspecified parts is taken in water to cure syphilis.
Irhajojo	Not identified	<i>Plectranthus laxiflorus</i>	For fever and abdominal upsets. Root infusions used as mouthwashes, for loose and bleeding teeth. Crushed leaves and stems are mosquito repellents.
Iqwili	Kalmoes	<i>Alepicia capensis</i>	For fever. Used for rheumatism. Applied to wounds.
Ugwebeleweni	Golden star	<i>Hypoxis cyperacea</i>	For vomiting when you suspect a discomfort caused by evil charms or poison.
Umathungwa	Paintbrush	<i>Haemanthus albiglossus</i> Jacq.	Used as soap.
Usikhikhi	Kruipsalie	<i>Salvia</i> sp. Sf. <i>S. runcinata</i>	Used for babies' rash in newly born infants. Boiled leaves are mixed with mother's milk to be taken.
Umnqayi	Bastard camphor tree	<i>Cryptocarya woodii</i>	Used to fetch the dead from the grave - strong stick for fighting.
Umfutho	Horsewood	<i>Clausena</i>	Used to fetch the dead from the grave - wood smoke to fumigate new born babies and steam from the boiling leaves is used to cleanse the body internally.
Umcheyi	True yellowwood	<i>Podocarpus latifolius</i>	Used to fetch the dead from the grave - strong stick for fighting.
Umnnyamanzi	Large leaved onionwood	<i>Cassipourea gummiflua</i> var. <i>verticillata</i>	For food; fighting sticks; and bring the spirit of the dead home.

Xhosa Name	Common Name	Botanical Name	Uses and Importance
Umbhezo	Not identified	Crabbea cirsioides	Used to destroy insects; used for snake and spider bites; toothache, blood poisoning and to disinfect infested meat.
Umhlontlo	Euphobia tree	Euphorbia tetragona	Used to cure cancer and blisters.
Umngcunube	Weeping willow	Salix babylonica	For shade.
Isiphingo	Droog-my-keel bush	Scutia indigo	Edible berries.
Umphunzisa	Witgatboom	Boscia oleoides	Roots are cooked as food.
Umbhongisa	Monkey apple	Royena pallens (fruit)	Edible fruit.
Umthathi	Sneezeewood	Plaaroxylon utile	Branches are burned in sacrifices.
Umkhoba	Bastard yellowwood	Podocarpus elongata	Used for making wagons.
Umqaqoba	Common spoke thorn	Gymnosporia buifolia	Root concoctions are taken as anthelmintics and used for epilepsy, abscesses, hernias and syphilis. Thorns and roots are boiled and then tied to a sharp instrument which is stabbed into the chest of a pleurisy sufferer.
Umbabo	Wild chestnut	Calodendrum capensa	
Intlolokotshane	Torny karree	Rhus gucinzi	Edible seeds, also used for eye complaints.
Umqonci	Boerbean	Schotia afra. Nov. afra	Bark is used in red bark mixtures to ward off evil. The mixture is also used to cleanse people during purification rites after the death of a relative.
Ummemezi	Cape onionwood	Cassipourea flanaganii	Used as a cosmetic.
Ubulawu	Wild carnation	Dianthus thunbergii	Used for ritual ceremonies.
Intelezi	Spekboom	Portulacaria afra Gasteria bicolor	Used to wash the body for rituals and spiritual aspects.
Iyeza lamasi	Medicine of milk	Senecio coronatus	Used to wean children.

Xhosa Name	Common Name	Botanical Name	Uses and importance
Umsimbithi	Ironwood	<i>Millettia caffra</i>	Residue from evaporated ground, roasted roots mixed in water is licked from fingers to induce sleep. Used to fetch the dead from the grave.
Umdakashe	Not identified	Not identified	Strong stick for fighting. Used to fetch the dead from the grave.
Umphafa	Sneeze-wood	<i>Ptaeroxylon obliqua</i>	Leaves are used to bring the dead from the grave - bark is used for rheumatism and arthritis. Powdered bark is used as snuff to relieve headaches.
Umngcele	Not identified	Not identified	It is a strong grass used for roof thatching.
Umthala	Not identified	<i>Miscanthidium erectum</i>	It is a thick, strong grass for roof thatching.
Umqungu	Turpentine grass	<i>Cymbopogon excavatus</i>	It is a thin grass for roof thatching - roots are used in ritual cleansing washes. Sap from cooked roots is used as an anti-emetic.
Iselwa lentaka	Not identified	<i>Dielis reptans</i>	Wild spinach.
Izaqoni	Bitter grape	<i>Rhoicissus tridentata</i>	Roots are mixed with food and are taken regularly during pregnancy to ensure a safe delivery. Tubers are used for renal complaints, cattle diseases and epilepsy.
Amagontsi	Natal cotton	<i>Aponca simplex</i>	Roots are edible.
Iganandela yehlathi	Wild grenadilla	<i>Passiflora</i> sp.	Edible fruit and vegetable - used for grass for making mats and brooms.
Umnqatha	Wild carrots	Not identified	Used for grass for making mats and brooms.
Umsuka	Not identified	Not identified	
Urhatshu	Not identified	Not identified	Used for grass for making mats and brooms.
Unyelenyele	Not identified	Not identified	Used for grass for making mats and brooms.
Incaluka	Not identified	Not identified	Used for grass for making mats and brooms.

Xhosa Name	Common Name	Botanical Name	Uses and Importance
Iphuzi	River pumpkin	Gunnera perpensa	Roots are boiled and used for cystitis and structure of the bladder, and ensures easy childbirth. Leaves are used for swollen legs; rheumatic fever.
Itshongwe	Milk bush	Xysmalobium orbiculare	Stomach ache and headaches. Small pieces of dried roots are chewed and then spat out to divert an approaching storm.
Umkhaba	True yellowwood	Podocarpus latifolius	For strengthening the homestead against evil and bewitching.
Umkhanziso	Not identified	Not identified	Used for making strong sticks.
Umbangandlela	Kraaibos	Heteromorpha arborescens	Causes lightning if brought home but is sometimes used for mental and nervous diseases.
Unyenye	Assegai wood	Grewia occidentalis	For ritual ceremony. Roots when boiled facilitate delivery. Root bark for bladder ailments. Powdered bark is used as soap to wash the head to prevent hair from going grey.
Isibande	Not identified	Not identified	Grass chewed for halitosis, acne and fever.
Isihihi	Not identified	Not identified	For ornamental purposes.
Inggwane	Not identified	Not identified	Used for fuel.
Amacima-mlilo	Not identified	Not identified	Used to cure oedema.
Ugangatshane	Not identified	Not identified	Used for dressing anal wounds.
Umkhwenkwe	Cheesewood	Pittosporum viridiflorum	Used to cure asthma, for febrile complaints, for stomach ailments.
Izichwe	Muishondblaar	Helichaysum foetidum	The juice of the tree is used for dressing the wounds of circumcised boys. Young girls use it to relieve menstrual pains.
Umdlonyane	Wordinwood	Artemisia absinthium	Used to relieve common 'flu and colds.
Iphewula	Pigs ears	Cotyledon orbiculata	Leaves are boiled - medicine for steaming to bring good fortune - juice for earache, boils and other inflammations.

Xhosa Name	Common Name	Botanical Name	Uses and Importance
Impepho	Not identified	Helichrysum decorum	Smoke from burning the plant is used to chase away bad luck and produce good smell, used for making beds for expectant mothers.
Amaqunube asendle	Wild berries	Morus alba	Edible fruit.
Ingwenye	Loquat fruit	Fruit of Harpephyllum caffrum	Edible fruit.
Uralajane	Stinging nettle	Urtica urens	Wild spinach, also cooked to remedy impotency.
Unomdlomboyi	Not identified	Amaranthus paniculatus	Wild spinach.
Idwarhane	Sybosie	Senecio latifolius	For wounds and sores.
Ikhala	Cape aloe	Agave sp.	Purgative, dressing wounds, for chest pains; also fuel.
Intebe	Water lily	Zantedeschia	Absorbs water and makes homes dry up. Wild spinach, decoration.
Imbilikicane	Fat hen	Chenopodium album	Wild spinach, leaves are used as a dusting powder for genital irritation in children. Is also a blood purifier.
Ububazi	Stinging nettle	Urtica dioica	Used to stop nose bleeds.
Intsangu	Dagga	Cannabis sativa	Leaves boiled to cure high blood pressure, relieves dry cough, diabetes, asthma.
Umhlabelo	Osbossie	Talinum caffrum	Leaves are crushed to cure sprains in people and animals, root infusions are taken for nervousness and stomach ache.
Irhwabe	Wild lettuce	Sonchus sp.	Wild spinach.

RHODES UNIVERSITY
DEPARTMENT OF EDUCATION

RESEARCH PROPOSAL

TITLE:

**A PROFILE OF A RURAL SCHOOL IN THE TSOLO DISTRICT: ASSESSING
POSSIBILITIES FOR THE INTRODUCTION OF ENVIRONMENTAL
EDUCATION IN THE FORMAL SCHOOL CURRICULUM.**

Submitted in Partial Fulfilment
of the requirements for the degree of
MASTER OF EDUCATION
of Rhodes University

by

Mandisa S. Ngwane

March 1999

Supervisor: Miss Ursula van Harmelen

1. FIELD OF STUDY

The field of study is environments education.

2. PROVISIONAL TITLE

A profile of Eastern Cape rural schools with a view to identify the issues inherent in the establishment and implementation of Environmental Education in the formal curriculum.

3. CONTEXT

The last decade of the 21st century has seen the development of definitions of environmental education from only being a biophysical aspect to the inclusion of social, economic and political aspects. According to Tyldesley (1990:22) "Environmental education is education aimed at reconciling man with his 'world' and all the participants in that world including other 'men'. It entails factors such as the wise utilisation of resources, and the building of sound inter-human relationships to restore harmony with the environment as a whole". Wilke (1993) defines Environmental education as aiming at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help and solve these problems and motivated to work toward their solution. Huckle (1991) maintains that "education for the environment should be shared speculation with pupils of those forms of technology and social organisation which can enable people to live in harmony with one another and the natural world". Martin (1990) avers that environmental education does not ultimately have validity unless it also involves education to change the human environment for the better by understanding on the one hand the political process by which this can be done as participating citizens, and on the other hand, as noted by conservationists and other environmentalists by acquiring an environmental ethic and a knowledge of the ecological basis of life on which value judgment about the environment can be based. Environmental education is an **across-the-curriculum** approach to learning which helps individuals and groups to understand the environment with the ultimate aim of developing, caring and committed attitudes that will foster the desire and ability to act responsibly in the environment. Environmental education is concerned, not only with knowledge but also with feelings, attitudes, skills and social action.

All the above definitions have common objectives like the interrelationship of people with their environment, the need to promote, adjust and develop a society that lives harmoniously with its environment, an understanding of the biophysical environment and its role for our survival, the need for education that will result in critical citizens that are capable of taking action to address the environmental issues and problems that threaten sustainability, and provide the entire population with not only the knowledge, but also the feelings, skills, attitudes and social actions.

The current environmental education theory therefore is promoting approach to education that encompasses more than mere content about the environment, rather the emphasis is on conceptual understanding and the skills around the capabilities needed for problem solving and wise decision-making.

In line with current environmental education theory in South African schools the curriculum for adoption in 1998 had identified environmental education as a cross-curricula endeavour which is to operate at all levels of formal education within the accepted theory of the current environmental education thinking.

The new curriculum represents a radical paradigm shift for education. This curriculum however is to be implemented in schools that vary considerably in terms of facilities, and with regard to the communities they serve. Urban schools, especially former white schools, are far better facilitated than rural schools. Rural schools are usually understaffed, or staffed by unproductive pensioners and unproductive young people who do not commit themselves to their work. They are far away from the national and even

secondary roads. Some schools are dilapidated, the classrooms are few and the pupils are crammed into them. According to Dr Stoffel van der Merwe, the then Minister of Education and Development Aid, in 1990 there was a shortage of 60 343 classrooms in primary schools and in 99 605 classrooms in secondary schools (Mncwabe 1993).

The few problems that I have identified above include the Transkei region. It has become imperative for the implementation of environmental education as a cross-curricula endeavour even in the Transkei region despite its meagre resources and the top-down approach in schools or the scientific approach. The pupils' minds should be conscientised for the paradigm shift in this period of modernism. The shift from rote learning or top-down approach to social constructivism has been introduced and instilled in the pupils' minds. Tyldesley (1990) argues that the Transkei education system has laid emphasis on science, compartmentalisation of subjects and isolation of man from the environment. With the implementation of environmental education in the present school curriculum, the isolation of man from his environment will be replaced by the knowledge, awareness, skills, attitudes and values of the relationship between man and his environment, and the wise utilisation of resources in a sustainable fashion by man so as to avoid mass destruction, over-population and pollution. The environmental education, even though I am not sure about its readiness for the implementation.

The school has an advantage of being located in a rural setting with a tarred road. It is about one hundred and fifty metres from the Post Office and three hundred metres from a government hospital (St Lucy's), around an anglican mission station. It is near the indigenous forest and pine and wattle plantations on the banks of a perennial river. In the background there are mountain folds which have caves, though I have never been in them. This good background for excursions and fieldwork will help the pupils to understand and observe nature around them and relate the importance to their lives. Their understanding will be based on practical examples rather than theory. They will be able to associate features with names. The school will really be a place of teaching and growth for the pupils. Even though the gardens are not well kept, the introduction of environmental education will be designed such that they include hedges of shrubs, trees and creepers.

4. RESEARCH GOAL

To identify the dimensions within a rural Eastern Cape School and its surrounding community that will have relevance for the implementation of environmental education in the formal curriculum as a cross-curricula initiative.

5. METHODOLOGY

I will be working on a descriptive case study within the interpretive paradigm. The reason for using this research approach is its ability to contribute uniquely to our knowledge and understanding of individual and complex social phenomena. It allows an investigation to retain the holistic and meaningful characteristics of real life events (Yin 1989). As such it is seen to be an appropriate means to achieve the goal of this study.

As characteristic of the interpretive paradigm I will work directly with the subjects in order to understand their interpretations of the world around them, namely, their school and the existing cross-curricula initiative.

6. DATA COLLECTION

The research instruments that will be used include in situ observation, semi-structured interviews and workshopping. The in situ observation will be done by the researcher in a number of visits with the

purpose of obtaining first hand information about the school and its environs. Observation in a case study helps the researcher to observe the characteristics of the individual unit, the school and the community situations. The aim of such observation is to probe deeply and analyze intensively the various phenomena that constitute the life cycle of the unit with a view to establish generalisation about the wider population to which that population belongs (Cohen and Manion 1994; Dane 1980). The semi-structured interviews focused and non-directive will be held with two members from each of three groups I will be working with. The reason for using focused interviews is that I need considerable flexibility concerning follow-up questions (Merton, Fiske and Kendall 1956), and the respondent is will choose will be familiar with the research topic. The non-directive interview will encourage the respondent sot discuss the topic (Dane 1990:1310131) with little provision or no guidance and few questions from me.

Individual interviews are often very productive sources of information which enables the researcher to get into the specific in-depth information (Hopkins 1992). Triangulation will be used to obtain constructive validity through the use of multiple data gathering procedures.

Workshops, according to Hopkins (1992), are equivalent to the best practice on the traditional INSET course where we gain understanding, see demonstrations of the teaching, strategy we may wish to acquire and the opportunity to practice them in a non-threatening environment. The skills that are introduced by workshops to us are useful if we transfer them to our workplace. I will try to plant the seed of the usefulness of workshops to my colleagues.

7. SELECTION OF PARTICIPANTS

I will workshop ten teachers, five with ten years' teaching experience and five with less than ten years' teaching experience. I will choose five standard ten pupils and five community members and conduct workshops on them. From each of the three groups above I will interview two pupils.

8. DATA ANALYSIS

Data will be analyzed qualitatively.

9. REFERENCES

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DEPARTMENT OF EDUCATION

RHODES UNIVERSITY

RESEARCH PROPOSAL

CANDIDATE: Mandisa S. Ngwane

DEGREE: Master of Education (Environmental Education)

DEPARTMENT: Education

SUPERVISOR: Dr E. Janse van Rensburg

TYPE: In partial fulfilment of the requirements for the degree

TITLE: Exploring socio-cultural factors that have contributed to the decrease of plant species in the Eastern Cape: a case study of the Tyeni village, Tsolo, Transkei.

1. Field of study.

The field of study is environmental education.

2. PROVISIONAL TITLE:

Exploring socio-cultural factors that have contributed to the decrease of plant species in the Eastern Cape: a case study of the Tyeni village, Tsolo, Transkei.

3. CONTEXT.

The biophysical environment is deteriorating progressively (Cock & Koch 1991; 1993; Hutchison 1989; Wilson & Ramphele 1989). Biodiversity in Africa has suffered serious damage from both human activities and climatic change (Hamilton 1982). Martens (1992:69) views the "loss of biodiversity on land ... [as] a global crisis in its own right[which] has both direct and indirect causes". Maitima (1992:11) observed that "Species extinction and habitat destruction now occur at a faster rate than before due to commercial and ethnobotanical utilisation of certain plant species".

The diversity of life forms affected by environmental degradation includes plants. Plants are part of the complex web linking air, water, soil and every lifeform in the biosphere. Plant cover protects and partly creates the soil. Forests accumulate and distribute water and influence the local climate. Only plants can convert the sun's energy, minerals and moisture into forms sustaining animal life including human beings. Plants produce and maintain the oxygen balance. They absorb large quantities of carbon dioxide through the process of photosynthesis, which, when it mixes with rain water results into carbonic acid (acid rain) that can lead to rust on metals and crop damage. Plants could minimise the threatening process of global warming. It is estimated (WWF, undated) that about twenty-five thousand types of plants are in danger of extinction. A disappearing plant may take with it ten to thirty dependent living things. We share the world with plants and also we have the power to affect them in different ways (Walters & Hamilton 1993).

The global disappearance of plants species is also part of the general environmental degradation in my home area, Tyeni. My area is, as Irwin (1993:11) puts it, a "mixture of poverty and relative prosperity" like many other rural areas. On my errands during the mid '80's I have noticed that plants have since my childhood decreased around my home. I was surprised at the loss of plant species, because during my childhood days plants were widely used in our daily activities. I have always thought that that practice was ongoing. I have noticed the importance of plants growing naturally in my immediate environment as far back as my childhood days when we used to collect cow-dung and firewood from the veld and the forest. These plants have different uses. Some are edible, like *isiphingo* (*droog-mijkeel* bush), *amaqunube asendle* (wild berries), *ingwenye* (loquat fruit), *uralajane* (*urticana*) and *unomdlomboyi*. Some are used for medicines like *iphewula* (*cotyledon coruscans*), *umsobo* (deadly nightshade), *umhlonyane* (*Artemisia afra*.) and *idwarane* (*senecio latifolius*) and others for cosmetics, for example *ummemezi* (*cassipourea flanaganii*), *isibindi* (*Ganoderma* sp.), *ikhala* (cape aloe) and perfumes, for example *impepho* (*Hetichrysum odoratissimum*).

By comparing the plants that occur now and the plants that occurred during my childhood, the residents of my home area are doing nothing to protect the plants they themselves mostly benefit from. I think it is our responsibility to safeguard the plants, what Walters & Hamilton (1993: 6) call our "precious inheritance". We should not see "plants as a bundle of resources for our consumption" (WWF, undated) but as resources that we must value and protect for our lifestyles and for following generations. In traditional societies plants are treated with reverence and respect. For instance, in my area *umthathi* (sneezewood or *Ptaeroxylon obliquum*), *umnquma* (wild olive or *Olea europaeae subsp. Africana*) and *ubulawu* (*Dianthus thumbergii*) were not chopped down unless for ritual purposes.

The society we live in today has through modern technology exploited natural resources, including plants, in order to improve standards of living. This exploitation of plants is done irrespective of levels of social, political and scientific development of South Africa's population. Ignorance, the lack of responsibility, the drive to have many industries whose raw materials are plants, the need to clear the vegetation for settlement sites and cultivation, and the acquisition of food from plants have caused us to over exploit plants. The environmental crisis is not only situated within the biophysical world, but also in the social, economic, and political spheres (O'Donoghue 1993).

There are many reasons behind the loss of biodiversity, but this study will focus on socio-cultural factors that have led to the decrease of certain plant species around Tyeni.

4. RESEARCH AIMS.

The main aim of this research project is to explore socio-cultural factors that have contributed to the decrease of indigenous plants in general around my home area, the Tyeni village in the Tsolo district.

This aim will be addressed by investigating the following:

- 4.1 the knowledge and use of indigenous local plants by residents in Tyeni
- 4.2 whether the residents have noticed any changes in the occurrence of such plants and whether they have experienced any impact caused by possible decreases
- 4.3 reasons the residents may offer for possible decreases in plant species
- 4.4 whether the current residents attach any respect and value to various local indigenous plants.

A secondary aim of the study is to establish whether the plants of the Tsolo district and any possible changes in their occurrence, have been scientifically documented.

5. METHODOLOGY.

I will be working within an interpretive framework, to investigate and understand holistically the underlying factors that have led to the decrease of certain plant species around my home area and the value people attached to them. I will be using ethnography, because of its "descriptive character" and emphasis on the "understanding of events in context" (Hammersley 1995:22, 23) which is what I intend doing in this study. Ethnography literally means a study of the practice of the way of life of some identifiable group of people and the acquisition of cultural knowledge. This where my research paper will focus.

6. SELECTION OF PARTICIPANTS.

I will work with three generations of men and women, both educated and uneducated, currently residing in the Tyeni village. I will choose about twenty-four people to work with. I will choose the ones I think are most likely to be knowledgeable on the topic I am going to research. I am sure of getting a good response from them as they are my village people and I will stay with them with for two weeks.

7. DATA COLLECTION

To increase the merit and the credibility of this study (Cantrell 1993) I will use triangulation. I think both semi-structured interviews (Burroughs, 1975) with individuals and focus group discussions, will be useful in this study. My observations since I was a girl of ten years until now, will also help me to compare the knowledge I have with what I will hear from the participants. I will interview the participants at their homes and at their social gatherings if need arises. This will allow me to gather descriptive data in the subjects' own words and to access the unobservable - to "walk in the head" so to speak (Cantrell 1993:96). Guba and Lincoln (1981) describe interviewing as the backbone of naturalistic research. The interview questions will be mostly open-ended as these are appropriate when "the issue is complex, the relevant dimensions are unknown, or the interest of the researcher lies in the description of a phenomena, the exploration of a process, or the individual's formulation of an issue" (Guba & Lincoln, 1981: 177-78). I will keep a research diary during the two week stay in Tsolo. Data will be also be obtained from analysing documents about indigenous plant species in the geographical area (if available) and the literature on plant usage in traditional societies.

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