TEACHERS' AND STUDENTS' VIEWS ON SANITATION AND WATER SUPPLY AT NGWARITSANE HIGH SCHOOL IN BUSHBUCKRIDGE

by

JULIA SHIRLEY MOTSEPE

Mini-Dissertation

Submitted in partial fulfilment of the requirements for the degree

MAGISTER EDUCATIONIS

in

ENVIRONMENTAL EDUCATION

in the

FACULTY OF EDUCATION AND NURSING

at the

RAND AFRIKAANS UNIVERSITY

SUPERVISOR: PROF HG VAN ROOYEN

MAY 2001

DEDICATION

Dedicated to my mother, Kate and to my late father, Reuben who passed away on the 14th of June 1987

and

my children, Lerato and Nomfundo

ACKNOWLEDGEMENTS

My brothers, Hendry, Sonboy and Mmeli for giving me courage to complete this study.

My sisters, Lindy, Kedibone and Thokozani, together with my niece, Nomathemba and nephews Luckyboy and Senzo, for taking care of my daughters when I was away for studies.

My brother-in-law, Harold Segage, who gave me the courage when the going became unbearable, and who sacrificed his time to transport me to the research sites.

My uncle John and aunt Sellina Mkhabela for minimizing my accommodation costs.

All my friends and colleagues at Hlamalani School, for their support and encouragement, and special thanks to my principal, Mr W.H. Lekhuleni and Mrs M.J. Mathumba for their advice.

I also wish to thank Shadrack "Shakes" Mkhonto, Sarah Ndlovu and Lindiwe Mkabi for being so generous with their resources.

Mr. V.V. Mathumba, my typist who, despite his tight schedule, sacrificed his time and came to my rescue.

I would also like to thank the many other people, who in one way or the other helped me when the going got tough. It is impossible to list all the names but particular mention must be made of my friend, Miss Ivy Khomotso Nonyane. Without her support, encouragement and understanding this work would not have been possible.

Libraries of the following institutions: RAU and UNISA.

Most of all, I am grateful to God for His enabling grace to write this dissertation in the midst of a heavy schedule, including much travelling, teaching and loads of correspondence.

OPSOMMING

Die 1994 verkiesing het gelei tot die instelling van die eerste demokrasie in ons pragtige land, Suid-Afrika. In hulle verkiesingsmanifeste, het die meeste politieke partye klem geplaas op die skepping van 'n beter lewe vir die inwoners, waarvan gesondheid een komponent is. Die huidige regering probeer hierdie doelstelling van 'n beter lewe te bereik deur die voorsiening van gratis gesondheidsorg in die meeste van die regering se gesondheidsinstellings.

Na die verkiesing het die African National Congress (ANC) met die Heropbou- en Ontwikkelingsplan (HOP) na vore gekom. Een van die sleutelareas was om aan die inwoners se basiese behoeftes te voorsien waaronder werksgeleenthede, grond, behuising, vervoer, water, telekommunikasie, krag, 'n skoon en gesonde omgewing, voeding, gesondheidsorg en sosiale welsyn. Die ANC probeer sy uiterste bes om die ongeregtigheid van die verlede reg te stel ingevolge waarvan bestaande waterbronne oneweredig verdeel was. Die inwoners is hulle reg van toegang tot skoon water ontsê – "watersekuriteit vir almal".

Die HOP het voorsiening gemaak vir 'n proses waarvolgens alle betrokke partye betrek sou word om die Waterwet te wysig ten einde die reg van alle Suid-Afrikaners tot watersekuriteit te verseker. Die hoofdoelstellings van die HOP is die volgende:

- Om elke persoon van voldoende gesondheidsgeriewe te voorsien.

- Om 50 – 60 kubieke liter skoon water op die perseel te voorsien, sanitasie te verbeter en 'n toepaslike huishoudelike vullisverwyderingstelsel daar te stel.

- Om elke Suid-Afrikaner van toeganklike water en sanitasie te voorsien.

Daar word vertrou dat die bevindings van hierdie studie verder sal bydra om "omgewingsbewustheid" in die regte rigting te stuur. Die bevindings dui op 'n behoefte by alle inwoners vir sanitasie en basiese watervoorsiening want daarsonder is lewe nie moontlik nie. Voorsiening daarvan is 'n voorvereiste vir goeie gesondheid – en inderdaad die voortsetting van lewe op aarde.

LIST OF TABLES

LIST OF CONTENTS

CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

In this section, the context in which the study takes place will be discussed. The problem statement and motivation of the study, the aims and objectives, the research methodology, the clarification of the key concepts of the study and a general overview of chapters will be presented. The research question will also be posed.

1.2 CONTEXTUALISATION OF THE STUDY

The research report in this study is an attempt to ascertain what teachers' and students' views are on sanitation and water supply at Ngwaritsane High School, in Bushbuckridge. This is an exploratory study of Ngwaritsane High School teachers' and students' experience of inadequate sanitation facilities.

Pietersen (1996) reported that bad sanitation practices were costly and have resulted in many deaths. He maintained that South Africa has a record of human suffering and deaths caused by the unhygienic disposal of human excreta, and that diseases such as bilharzia, typhoid, cholera and dysentry have been caused by poor sanitation practices. There is a definite need to address the state of inadequate sanitation facilities in rural areas such as Bushbuckridge.

Against the background of this brief orientation, this study proposes to examine the context of poor sanitation and water supply, and to contribute to the debate on how to improve the health status of the teachers and the students alike.

1.3 PROBLEM STATEMENT AND MOTIVATION FOR THE STUDY

1.3.1 Background to the problem

South Africa normally is a dry country with an average annual rainfall of 483mm compared to a world average of 860mm. It has long periods of drought more frequently than heavy rain and floods (Rotating the cube, 1990:13-14 as quoted by Blake et al. 1997). Dreyer (1998:7) maintains that in this country where water is scarce, more than 12 million people do not have access to adequate supply of potable water, and nearly 21-million lack basic sanitation. The lack of basic services such as water supply and sanitation is a key symptom of poverty. In rural areas, this situation is more alarming.

The school under study is situated in Bushbuckridge, a rural area of the Northern Province. According to Dreyer (1998:13), the Northern Province is a dry province and not able to meet the need for water from its own resources. Basson, (1997) as quoted by Dreyer (1998) reported that the province is part of the Northern Water Region, which comprises all the rivers, which flow into the Limpopo River. The Limpopo drains the whole of the Northern Province as well as parts of Gauteng, Northwest and Mpumalanga. This area is mainly covered by typical bushveld vegetation and has a number of mountain ranges - the Waterberg, Soutpansberg, Transvaal, Drakensberg, Lebombo Mountains and the Magaliesberg. Dreyer (1998:13) further maintained that many villages in the old homelands received water from boreholes maintained by the previous administrations. There was just enough water to meet basic needs. The boreholes were driven by diesel pumps. The government has continued to provide diesel free to these communities. This causes problems for new village water schemes that require payment.

According to the preliminary results of the 1996 census, the Northern Province has 10,9% (4 128 000) of the population of South Africa. It comprises the old homelands of Lebowa, Gazankulu and Venda. In 1995 approximately 18% of South Africa's poor people lived in the Northern Province. When compared to the population figure for the

2

province, this means that 77% of the population of the province is poor when the poor are defined as those having an expenditure level of less than R301 per adult per month (World Bank, 1995).

According to Wits Rural Facilities (1995), they stated that the Bushbuckridge area, just like most rural areas, has a shortage of water. The Bushbuckridge area has a total population of approximately 750 000. The region is made up of bits and pieces from the old Gazankulu and Lebowa homelands. The area is poverty stricken, as it has no economic muscle. There are no big factories to generate employment. Health services are fragmented and poorly provided for. Water supply is poor, and there virtually is no reticulated water. The sanitation system is also poor, and is dominated by pit toilets.

The school under study viz. Ngwaritsane High School was established in 1976. It is a community school, which is under Thabakgolo Tribal Authority. The school took its name after a river known as Ngwaritsane, which is the tribal name of the Kgosi Barney Mashego of Thabakgolo Tribal Authority.

1.3.2 The research question

The study is aimed at addressing the following question formulated from the research problem:

What are the views of Ngwaritsane High School teachers and students on sanitation and water supply in Bushbuckridge?

1.3.3 Aims and objectives of the study

The main aim of the inquiry is to contribute to the debate on how to improve the health status of the Ngwaritsane High School teachers and the students.

- The study also aims at systematically documenting the needs resulting from a lack of sanitation and water supply programs.

- To construct a relevant conceptual framework from some literature on sanitation and water supply by which the construction of the research will be validated.

- To argue the findings from the investigation including the reliability and validity of both the process and the product of the inquiry.

- To conduct field investigation that will capture the needs for the mentioned programs from the views of the research sample.

1.4   THE RESEARCH DESIGN AND METHODS

The research design of this study is based on the main tenets of qualitative research (Le Compte & Preissle, 1993). This design is concerned with capturing data that presents contextual meaning. Le Compte and Preissle (1993:31-32) maintain that qualitative research is concerned with contextual meaning, thus such studies are "framed by descriptions of explanation of, or meanings given to, the phenomena by both the researcher and the participants, rather than by the definitions and interpretations of the researcher alone".

The epistemology of qualitative research is based on avoiding the description of only certain selected aspects of behaviour as the act of selection would be considered a contribution of the researcher.

1.4.1 Data collection methods

For the purpose of the study, two major data collection methods, namely observation and interviewing will be employed. This will be discussed more fully in chapter 3.

1.4.2 Selection of participants and sampling

According to Le Compte and Preissle (1994:10), selection refers to a more general process of focusing and choosing what to study, it involves defining what kinds of people and how many of them can be studied, as well as when, where and under which circumstances it will be studied. Le Compte & Preissle (1993:57) maintain that populations are chosen on the basis of their theoretical significance or their relevance to the theory that suites the research question.

The population to be interviewed will be from Ngwaritsane High School at Bushbuckridge. The sample group will consist of ninety-one people, that is, eleven teachers of both sexes (principal included) and eighty pupils of both sexes (fifty girls and thirty boys) from grade eight to twelve. The total number of teaching staff consists of twenty-nine (29) people. Of this number, 18 are female and twelve are male. For the purpose of this study, the researcher interviewed six (6) female teachers and five (5) male teachers (the principal included). These participants will be selected randomly (Le Compte & Preissle, 1993).

The rationale behind my interviewing more girls is not only because they are more than the boys, but also because they are actively involved in the cleaning and maintenance of cleanliness in the school. In reality, as the culture of this study, portrays boys even at home hardly get involved in doing any household chores.

1.4.3 Data analysis

Miles and Huberman (1994:10) define data analysis as consisting of three current flows of activity: data reduction, data display and conclusion drawing. Qualitative data analysis requires organisation of information and data reduction. The process of data analysis in this study will involve obtaining data from various sources, categorising the data and clustering in dendograms.

1.4.4 Reliability and validity

Schumacher and McMillan (1993:157) define validity as a degree to which systematic explanations of phenomena match the realities of the world. Validity refers to the truth or falsity of the propositions generated by research. It can be external as well as internal. Internal validity expresses the extent to which extraneous variables have been controlled or accounted for.

External validity refers to the generalizability of the results, the extent to which the results and conclusions can be generalized to other settings (Schumacher & McMillan, 1993:158). Reliability refers to the extent to which the study can be replicated. It assumes that the researcher will obtain the same results as those of prior studies (Le Compte & Preissle, 1993:332; Miles & Huberman, 1994:278).

1.5   CLARIFICATION OF CONCEPTS

The aim of clarifying concepts is to help the reader to understand their significance. In this chapter, key concepts, which are used in this study, will be clarified.

1.5.1 Sanitation

The word sanitation refers to the safe removal of human excrement in a way that protects health and the environment. To be safe and hygienic, a sanitation system must prevent people from touching waste, prevent flies from settling on the waste and remove bad odours. Sanitation therefore, involves using a toilet of any sort (Palmer Development Group 1994:2). This concept will be clarified further in chapter 2.

1.5.2 Water supply

The concept water supply refers to the provision of clean water in people's houses or close enough to their houses in order for people to have easy access. Generally water

is supplied by means of pipe systems however, it can also be supplied by trucks or drums (Palmer Development Group, 1994:2).

1.6   EXTENT OF THE STUDY

The main focus of the study will be the investigation of the experiences and views of Ngwaritsane High School teachers and students concerning the sanitation facilities at their school and how they cope with the inconsistent water supply. The research will be guided by broad questions about the teachers' and students' attitudes towards the presently available toilet facilities; such questions include:

(i)   their comfortability with the situation
(ii)   their knowledge of healthy sanitation practices

The findings of the study will be used to educate the community about good sanitation practices. It will also inform curriculum development that could lead to relevant health education for the society in general and rural schools in particular.

1.7   LIMITATION AND DELIMITATIONS

One limitation might be the reluctance of some interviewees to talk freely about this issue in public, taking it to be too personal, thus their comments might be very limited. The fact that the researcher's on-site inspection might not match information provided by interviewees is seen as another possible limitation. Similarly, students who are not used to such deplorable toilet conditions at their own homes, might be emotionally upset to the extent of distorting information.

The study is limited to one school in Bushbuckridge, which cannot be considered fully representative of the schools in the area. The study is further limited to one race group, and as such the findings would not be generalisable to communities other than those being served by the school subjected study.

1.8   PROGRAMME OF THE STUDY

The study consists of the following chapters:

Chapter 1	Orientation to the study. The study is contextualised and the research problem, purpose and research methodology are discussed.
Chapter 2	Sanitation and water supply. Literature sources will be reviewed which have addressed similar or related issues.
Chapter 3	Research Design and Methods. In this section the research and methods will be discussed. The findings will be processed, analysed and consolidated.
Chapter 4	Interpretation and Analysis. The consolidated findings will be interpreted.

1.9   CONCLUSION

This chapter served as an introduction to the study. The context, aim, methodology and research question were explained briefly. The chapter that follows deals with the conceptual and theoretical framework of the research.

CHAPTER TWO

SANITATION AND WATER SUPPLY

2.1   INTRODUCTION

In the previous chapter the research was conceptualized. The focus of this chapter is sanitation and water supply. This chapter offers views by various theorists who have conducted studies to investigate the effect of poor sanitation and water supply in various communities. The concept sanitation will be clarified further, together with the concept health, disease, education, community and health education.

2.2   DEFINING SANITATION

As mentioned in the previous chapter, sanitation means the removal of human excrement in a way that protects health and the environment against diseases and germs. The Oxford English Dictionary (1961:97) defines sanitation as the devising and application of means for the improvement of sanitary conditions. It also defines sanitary as pertaining to the conditions affecting health, especially with reference to cleanliness and precautions against infection and other deleterious influences, pertaining to or concerned with sanitation. Also occasionally of conditions or surroundings free from deleterious influences. According to the Oxford Advanced Learners Dictionary (1989:1120) sanitation is defined as systems that protect people's health especially those that dispose efficiently of sewage. When viewed in a broader context, sanitation is simply seen as the provision of properly designed toilets. However, it needs to be seen more broadly as part of the process of improving environmental health. In this context there are important related issues, notably:

- Providing easy access to a supply of clean water.
- Promoting good domestic hygiene practices, especially the washing of hands.
- Ensuring the proper use of the toilet by all members of the household (Palmer Development Group, 1995:3).

Pietersen, (1996) as quoted by Zebediela, (1998) maintains that sanitation is the maintenance of sanitary conditions. One component of this dissertation is to explore the hygienic practices of the available school facilities in conjunction with the user experiences. It also focuses on the teachers' and students' roles to maintain these facilities so that they become disease and germ free. In some instances, the concept "adequate sanitation" is being used. The Palmer Development Group (1994:4) define adequate sanitation as "easy access to a toilet" facility close to or in the house/institution, where the toilet has been designed and constructed to prevent contact with faces either directly or through vectors such as flies, and is regularly used by all members of the household /institution. Inadequate sanitation, therefore, predominantly comprised unimproved pit latrines, bucket systems and "none".

2.3 DISEASES RELATED TO POOR SANITATION

2.3.1 Defining disease

Bedworth (1978:135) maintains that disease can be thought of as a failure to attain health. It can result from genetic predisposition, ignorance about health matters, inappropriate individual, social or political responses, medical failures (lack of personnel or facilities, or misdirected efforts) and environmental forces that are detrimental to human welfare. Furthermore, as maintained by Bedworth (1978:135) disease can be organic, functional, or both. Adequate health information and its application at the right time is the primary preventive ingredient.

2.3.2 Diseases related to poor sanitation

Lack of access to safe sanitation (toilet) facilities (together with inadequate water supplies) is a significant cause of ill health in South Africa (Evans, 1994). Ranamane (1995:10) argues that unhygienic disposal of human excreta is often associated with the lack of adequate water supplies and other sanitation facilities, insufficient personal hygiene and with low economic status.

As all of these and other related components may have an effect on health, it is difficult to assess the role played by each in the transmission of communicable diseases. Studies have been reported showing the significance of water availability in the control of shigellosis and the mortality from diarrhea diseases among infants.

Not ignoring the value of a good quality water source, many health officials believe the availability of sufficient quantities of water within close reach may be even more important to improve the health status of the community concerned. The abundant use of water usually results in better personal and general domestic cleanliness.

Pearson and Idema (1998:1) maintain that disinfection is a very important step in the treatment of drinking water in order to prevent or reduce the risk of waterborne diseases. However, it has been reported that in many cases in the developing countries a high level of reliability of water supply schemes, particularly the treatment process, is the exception rather than the rule. This could be contributed to various factors, which include cost, operator training and knowledge and problems with the maintenance of the infrastructure.

Schalekamp, as quoted by Pearson and Idema (1998:1) claimed that various types of pathogenic micro-organisms, which include bacteria, fungi, protozoa and viruses may be present in raw water sources. These micro-organisms pose a potential risk to human health (Rao & Melnick, 1986, as quoted by Pearson and Idema, 1998:1).

Cholera, typhoid and gastroenteritis caused by these organisms are amongst the important water borne diseases. The importance of water in the transmission of diseases in humans is highlighted by the World Health Organization (WHO) who claim that 25% of all the world's hospital beds are occupied by people with diseases caused by polluted water or water-related diseases (WHO, 1976, as quoted by Pearson and Idema, 1998:1). It was further claimed that 50 000 people (33.3%) of those who die in the world daily, die of water related diseases.

2.4   SANITATION IN RURAL AREAS

2.4.1 Definition of rural

Palmer Development Group (1995:3) maintains that the National Demand Side Database model used a broad definition of "rura"l which defines all areas outside proclaimed towns (that is, without an urban local authority or municipality) as rural areas. This definition includes the census definitions of "semi-urban" (areas of an urban nature but which do not have any form of local government and "non-urban" (all areas that are not "urban" or semi-urban").

2.4.2 Provision of sanitation in rural areas

It is a widely held view that the Department of Health should not be involved in the actual provision of sanitation facilities (Wilson, 1994). At the same time, the Department of Health cannot relinquish responsibility for the health component of a national rural sanitation programme, although there is recognition that sanitation is an "under-explored area" within the Department. The Palmer Development Group (1995:13) maintains that it is probably fair to say that little detailed attention has been given by the Department of Health, to date, on health promotion and health education as it directly relates to a national water and sanitation programme. The white paper notes that policy and practice regarding sanitation is relatively under developed. It further recognises that because of the strong linkage between sanitation services and public health, the health sector must play a significant role in all aspects of sanitation policy creation, planning, implementation and monitoring (Palmer Development Group, 1995:11).

The Palmer Development Group (1995:15) maintains that the Departments of Health and Water Affairs are the bodies with primary responsibility for rural sanitation at a national level. In South Africa, the Department of Water Affairs has taken a lead in rural sanitation policy development and advocates that sanitation should be strongly linked to water supply programmes. Policy development and thinking is also more

12

advanced in this department, compared to the Department of Health. Furthermore, it appears that the Department of Health supports this initiative, provided that they are able to interact meaningfully in the policy and programme development.

Cairncross (1992:8), as quoted by Palmer Development Group (1995:32) stated that people needed to be convinced of the advantages of owning a toilet. Greater commitment by the user is needed for a latrine to be installed than for a water supply. In additional, commitment by the householder is required not only to build a latrine, but also to ensure its (proper) use by all members of the family. In the researcher's view, by proper use it means that each and every person should know that, after using the toilet, hands be washed. Toilet paper should always be available so that people who might need to use the toilet should not be frustrated. In some instances, when children do not find toilet paper in the toilet, they tend to smear the walls with dirt.

It therefore makes sense for the "institutional home" (and hence responsibility) for rural sanitation to be placed in the Department of Water Affairs, provided that mechanisms are created whereby the Department of Health (and Housing, if necessary) can make meaningful contributions and input into sanitation policy and programme development.

2.5   WATER SUPPLY IN RURAL AREAS

International experience suggests that sanitation and water supply should at least be dealt with under parallel initiatives. It should be noted that the high demand for improved water supplies amongst many rural communities also provides an important opportunity to promote public health and improved sanitation (Palmer Development Group, 1995:5).

Ranamane (1995:11) maintains that before April 1994, water provision to communities was the responsibility of the former TBVC states (Transkei, Bophuthatswana, Venda and Ciskei), the six self-governing territories, and the Republic of South Africa

(RSA). Ranamane (1995) further maintained that in the new, democratic South Africa, all the Water Departments have been amalgamated to establish the new, national Department of Water Affairs and Forestry. The Department came into existence on 1 July 1994 by proclamation of the President. Ranamane (1995) goes further and maintains that the former RSA Department of Water Affairs was responsible for the effective management of water resources for economic purposes. The new Department is now tasked, in addition to the former responsibility, with water supply and sanitation provision to communities.

Scowsas (1991), as quoted by Hazelton et al., (1994:15) argues that water supply in the rural areas of South Africa has traditionally been obtained from wells, springs and rivers. In most areas there are few data available on water supply coverage. It is estimated that nearly eight (8) million dwellers lack adequate water supply. The rural people are in most cases victims of diarrhea and bilharzia because they fetch water from wells, springs and rivers and they use this water for cooking, bathing and drinking while it is not purified.

Most of these people are poor and tend to rely on state intervention for improved water supply (Hazelton et al., 1994:15). Cairncross (1992:8) as quoted by the Palmer Development Group (1995:32) reported that user commitment to sanitation is less likely to be present than commitment to a water supply. The convenience and aesthetic advantages of a ready source of clean water are usually apparent to all, and the desire for them needs little stimulation. Not everyone is convinced, however, of the advantages of latrines. Considerable persuasion is therefore required in most successful programmes, whether it is called health education or salesmanship.

Dreyer (1998:8) maintains that water is a natural resource-considered by many to be a gift "from God", which as such should be free. Furthermore, as maintained by Dreyer (1998:8), however, a key principle of the Reconstruction and Development Programme (RDP), is that services should be provided and paid for in a manner which does not require ongoing government funds to keep them running. The financial cost

of water arises from the need to abstract it from a source, treat it and bring it to where it is required.

2.6 THE ROLE OF LOCAL GOVERNMENT IN SANITATION AND WATER SUPPLY IN RURAL AREAS

The water white paper policy provides that all communities in the country have the right to basic services and to the support they need to achieve them. Furthermore, as maintained by the White Paper, in the long term the supply of services should be the responsibility of democratic local government. In the medium term the government will support local level institutional development as well as provide assistance for the physical development of water supply services. The short-term goal is to maintain service delivery. The key to sustainable water development is the existence of functional, competent local government, although it is acknowledged this will not be likely for a long time to come.

Through all this, it is central government's intention in all its functions (not only water supply) to put the community first, to ensure the transfer of control to the local level and to make the community the client (Palmer Development Group, 1994:9-10).

Dreyer (1998:8) maintains that the basic service provision policy is to ensure that all South Africans have access to basic water supply within seven years. Basic water supply is defined as 25 litres per person per day. This is considered to be the minimum required for direct consumption, for the preparation of food and for personal hygiene. It is not considered to be adequate for a full, healthy and productive life.

According to the guidelines from the White Paper, as quoted by Palmer Development Group (1995:12) the responsibility for the implementation and management of sanitation services lies with the local authority. Second tier agencies and the Department will only take action where local government does not exist and such action will be aimed at ensuring that the local capacity to provide adequate services is established as soon as possible, enabling the speedy withdrawal of higher tier

15

authorities. Where local authorities do not exist, the Department will use Local Water Committees as the vehicle for sanitation development.

2.7 COMMUNITY INVOLVEMENT

A community can be referred to as a residential settlement of a group of human beings that is organised to accomplish a common purpose. Cohen (1973:12-15) defines community as symbolically constructed, as a system of values, norms and moral codes which provides a sense of identity with a bounded whole to its members. According to Sergiovanni (1994:4), not all groupings of individuals can be characterised as formal organisations. Communities are socially organised around relationships and the felt interdependencies that nurture them.

Sergiovanni (1994:47) further maintains that communities are defined by their centers of values, sentiments and beliefs that provide the needed conditions for creating a sense of "We" from "I".

The concept "community" refers to an aggregate of people who have formed a sense of solidarity or shared identity on the grounds of a common characteristic such as residence, frequent social interaction, shared beliefs or close ties. These ties may be based on kinship, occupation, the experience of living together etc. as long as they are sufficiently important to provide the members of the group with common interests and goals.

Boonzaier and Sharp (1998:29-39) as quoted by Dreyer (1998:4), further clarified the concept by stating that communities can best be understood as an "image of coherence", a cultural notion that people use in order to give a reality and form to their social actions and thought, although it is often romanticised. Communities are dynamic and in a constant state of flux, even when they are apparently most stable.

Friedman (1992:2) as quoted by Dreyer (1998:4), supports by arguing that the term "community" may ascribe a cohesion and richness of associational life that is, at best,

yet to emerge. Furthermore, Worsely (1987:238-272) as quoted by Dreyer (1998), maintained that even though community has become disassociated from locality, the ideology of communities remains strong. The desire to realise an idealised notion of community continues to inspire visions of a better life in future.

To achieve community we have to commit ourselves to the principle of "Love thy neighbour as thyself". In trying to answer the question of who should provide for water and sanitation services, it becomes evident that the community is among the most important organisations involved in planning and construction. According to the Palmer Development Group (1994:20), the word 'community' can mean many things.

From the point of view of providing services, there are two important groups in a community. The first is the people who live in the area where the services are being provided. The second is the community structure, which represents the people. The community structure can be an ad hoc committee, or a civic association. Sometimes a trust or a private company is set up by the community to look after local development. The most important thing about this structure is that it must represent people properly. In other words, the structure must be democratically elected and accountable to the people for the work it does. Community structures can also be developers.

When services have been installed, they need to be looked after and repaired if they break. The community and the local authority are mainly responsible for this maintenance work. People in the community are often the first to identify problems in their areas. They need a community structure to inform the local authority about problems and to make sure that the local authority responds.

2.8   INSTITUTIONAL SANITATION

The Palmer Development Group (1995:50) maintains that "institution" in a rural context includes schools, clinics, community centres and other public gathering places.

The circumstances at each of these institutions may vary greatly with respect to water availability, affordability, geographical and geotechnical situations, and extent of use.

2.8.1   School sanitation

Estimates of the distribution of sanitation systems used at rural schools were summarised and the number of schools without adequate sanitation were summarised as 3065 in the Northern Transvaal. The data shows that about 90% of both schools and learners do not have adequate sanitation facilities in South Africa. No systematic assessment of the state of existing facilities was attempted, however, anecdotal evidence suggests that, it is likely that many of the existing "adequate" facilities could be considered inadequate if a holistic definition of sanitation was used, assessing cleanliness, use and hygienic behaviour patterns (Palmer Development Group, 1995:7).

According to the Palmer Development Group (1995:11), it is maintained that the improvement of sanitation to schools needs to be a major component of a sanitation programme. Here the responsibility of the school itself for improving sanitation needs to be emphasised, with district sanitation teams providing support. It is recommended that subsidies be made available but that the schools should make a financial contribution. With the emphasis also on appropriate technology, construction can be carried out by local contractors but, due to greater complexity, more attention should be given to design and supervision than would be the case for household toilets.

The Palmer Development Group (1995:16) further maintained that improvement of sanitation at schools should follow a demand driven approach, requiring a firm commitment to sanitation improvement (and proper maintenance of facilities once built) from the schools as well as a significant cash contribution calculated on a per pupil basis. A suggested amount for this is R25 per learner, budgeted from the national and or provincial sanitation programmes. The cost differential of more expensive sanitation systems (if desired by the school) should be paid for by the schools themselves.

18

2.9 TOWARDS A CORE-PLUS CURRICULUM

According to Kairamo (1989:85), curriculum is that which is taught and learnt in schools and other educational institutions, and Minzey and Townsend (1984:15) argue that new educational programmes should satisfy the need to be "realistic", relevant and responsive to develop the community aim. This aim can be realised through the learning content, learning opportunities, teaching, learning activities and learning experiences (Collins, 1969:71).

Dekker and Lemmer (1993) refer to curriculum as being a planned and organised activity, which learners undertake in institutions, which include the subject matter they are exposed to, as well as teaching and assessment.

In the booklet "Curriculum 2005", curriculum is defined as everything planned by an educator, which will help develop the learner. This can be extra-mural sports activities, debates, and trips to a factory where paper is made or even a visit to a library. I therefore, define curriculum as all the learning and teaching activities planned for a child by an educator in order to reach an educational aim that develops a child to the point where he can perform activities successfully.

Kairamo (1989:184) regards the core-curriculum as leading to a minimum competence for everybody, to which options may be added to suit a learner's tastes and activities. Core-curriculum elements are present in the curriculum of specific learning matter.

A core-plus curriculum can be defined as a curriculum that incorporates the development of personal skills and involvement activities for a range of people at all levels of school operation. The core part of the core-plus curriculum incorporates the local community needs and uses the available resources of the community to address those needs. Sanitation education can thus become part of community education in which the local community is informed about the good sanitation practices including the maintenance of these facilities.

According to Palmer Development Group (1995:3), it is maintained that for a process of improving sanitation to be successful, it needs to be integrated with an education process, which provides people with information about both the "hard" issues of building toilets and the "soft" issues of health practice. This education process also needs to focus on the promotion of sanitation, in order to stimulate demand for improved sanitation. Health education and promotion can be mutually reinforcing each generating more awareness of health issues.

When the curriculum is being planned the physical resources, work programmes, assessment criteria and extra-mural programmes should all be taken into account. This can include the curriculum extending to learning opportunities outside school (Henning, 1997). Nielsen and Cummings (1997:31) state that the curriculum should be relevant to the community and its needs, values and aspirations. An appropriate curriculum for peripheral areas should adequately address local problems and needs, but maintains an opening towards the national and international communities and opportunities.

In 1997, the South African government, through its department of education, culture and sports, launched a new school plan-curriculum 2005. The new curriculum was adapted largely from educational systems in the former British colonies especially Australia, Canada, the United States of America and New Zealand. It marks a complete departure from the present curriculum, which is a content-based, examination led system. Curriculum 2005 is intended to be very practical, that is, develop skills of learners.

The new curriculum, namely Curriculum for 21st century which is Outcomes Based Education (OBE),is currently being implemented and reflects that the lifelong learning is ideal for all South Africans. According to Pastoll (1993), as quoted by Klu, (1997), in an OBE system, students are assigned grades on the basis of demonstrated achievement rather than the amount of material covered during a grading period. There are three types of authentic assessments-multiple validations, portfolios and

secured tasks – and evidence of achievement from all three must be used to determine grades.

The new curriculum has eight learning areas notably:

(1) Language, literature and communication (LLC)

(2) Human and social Sciences (HSS)

(3) Technology (Tech)

(4) Economic and management sciences (EMS)

(5) Mathematical literacy, Mathematics and Mathematical Sciences (MLMMS)

(6) Natural sciences (NS)

(7) Life Orientation (LO)

(8) Arts and culture (A&C)

Each learning area has a committee consisting of teachers, students, workers, specialists and education officials, and these committees are developing learning outcomes. From the eight (8) learning areas, Life Orientation (LO) focuses on health. Life Orientation is a learning area, which can solve the problem of sanitation and water supply to learners.

The purpose of the new curriculum is to break away from the past and give South African students "quality" education, which will keep them abreast with the rest of the world and make them competitive in the outside world. It will also help to bridge the huge gap, which existed between black and white educational systems in the apartheid era.

2.9.1 Health education

Dubos, as quoted by Bedworth (1978:135), maintains that health can be regarded as an expression of fitness to the environment, as a state of adaptedness. Bedworth defines health as the quality of a person's physical, psychological, and sociological functioning that enables him or her to deal adequately with self and others in a variety of situations. According to Bedworth (1978:5-6), education is a complex

21

process of experiences that influences a person's self-perception in relation to the social and physical environments. Bedworth (1978:6) goes further and maintains that health education incorporates both of these definitions in one educational discipline. Sinacore, as quoted by Bedworth (1978:45) defines health education in terms of the ways it contributes to the promotion and maintenance of health and the prevention of disease. Kilander, as quoted by Bedworth (1978:45) defines health education as the sum of all experiences that favourably influence knowledge, attitudes, and practices relating to individual and community health. Willgoose in Bedworth (1978:45) stated that health education is an applied science concerned with relating research findings in health to the lives of people. Grout, as quoted by Bedworth (1978) also supported by maintaining that health education is the translation of what is known about health into desirable individual and community behaviour patterns by means of the educational process.

One of the most basic and vital functions of government is the provision of health education opportunities for all people. Each individual must learn ways to maintain health and to avoid situations that are hazardous. Society cannot survive unless social and physical environments are improved and the health of people is preserved (Bedworth, 1978:17).

The Palmer Development Group (1995:26) argues that commitment of public resources towards improved rural sanitation is usually justified on the basis of improved community health, and the associated (but seldom quantified) economic benefits. The motivation of improved quality of life suggests that households themselves should have a direct interest in, and commitment towards, improved sanitation.

Health educators, school and community agency administrators at all levels, and policy making boards must recognise that it is essential for broad-based commitments to be made, directing attention towards the causative factors associated with these health problems and the means for preventing them. These factors include 1. Heredity 2. Adverse environmental forces 3. Individual emotional inadequacies 4.

Social impingements upon the individual's freedom to function adequately 5. The individual's development of health misconceptions and 6. The individual's misperception of self, others and the world in general (Bedworth, 1978:23).

Bedworth (1978:24) further maintains that today's health should be viewed as a pioneering effort that recognizes the scope of preventable health issues, the potential resources available, and the need to deal with the urgent health problems in the context of promotion and maintenance of health, prevention and treatment of disease, and rehabilitation of the disabled. Bedworth (1978:22) defines health maintenance as those measures one takes to ensure that an optimal level of health continues.

Bedworth (1978:25) goes further and maintain that health education must be thought of as one of the chief means of influencing human effectiveness. It is imperative that people be provided with opportunities to acquire the accurate health information necessary for making intelligent choices about the behaviour best suited for promoting health and preventing disease, disability and premature death.

Health education must take into account personal as well as environmental variables that affect the health of people. The health educator needs to recognise the similarities and differences of individuals and apply this knowledge to the educational process and adjust the learning environment accordingly (Bedworth, 1978:65).

Hygiene education programmes seek to provide people with information that they can use to change their behavioural patterns so that they improve their health. Hygiene education is thus not coercive, but motivational. It is not simply telling people what to do but rather explaining to them why they need to do it and how it will help them to better health (Mara, 1996:201). Bedworth (1978:5) maintains that people must learn to depend to a great extent upon themselves to maintain their health and to avoid hazardous situations.

2.9.2   Environmental education

Bellamy (1991:7) as quoted by Blake et al., (1997:3) maintains that the environment is all the things we need to be able to live - clean water to drink and to wash with, space to live and move in, fresh air to breathe and food to eat. We could not live without plants and animals. They help to make the soil, the clean water and the air, and they provide us with all our food.

The Bill of rights stipulates that every person shall have the right to an environment, which is not detrimental to his or her health and well being (Blake et al., 1997:8). Blake et al. (1997:64) further maintain that environmental education is intended to promote among citizens the awareness and understanding of the environment, our relationship to it, the concern and responsible action necessary to assure our survival and to improve our quality of life (Rotating the cube 1990:99 as quoted by Blake et al. (1997).

Markham (1988:38-39) as quoted by Blake et al. (1997:66) further maintained that throughout the world, increasing awareness of environmental problems has had positive effects. These include international, and national, legislation protecting endangered species or the protection of wetlands and restrictions on air pollution.

According to the guidelines from the White Paper regarding the environmental policy, it is maintained that sanitation systems must be environmentally sound. Both on-site sanitation and waterborne sanitation systems can create environmental problems. The impact of different sanitation options must be weighed against the impact of unimproved sanitation practices. The risk of ground water and surface water pollution must be assessed and options considered which include the costs of alternative water sources or water treatment versus alternative methods of sanitation provision (Palmer Development Group, 1994:13). Furthermore, as maintained by the Palmer Development Group, (1994:31) the environment should not therefore be regarded as a "user" of water in competition with other users, but as the base from which the resource is derived and without which no development is sustainable.

Bedworth (1978:21-22) maintains that the quality of the environment is extremely important, for it can encourage the expression of desirable traits, and in many instances, discourage the expression of undesirable traits. Further, the behaviour of the individual can have a direct bearing upon the degree to which the environment can or will affect positive growth or the expression or development of an unhealthy condition.

Blake et al. (1997:59) maintain that sustainable development is a way of interacting with the environment, which takes into account the way different species depend on one another. In other words, it is a way of working with nature rather than against it. It takes into account the fact that the survival of future generations must be safe guarded and the environment must be protected and improved, rather than destroyed.

Blake et al. (1997:61) go further and maintain that local and national governments have a part to play in maintaining a healthy environment. Governments have to create conditions of economic growth with particular focus on poverty alleviation, food security and sustainable agricultural systems.

Public awareness can make a difference in every community. Environmental education can focus on issues such as population growth, pollution, depletion of resources, conservation of resources and planning the human environment (Blake et al., 1997:64).

A second element association with the development of a model for health and health education is the concern for the numerous health hazards resulting from the environment, both natural and artificial. These include a wide variety of communicable and/or non-communicable diseases, many of which can be prevented, eliminated, or alleviated by (a) massive improvements in the environment, and (b) changes in the way individuals react to their environments. Some diseases, for example, are the result of infectious agents (natural environment), but many can be prevented through

immunity programs, improve sanitary measures, etc. and as emphasised earlier, some diseases are self-inflicted (artificial environment) by the individual's inappropriate behaviour.

Mosley and Weber (1993:41) as quoted by Blake et al. (1997:67) maintain that every person can make a difference in some small way. The real solution though, rests not so much with technology as with people. All people can do at least one simple thing to help the environment.

To sum up, Bedworth (1978:5) argues that unless health is preserved and the environmental factors that threaten it are reduced or eliminated, society will not survive, for the adaptability of people, as with other forms of life, has limitations and human extinction becomes a definite possibility.

2.10 CONCLUSION

This chapter focused on sanitation and water supply. The views of various theorists and different concepts such as sanitation, water supply, health, education, health education and community were also clarified. The chapter that follows will be focusing on the methods of investigating sanitation and water supply.

CHAPTER THREE

RESEARCH DESIGN AND METHOD

3.1 INTRODUCTION

The purpose of this section is to discuss the research design and the methodology used in collecting the data on the teacher's and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge

The discussion includes:

- The description of the setting on the inquiry
- The research design and methods
- Selection and sampling
- Reliability and validity in research
- Data collection methods
- Data analysis
- Final configuration

3.2 SETTING OF THE INQUIRY

The investigation took place at Bushbuckridge rural area situated in one of the districts in the Northern Province. For this study, one school was selected, namely Ngwaritsane High School, as the setting for the research.

The school under study is situated at Bushbuckridge in the Eastern Transvaal, about 2km away from Bushbuckridge Shopping complex along the left hand side of the national road to Hazyview on the hill of Maviljan Trust.

Due to shortage of secondary schools in this area (Lekete High School was the only secondary school in the area up to 1976 and was 25km away), the community then

27

decided to build their own secondary school, Ngwaritsane, which was surrounded by approximately 10 primary schools around the areas of Shatale, Dwarsloop, Maviljan and Marite.

Bushbuckridge area has a shortage of water. Most schools use pit toilets. Furthermore, other schools use the bush as there are no toilet facilities at all. Toilet facilities and clean water are needed to have proper sanitation. Due to the lack of sanitation facilities, teachers and students of Ngwaritsane High School are exposed to dangerous diseases such as cholera, bilharzia and diarrhea.

3.3   THE RESEARCH DESIGN AND METHOD

Research design refers to the plan and structure of the investigation used to obtain evidence to answer research questions (Schumacher & McMillan, 1993:31). According to Merriam (1991:18), as quoted by Nonyane (1996) the design refers to the decision about how a research study is to be conducted and can be classified according to the "logical arrangement that bear upon our ability to draw casual inferences from our research findings".

The research design of this study consists of qualitative research methods. It is also a naturalistic inquiry because it takes place in a real-life environment. It is concerned with primary interactive research (Schumacher & McMillan, 1993:371). The interactive field research is primarily concerned with the participants in their natural setting.

The participants expressing their views and experiences in their own words and in their natural settings contribute to the contextual validity of an inquiry (Marshall & Rossman, 1989:97). Data will mostly be recorded in words (Miles & Huberman, 1994). For the purpose of this study the design was characterised by its description, contextual and exploratory nature. The characteristics of the design related to this are as follows:

- Process rather than outcomes or product.

- The process in this study was to observe and interview both teachers and students at Ngwaritsane High School.

- Description – gain an understanding through the analysis of words (Miles and Huberman, 1994:20), which can be organised to contrast, compare and analyse patterns of behaviour. The data of the research were documented in descriptive qualitative language.

- The researcher is the primary instrument for collecting data and analysis. The researcher observed, recorded and analysed data in this research.

- Fieldwork – the researcher physically went to the school, in the setting to observe, interview and record behaviour in its natural setting (Miles and Huberman, 1994:6) and interacted with those being researched. The researcher was present for the study on a daily basis over a period of a month.

3.4 SAMPLING

Qualitative researchers usually work with small samples of people, situated in their context and studied in-depth (Miles and Huberman, 1994:27). A non-probable method of sampling, namely purposive or purposeful sampling, is used in this study. Purposive sampling is based on the assumption that "one wants to discover, understand, gain insight, therefore one needs to select a sample from which one can learn the most" (Merriam, 1991:48).

Purposive sampling is akin to what Le Compte and Preissle (1993:69) call "Criterion-based selection", although they note that selection refers to a more general process of focusing and choosing what to study, while sampling is a more restricted and specialised form. Criterion-based selection requires that one establishes the criteria, bases or standards necessary for units to be included in the investigation; one then searches for examples that match the specified array of characteristics.

For the purpose of this study, teachers' and students' views on sanitation and water supply at Ngwaritsane High School in Bushbuckridge, a rural area of the Northern Province have been selected.

The researcher is a resident of Bushbuckridge and has been since birth (1964), and is aware of the poverty, fragmented health services, no reticulated water and poor sanitation systems. These factors together with the researcher's own experience with regard to lack of sanitation and water supply, have initiated the choice of study in this area.

Ngwaritsane High School will be selected for the actual research. In this school, teachers and students will be targeted, because they are there seven hours a day and as such they are the victims. Respondents from Ngwaritsane High School will be sampled by the researcher. The following will be participants: 11 teachers (the principal included) and 80 learners of both sexes (50 girls and 30 boys) from grade eight to twelve, and they will be selected randomly (Le Compte, 1993).

3.5 RELIABILITY AND VALIDITY

3.5.1 Introduction

The main purpose for research is to search for the believability or credibility of the practice or theory in that particular field of study so that the study is believed and trusted (Nonyane, 1996:74). According to Merriam (1994:164), all research is concerned with producing valid and reliable knowledge in an ethical manner (Le Compte & Preissle, 1993:315; Merriam, 1991:164).

3.5.2 Reliability and validity

Reliability and validity are inextricably linked when research is conducted. Guba and Lincoln, as quoted by Merriam (1991:171), maintain that since it is impossible to have

30

internal validity without reliability, a demonstration of internal validity amounts to a simultaneous demonstration of reliability.

3.5.3 Reliability

Reliability refers to the extent to which one's findings can be replicated. This implies that if another investigator uses the same procedures, measurements, conditions and variables, the "same" results should be obtained (Merriam, 1991:170 and Weirsma 1980:239). Merriam maintains that "the term reliability in the traditional sense seems to be something of a misfit when applied to qualitative research".

3.5.4   Validity

Validity will be discussed with reference to its two kinds, which are external and internal validity.

3.5.4.1   External validity

External validity is concerned with the extent to which the finding of one study can be applied to another situation including generalizability of the results (Wiersma, 1980:239). In order to enhance the possibility of qualitative research findings being generalized, the researcher has to provide a detailed description of the study's context (Merriam, 1991:177). The researchers can improve the generalizability of their finding by providing a rich, thick description "so that anyone else interested in transferability has a base of information appropriate to the judgment" (Lincoln & Guba, 1985, as quoted by Merriam, 1991).

3.5.4.2   Internal validity

Internal validity refers to the extent to which scientific observations and measurement are authentic representations of some reality. Apart from dealing with the question of how one's findings match reality, it involves drawing conclusions with confidence

(Borg & Gall, 1989:405; Merriam, 1991:166, Le Compte, Millroy & Preissle, 1992:647). Lincoln and Guba (in Krefting, 1991:215) as quoted by Nonyane (1996), refer to this as "truth value". According to them, truth value asks whether the researcher has established confidence in the truth of the findings for the subjects or informants, and the contexts in which the study was undertaken. In qualitative research, truth value is obtained from the discovery of human experiences as they are lived and perceived by informants.

For the purpose of this study, the researcher will discuss the collected data and results with a colleague who has experience in qualitative research. This section focused on the concepts of reliability and validity in qualitative research. The section that follows will focus on data – collection method.

3.6 DATA COLLECTION

The paradigm and the format of the study determine the nature of the data collection methods and how this is implemented. Qualitative data collection is eclectic in nature, and therefore utilises rich and diverse data to answer questions about the complexity and variability of human life (Le Compte & Preissle, 1993:158). Merriam (1991:67/8) quotes Patton (1980), who describes qualitative data as consisting of "detailed descriptions of situations, events, people, interactions, and observed behaviours, direct quotations from people about their experiences, attitudes, beliefs and thoughts; and excerpts or entire passages from documents, correspondences, records and case histories"

According to Cohen and Manion (1994:38), by methods are meant " the range of approaches used in educational research to gather data which are to be used as a form for inference and interpretation, for explanation and production".

For the purpose of this study data were collected through observations and interviews, and field-notes. The different methods of data collection used will be discussed.

3.6.1 Research instrument

Instrumentation refers to the specific methods used for collecting data. In this study field-notes were recorded noting observations of participants' behaviours. According to Patton (1987), data also include the silence during the interview session by participants, and what was said during the breaks and after the sessions.

3.6.2 Observation

Bailey (1989:2) indicates that the observational method is the primary technique for data collection on non-verbal behaviour. As main method of reality, it is also the main method of capturing human interaction both in language and otherwise.

According to Bell (1993) observation is thus the transfer of the whole person into an imaginative and emotional experience in which the field worker learned to live in and understand the "new" world. The technique is however, not without its critics as Cohen and Manion (1989:129) observe:

> The accounts that typically emerge from participant observation are often described as subjective, biased, impressionistic, idiosyncratic and lacking in the precise quantifiable measures that are the hallmark of survey, research and experimentation.

According to Marshall (1985:79), observation entails the "systematic noting and recording of events, behaviours and artefacts (objects) in the social setting chosen for a study". Observation as a research method also refers to a more specific method of collecting information that is very different from interviews or questionnaires. The observational method relies on the researcher seeing and hearing things and recording these observations rather than relying on a subjects' self-reported responses.

33

The researcher "makes no special effort to have a particular role, but is allowed as an unobtrusive observer" (Marshall, 1995:79). This means that the researcher must not participate but simply record information without interpretation of the behaviour being seen and heard. Behaviour can thus be recorded as it occurs naturally. Observation is preferred when one wants to study in detail, the behaviours that occur in a particular setting or institution. The activities and conversations will be written down for later analysis.

3.6.2.1   Researcher's report on school observation

Access to the school was gained personally. A letter was written requesting permission to use the school, but no response was received. In the letter it was stated that the researcher will be observing as from the 10th August up to the 14th. The researcher did not wait for a response from the school, and merely arrived on the dates indicated in the letter.

The researcher introduced herself as a student from the Rand Afrikaans University (RAU) doing research in the field of Environmental Education. The research proposal was presented in writing to the principal of the school. The principal apologized for failing to respond to the letter, stating that he was overloaded with work because the students were busy writing monthly tests. He (the principal) told the researcher that they (the management and staff) decided on introducing monthly tests with the aim of helping the learners to improve their work and also to catch up with the syllabi. The principal assigned teachers whom the researcher had to contact directly for further arrangements.

Statistical data with reference to the number of students attending the school was also collected during this visit. The visit also included a inspection of the toilet facilities. As mentioned earlier, the learners were busy writing tests and it was difficult to gain access to the students initially.

The researcher observed the entire school including a physical inspection of the toilets. The researcher's comments are limited to sanitation and water related issues as this is the concern of this study. The school has two types of toilets namely, pit and water closet toilets. The pit toilets are not well cared for, it smelt badly and are plagued by flies. The two flush toilets are meant for teachers, one for the males and the other for females. The water closet toilets are also not up to the standard, due to lack of water.

The school has seven hundred and sixty three learners (763), twenty-nine (29) teachers, two (2) heads of department and a principal. There are sixteen (16) pit toilets, eight (8) for male students and eight (8) for females. Out of the 763 learners, three hundred and twenty five (325) are male. When the number of male students is divided by 8 seats, forty one (41) learners are sharing a toilet. There are four hundred and thirty eight (438) female learners, and when the number is divided by eight, fifty five (55) female learners are sharing a toilet.

Concerning the flush or water closet toilets which are used by the teachers, the principal told the researcher that the school shares the water with the community. This implies that if the school has water in the morning, it will only be for some hours and after that the water which comes to the school will be closed or stopped and it will be transferred to the community. By the time the water is closed, the teachers stop using the flush toilets and use the pit toilets.

The insufficient water supply further intensifies the problem. Water is vital to health and lives, therefore, there should be enough water for everyone.

During the observation, it became clear that both teachers and students found the situation uncomfortable. The school interval (break) lasts for forty-five (45) minutes, resulting in most of the students going to the bush. When it rains, all the dirt flows into the rivers and streams. The very same water is being used for bathing, cooking, washing and drinking. This is why there are lots of illnesses such as cholera, diarrhea, and bilharzia in black rural areas.

3.6.2.2 Field notes

In this type of research, the researcher made field notes which Le Compte and Preissle (1993:224) describe as "written accounts made on the spot or as soon as possible after their occurrence, that represent the interaction and activities of the researcher and the people studied". For field-notes to be of value to the researcher, Merriam (1991:98) suggests that they include the following amongst others:

- Verbal descriptions of the settings, the people and the activities;
- Direct quotations, or at least the substance of what people said;
- Observer's comments –written in the margins or in the running narrative. Observer's comments can include the researcher's questions, feelings, initial interpretations, reactions, hunches and working hypotheses.

In this study field-notes were made during contact with the participants and related to that which was observed. Thus, the field-notes are a supportive source of data, and as such were not analysed in detail, but they were useful for later data interpretation.

3.7 INTERVIEW

The third main method of data gathering employed for this inquiry is the interview. Marshall and Rossman (1989:82) describe interview as "a conversation with a purpose". In qualitative research, interviewing is considered a major source of data for understanding a phenomenon under study (Merriam, 1991:86). Thus combined with observation, interviews allow the researcher to check description against fact (Marshall & Rossman, 1989). Furthermore, Kvale (1983:174) suggest that the purpose of the qualitative research interview is to gather descriptions of the life-word of the interviewee with respect to interpretation of the meaning of the described phenomenon. Against this background, the main aim of using interview in this inquiry is to attempt to describe and understand the central themes the interviewees

36

experience and live towards issues of sanitation and water supply at Ngwaritsane High School in the Bushbuckridge area of the Northern Province.

In Chapter One it was stated that the three types of interviews would be explained in this section. An interview is a purposeful conversation usually between two people, but sometimes involving more that is directed by one to get information from the other.

Schumacher and McMillan (1993:426) distinguished three forms of interviews, namely:

- informal conversation (unstructured) interview: the questions emerge from the immediate context and are asked in the natural cause of events. There is no predetermination of question, topic or phrasing.
- Interview guide approach (semi-structured interview): Topics are selected in advance but the researcher decides the sequence of wording of questions during the interview.
- Standardised open – ended interview. (highly structured interview): Participants are asked the same question in the same order, thus reducing interview effects and bias.

3.7.1 Interview data

Interview data were collected from questionnaire interviews with two groups of people namely: the teachers (the principal included) and the students.

The two groups will be represented in the table:

TABLE 3.1: DETAILS OF PARTICIPANTS

PARTICIPANTS	Male	Female	TOTAL
TEACHERS (PRINCIPAL INCLUDED)	5	6	11
STUDENTS	30	50	80

The following need to be noted regarding this table:

1. TEACHERS: Both the male and the female teachers were represented.
2. STUDENTS: Each grade was represented by a male and a female student.

3.7.2   Examples of interview data and analysis

This interview took place on the 30th of April 2001 up until the 31st of May 2001 at the high school where the observation and field notes were recorded (see 3.6.2). The researcher interviewed eleven teachers (principal included). Here I present analysed extracts from one of the interviews that were transcribed.

A)   The researcher started by interviewing the teachers including the one responsible for the cleanliness of the school.

I=   Do you think that the endemic disease such as cholera is caused by unhygienic toilets?

T_1=   (Responds). Of course. Most people are using pit toilets and the bush. There are no tap water pipes where we should clean our hands after using the toilets. The same hands are to be used in buying from the hawkers.

I=   How can the school manager and staff provide a healthy panorama of the surrounding of this institution?

T10= I think that if we can grow trees, lawns, and the learners cleaning the classrooms, and that the school yard be kept clean at all times and there should be a fence, to protect everyone that will help the situation to improve.

B) The researcher's interview with students took place over a period of three weeks because the researcher was interviewing five students daily for one hour. The interview session lasted for ten (10) minutes per student.

The students gave their opinions regarding sanitation and water supply. The following were realised:

I= Do the Department of Health and Welfare provide health awareness in this school?

B_5= No

I= who usually keep the school surroundings clean?

G_{10}= We, the learners, are the ones cleaning the surroundings.

I= Do both educators and students smoke on the premises?

B_{15}= The teachers sometimes smoke, especially during free periods.

I= Do hawkers (women selllers) in the school receive health education lessons?

G_{50}= No. the hawkers do not receive any health education lessons.

C) I went to the principal's office on the 16th of August 2000. So I made contact with him personally and he was very willing to meet with me. He, however, demanded that I send him a copy of my proposal so that he can have a

background knowledge of what my study is about. I obliged and gave him a copy. He was thus prepared for me when we eventually met. The meeting took place in the afternoon.

Our discussion was mainly conversational in nature but I indicated some to the salient points raised here:

I= What in your opinion, do you think may be done to reduce the health risk between hawkers and the school?

P= (Principal). I think that if the government could provide stalls and they should have enough ventilation and be free from dust.

I= Have you ever raised the issue of sanitation with the educational authorities?

P= Yes. Various letters were written to the educational authorities, but no response showed up.

3.7.3 Questionnaire

According to Fox (in Mahlangu, 1987:79), this is technique whereby the researcher puts his questions on paper and submits them to the respondents, asking them in turn, to write their answers on paper. In the questionnaire, the completion of the form is done without any direct outside influence. The questionnaire is efficient and practical and his widely employed in educational research.

Tuckman in Mahlangu (1987:79) affirms that questionnaires are used by researchers to convert the information directly given by people into quantifiable data. By providing access to what is "inside somebody's mind", this approach makes it possible to "measure" what this person knows, likes and dislikes and what he thinks. Mahlangu mentions two types of questionnaires, which are closed or structured questionnaires and the open or unstructured questionnaires.

(a) Open questionnaire

Open questionnaires do not suggest answers. They call for the respondent's free response in his own words. No clues are provided and provision is made for a greater depth of response. The respondent reveals his frame of reference and the reason for his response. This type of questionnaire is difficult to interpret, tabulate and summarize.

In responding to open questionnaires, participants may omit certain points or emphasize things that are of no interest to the researcher and of no importance to the researcher. For this reason, researchers prefer the structured questionnaire (Mahlangu, 1987:79–80). However, the open questionnaire is the most viable of the two when verbal qualitative data are sought.

(b) Closed questionnaire

Closed questionnaires call for short, check responses. They provide for a "yes" or "no", a short response for checking an item from a list of suggested responses (Mahlangu, 1987:80). In this type of questionnaire, provision must be made for responses, which cannot be anticipated. Providing an "other" category permits the respondent to indicate what the most important reason might be, one that the compiler of the questionnaire may not have anticipated. The closed form questionnaire is easy to fill, takes little time, keeps the respondent focused on the subject, is relatively objective and is easy to tabulate and analyze. It also minimizes the risk of misinterpretation. However, it only reveals data that are implied in the items and thereby limits the scope of the inquiry.

A questionnaire was used as a method of data collection for this study. The 80 students (participants) as well as the 11 teachers (principal included) were responding to a questionnaire. Just a few examples of the questionnaire questions and responses

will be provided. A complete questionnaire and responses can be found in Addendum "D".

Q .... Question
R .... Response

PARTICIPANT 1 (Sample of questionnaire to teachers and students)

Q= How comfortable are you with the school facilities?

R= I am not comfortable with the facilities because the toilets are smelly. I also don't prefer using them, instead I prefer using the bush, as they are not properly cleaned.

Q= During shortage of water, how do you cope with the situation?

R= I feel as if I am in a desert place. I stay thirsty for whole day and can you imagine, in summer when it is hot it is so difficult to survive.

Q= Do you usually get irritated and nauseated when using these facilities?

R= I get irritated because I cannot use the toilet facilities as I wished to.

Q= How do you think the toilet facilities of your school can be improved?

R= I think if the government could take the responsibility of installing more water at school, that can alleviate the problem of the smelly toilets and they can be properly cleaned.

After analysing the questionnaire, the researcher realised that there were many unanswered questions. For instance:

Do the Department of Health and Welfare provide health awareness in this school?

Have you ever raised the issue of sanitation with the educational authorities?

Against this background, follow-up interview was conducted to address the outstanding issues and also to seek clarification on some of the answers given in the questionnaire.

3.7.3.1 Sample of interview questions (see Addendum E)

1. Who according to your opinion may address the link between diseases such as cholera and unhygienic toilets?
2. How can the school manager and staff provide a healthy panorama of the surrounding of this institution?
3. Do hawkers in the school receive health education lessons?
4. What, in your opinion, do you think may be done to reduce the health risk between hawkers and the school?
5. How does the school relate to the environmental staff?
6. Have you ever raised the issue of sanitation with the educational authorities?

3.7.3.2 Responses from the interview sample

1. The guidance teacher, community and health professional staff can be in partnership in order to solve health problems.
2. By growing trees, lawns, cleaning of the classrooms, school grounds to be well cared and the yard to be fenced for the safety of all.
3. The hawkers never receive any health education lessons.
4. If the government could provide stall for the hawkers, health monitors should be available in order to inspect the food. Dieticians should be invited to orientate the hawkers.
5. The school and the environmental staff do not relate.
6. Yes. Various letters were written to the educational authorities, but no response showed up.

3.7.3.3 The researcher's comments on interview

The researcher comments that the school should liaise with the Department of Water Affairs and Forestry, for the provision of water while the Department of Health and Welfare provides health awareness and resources that may reduce this health risk.

The community should organise the clean-up campaigns and also the provision of dustbins. Learners will be motivated to do recycling programs. Those who work hard will be rewarded.

As the teachers and students are sometimes smoking, then health education awareness should be provided in conjunction with Tobacco Act no 12 of 1999.

The hawkers should apply at school. The school management and health staff should educate the successful applicants about how to cater for both the educators and students in a hygienic manner. The inspectors should at regular basis inspect the food.

There should be interrelationship between the school and the environmental staff through visitations, where possible the environmental staff should provide school with resources and they should timeously make follow-ups.

Below, I present samples of answers to the interviews. I have used the following codes:

B   (A male student)
G   (A female student)
T   (Teacher)
P   (Principal)
B_1 (Refers to boy number one)
G_{10} (Refers to girl number ten)
T_4 (Refers to teacher number four)

3.7.4   Organising the data

3.7.4.1   The process of data analysis

Three data analysis sequences were used namely, coding, data processing and consolidation.

3.7.4.2   Coding

According to Miles and Huberman (1994:56), coding is already analysis. To "review a set of field notes transcribed or synthesized, and to dissect them meaningfully, while keeping the relations between the parts intact, is the stuff of analysis. This part of analysis involves how you differentiate and combine the data you have retrieved and the reflections you make about this information".

The following are some of the examples of codes from questionnaires. This is an indication of how codes were assigned to raw data.

Teachers' codes

M.P.T. (Many pit toilets), M.T.C. (I manage to cope), OCC. (Occasionally), N.C. (not comfortable), OF CL.P.T. (The often cleaning of pit toilets), AD.S.W. (Adequate supply of water), P.T. (pit toilets), I.WC.T.FAC. (improve water closet toilets facilities), I.E.C. (I easily cope), PERS.T.C (Perseverance helps us to cope), N.A.A. (Not at all).

Students' codes

HW.CT.S. (Having water closet toilets at school), F.C. (Fairly comfortable), FE.IN.D.P (Feels as if in a desert place), CL.LEC. (Classroom lecture), D.G.T. (Don't get irritated), WC.P.T. (Water closet and pit toilets), CW.F.H. (Carry water from home), TH.W.S. (To have more water at school), V.I. (Very irritated), GH.L.B. (Go home at lunch break).

Commonalities in codes

M.P.T:	Many pit toilets
M.T.C:	I manage to cope
OCC:	Occasionally
NC:	Not comfortable
TV:	Television (see Addendum E)
RD:	Radio (see Addendum E)
HW.CT.S:	Having water closet toilets at school
F.C:	Fairly comfortable
N.A.A.:	Not at all
D.G.I:	Don't get irritated
CL.T OF:	Cleaning the toilets very often
WC.P.T:	Water closet and pit toilets

For a full glossary of the codes see addendum G.

3.8   DATA PROCESSING

This is described as the "process of bringing order, structure and meaning to the mass of collected data" (Marshall & Rossman, 1989:112). It usually involves a continual process of looking for meaning by sorting reiteratively through the data (Johnson, 1992:90). Qualitative data analysis "...is a search for general statements about relationships among categories of data" (Marshall & Rossman, 1989:112) and according to Johnson (1992:90) should comply with the following criteria:

- Important issues, variables or themes should be identified.
- Discovery ought to be made about how these varieties, issues, or theme patterns interrelate in the bounded system.
- Explanations need to be given about how these interrelationships influence the phenomena under study.

- Fresh new insights need to be advanced.

In this study, the approach to data analysis which will be followed is based on the suggestions of Miles and Huberman (1994). They define qualitative data analysis as a process consisting of three phases: data reduction, data display, and a conclusion drawing or verification and are interwoven before, during and after data collection in parallel form. In this view, qualitative data analysis is "...a continuous interactive enterprise" (Miles & Huberman, 1994:12) of selecting, focusing, simplifying, abstracting and integrating the data and data collection and analysis is a simultaneous activity in qualitative research (Merriam, 1991:119). Data analysis occurs even before the data are actually collected, as the researcher decides which conceptual framework, which cases, which research questions, and which data collection methods to use.

3.9 DATA CONSOLIDATION

The large amount of data from the various collection techniques needs to be consolidated. The categories identified during data analysis were finally clustered in order to condense the categories and to reveal the underlying final products patterns contained in the data. These final categories are representative of the general findings of the inquiry (see Chapter 4).

3.10 CONCLUSION

The main tenets of the research in which this inquiry was conducted, were discussed in this chapter, illuminating the format of the study, methods of data collection and data processing. Understanding the various components of research and their interrelated nature is vital to the conducting of valid research. Integrated within this theoretical framework, this chapter has aimed to explicate the systematic process the data followed, from its initial collection, through its analysis, to the consolidation of the final empirical findings. The findings made will be discussed in the final chapter.

CHAPTER FOUR

FINDINGS, RECOMMENDATIONS AND CONCLUSION

4.1 INTRODUCTION

In this study attempts were made to answer the research question posed in the first chapter. This chapter aims to present the findings of the research. The consolidated data are interpreted against the background of the existing theoretical framework, as well as against new literature, which has been consulted and is referred to as a result of the findings. This is preceded by a discussion of the conclusions drawn from the findings. Recommendations will be suggested in this chapter of the mini-dissertation.

4.2 INTERPRETATION OF THE FINDINGS

McKerman (1991:226) maintains that when one moves beyond descriptions and tries to make some statements about what various responses means, and when one tries to suggest relationships among data, one is conducting an interpretation of data. In chapter one the research question of this study was formulated as follows: What are the views of Ngwaritsane High School teachers' and students' on sanitation and water supply in Bushbuckridge?

In the findings the researcher discovered that the school does get water daily but only for a few hours. The school and the community share the water. If the school uses water in the morning, the community is without water and vice versa. In the researcher's opinion, the lack of water contributes a lot to the uncleanliness of the school facilities.

It was also discovered that most of the students prefer to use the bush, because their toilets are not up to standard. They explained by saying that the bush was preferred to the toilets, as they could not stand the toilets any longer. They also stated that

48

returning from the toilet should be delayed because their school uniform would have a smelly odour. When they walk back slowly, the problem is less severe.

4.3 CONSOLIDATION OF THE DATA: INTERPRETATION OF RESPONSES

4.3.1 Question 1

The first question was: *What type of toilet facilities was available at their homes?* 73 of the interviewees responded by saying: pit toilets. 12 of the interviewees are using the water closet toilets and the other six interviewees are using the bush. In this question the researcher realised that all the interviewees wished for water closet toilets in their school. A need for health education and hygiene was however evident.

The students should be educated on the usage, handling and the maintenance of these toilets, because water closet toilets are different from the pit toilets they have at their homes. The orientation lessons will have to be organised in order for students to become acquainted with the water closet toilets.

4.3.2 Question 2

The researcher also wanted to know *how often their toilets were being cleaned.* The researcher realised that the students had two different responses: "often" and "occasionally".

The researcher wanted clarification especially from those who said occasionally. They explained that the cleaning of the toilets was determined by the availability of the water. They further stated that in most cases the extra-mural activities were scheduled for afternoons, and this made the cleaning impossible because by that time the water has been stopped and the school does not have buckets in which the learners can store water.

4.3.3 Question 3

The students were further asked *if they were comfortable with the school facilities or not?* Some students responded by mentioning that they were not comfortable, whereas the other group stated that they were fairly comfortable.

The researcher wanted to know how they coped during shortage of water. Some students responded that they felt as if they were in a desert place, other said that they bring water from home, others stated that they stay thirsty until after school, and the last group mentioned that they usually went home during lunch break in order to drink water.

The researcher further inquired about how their school facilities could be improved. Most students felt that all the school facilities (toilets) could be water closets and the other group mentioned that they needed more water at school. (For quantification see Addendum F.)

4.4   CATEGORISING THE RESPONSES

4.4.1 Frustration

The first category, which was evident from the analysis, is that the teachers and students are frustrated in using the school toilets, and this is supported by the responses they gave in the questionnaire stating that they got irritated and nauseated when they used the facilities at their school.

Another contributing factor which forces the students to use the toilets, is that they are being punished if they went out of the school yard during school hours.

Most of the students prefer using the bush as compared to the dirty toilets.

Question 7 in interviews:

During shortage of water, how do you cope with the situation?

Responses:

"I feel as if I am in a desert place. I stay thirsty for the whole day, and can you imagine, in summer when it is hot it is so difficult to survive."

"The teachers stop using the flush toilets and resort to the pit toilets."

"Perseverance helps us to cope until school-out."

"We go home at lunch break and fetch water."

"I carry water from home."

"I stay thirsty until school-out."

4.4.2 Willingness

The second category, which was evident from the analysis, is that the teachers and students are willing to use the school toilets provided that they are clean. The students state that the toilets are too dirty and smelly.

This is supported by the responses they gave when they said that the facilities were occasionally cleaned. The toilets cannot be frequently cleaned, because of the shortage of water.

4.4.3 Uncomfortable

The third category that was evident from the analysis is that the teachers and students were not comfortable with the situation in which they were. They cannot use the toilets as they wished to. In winter when the Osmo-regulation is very active,

most students dodge their lessons and go home in order to respond to the call of nature.

Question 12 in interviews:
How do you think the toilet facilities of your school can be improved?

Responses:

"I think if the government could take the responsibility of installing more water at school that can alleviate the problem of the smelly toilets and they can be properly cleaned."

"The often cleaning of the toilets. Adequate supply of water to the school will improve the water closet facilities."

"By building many water closet toilet facilities. By cleaning the toilets very often."
"The toilet facilities can be improved by cleaning them and having water on daily basis."

"The government should make a point of employing caretakers in each and every school."

"By having more water at school."

4.5 RECOMMENDATIONS

Schools are using uncontrolled pit toilets, which are a health hazard, both to teachers and students.

These pit toilets should be replaced by introducing the Ventilated Improved Toilets (VIP). This is because VIP's have the following advantages:

52

- They are hygienic
- They are simple to plan and affordable to build
- They are robust
- They need no water to operate and only a little water to clean
- They stop flies and smell
- They are safe
- Their maintenance is simple and inexpensive, without the need for expensive spare parts.

For further technical detail of the structure and working of VIP's, the reader is referred to Deverill and Still (1998).

In addition, School Governing Bodies (SGB's) should also take part in the project to build water tanks and VIP toilets for schools.

The government should also arrange workshops in order to train the SGB's in the running of the projects and also in fundraising.

The problem of water shortage can be overcome by building water tanks to store rainwater.

Providing water and toilets is not enough. Health and hygiene education is important too. Toilets should be kept clean and maintained properly. Everyone in the school should share the responsibility for this.

With regard to proper sanitation facilities in schools, it needs the support from other organisations, for example, the Local Council, Department of Public Works, the Environmental Health Department, the Department of Water Affairs and Forestry and NGO's.

Therefore, it is argued that health is linked to water and sanitation and that teachers' and students' views on and knowledge of sanitation are important factors to consider in sanitation education.

It is absolutely clear from the results that people should be provided with clean water and basic sanitation to prevent the present situation that is occurring in KwaZulu-Natal concerning the outbreak of cholera. The government should address the problem of clean water and sanitation as a matter of urgency.

4.6   CONCLUSION

It was evident from the findings of the study that the presupposition that Ngwaritsane High School is experiencing water and sanitation problems, is valid.

Although the research was only localised to the Ngwaritsane High School, which is in Bushbuckridge, the researcher firmly believes that there may be other areas in rural South Africa that are experiencing similar problems.

As such, the recommendations made in this study may not be beneficial to the Bushbuckridge area only, but to the country as a whole.

BIBLIOGRAPHY

BAILEY, KD 1987. Methods of social research. London: Collier Macmillan.

BEDWORTH, D 1978. Health education, A process for human effectiveness. New York: Harper and Row Publishers.

BELL, J 1993. Doing your research project: A guide to first-time researchers in education and social science. Buckingham: Open-University Press.

BLAKE et al., 1997. Teaching adults about the environment. Pretoria: University of South Africa.

BORG, WR & GALL, MD 1989. Educational research an introduction. New York: Longman.

COHEN, A 1985. The symbolic construction of community. Montreal: McGill University.

COHEN, L & MANION, L 1989. Research methods in education. 3rd edition. London: Routledge.

COLLINS, C 1969. College Orientation Education for Relevance. Boston: Holbrook Press.

DEKKER, ET & LEMMER, EM 1993. Critical issues in modern education. Durban: Butterworth.

DEVERILL, P A & STILL, D A 1998. Building school VIP's: Guidelines for the design and construction of ventilated improved pit toilets and associated facilities for schools. Pretoria.

DREYER, L 1998. The Dynamics of Community non-compliance with basic water supply projects. Water Research Commission, RSA.

EVANS, A 1994. Status of non-urban sanitation in S.A.: Public Health Aspects, Present Position and needs. Health Technology Research Group. Tygerberg, Cape Town: Medical Research Centre.

HAZELTON, D G et al, 1994, Development of drought response policy options for the cost effective provision of water supply to rural communities subject to recurring droughts. Report to the Water Research Commission. No. 506/1/94

HENNING, E 1997. Viability and adaptation in a school constructivist perspective on knowledge-making: a response to Zietsman and to Magadla. The South African Journal of Higher Education, ii(2).

KAIRAMO, K 1989. Education for life – a European strategy. London: Butterworth.

KLU, EK 1997. A re-training programme for language teaching in the outcomes- based paradigm. Johannesburg. Rand Afrikaans University (M Ed dissertation).

KVALE, S 1996. An introduction to qualitative research interviewing. Thousand Oaks: Sage.

LE COMPTE, M & PREISSLE, J 1993. Ethnography and qualitative design in educational research. Second edition. New York: Academic Press.

MAHLANGU, DMD 1987. Educational research methodology. Pretoria: De Jager-Haum Publishers.

MARSHALL, C & ROSSMAN, GB 1989. Designing qualitative research. London: Sage Publications.

McKERMAN, J 1991. Curriculum action research. A handbook of methods and resources for the reflective practitioner. London: Casterfiled Press.

MERRIAM, SB 1991. Case study research in education. A quantitative approach. San Francisco. Oxford: Jossey-Bass.

MILES, MB & HUBERMAN, AM 1994. Qualitative data analysis. Second edition, London: Sage Publications.

MINZEY, S & TOWNSEND, T 1984. Effective schooling for the community. London: Sage.

NIELSEN, HD & CUMMING, WK 1997 Quality education for all community orientated approach. London: Garland Publishers.

NONYANE, IK 1996. Literacy education in the rural area of Mpumalanga. Johannesburg. Rand Afrikaans University (unpublished M Ed dissertation).

PALMER DEVELOPMENT GROUP, 1994. Water and sanitation handbook for community leaders. (Urban and peri-urban areas). Water Research Commission. RSA.

PALMER DEVELOPMENT GROUP. 1995. Review of rural sanitation in South Africa. The Mvula Trust, RSA.

PATTON, MQ 1987. How to use qualitative methods in evaluation. London: Sage.

PEARSON, I & Idemam, G 1998. An assessment of common problems associated with drinking water disinfection in the developing areas. Report to the Water Research Commission. No. 649/1/98.

PIETERSEN, A 1996. Water and Sanitation: Towards a healthy family. South Africa; African Department of Water Affairs and Forestry.

RANAMANE, M 1995. The transfer of development information and its role in community water supply and sanitation (in Salus 6(10)). Meta-info Bulletin.

SCHUMACHER, SE & McMILLAN, JH 1993. Research in education: A conceptual introduction. New York: Harper Collins College.

SERGIOVANNI, TJ 1994. Building community in schools. San Francisco: Jossey-Bass Publishers.

WHITE PAPER, 1994. Water supply and sanitation. Cape Town.

WILSON, T 1994. Personnel Communication. Advisor to the Minister of Health.

WITS RURAL FACILITIES. 1995. Bushbuckridge Regional Plan. Klaserie.

ZEBEDIELA, T 1998. Foundation phase pupils' views on sanitation. Johannesburg: Rand Afrikaans University (M Ed dissertation).

Letter to the Principal

P O Box 1625
BUSHBUCKRIDGE
1280
7 August 2000

The Principal
Ngwaritsane High School
Private Bag X9349
BUSHBUCKRIDGE
1280

Sir

I am a Masters Degree student in Environmental Education at Rand Afrikaans University. Presently I am doing research in Environmental Education in the rural area of Bushbuckridge as part of my studies.

I have decided to use Ngwaritsane School as the source where data can be collected. I therefore request for permission to use your school for collecting data that are necessary for this study. I am intending to do some observation and have interviews with eleven teachers (11) and eighty students (80).

Die to time limit for this research, I would appreciate it if you will accept the suggested dates and times given below:

Observation: 10 August 2000 from 14h00
Interviews: From 14 August 2000 – 31 August 14h00

Further details can be discussed if you so wish,

Thank you

....
J S MOTSEPE (Miss)

Letter to teachers

P O Box 1625

BUSHBUCKRIDGE

1280

7 August 2000

Dear Colleague

I am a Masters Degree student in Environmental Education at Rand Afrikaans University. Presently I am doing research on Environmental Education in the rural areas of Buschbuckridge as part of my studies. I have decided to use Ngwaritsane High School as a centre for collecting data.

I therefore ask you to be part of my research by allowing me to interview you and that you also participate in an interview.

As educators you are aware of the importance of research and the valuable contribution it can make to the restructuring of schools, the quality of the school environment, and in particular the state of school sanitation and the community at large. As such I urge you to be part of this study process.

Thanking you in anticipation

....

J S MOTSEPE (Miss)

Letter to students

P O Box 1625
BUSHBUCKRIDGE
1280

7 August 2000

Dear Respondent

The following questionnaire concerns a study conducted by a student of Environmental Education, at Rand Afrikaans University in Johannesburg. She is currently writing her Master's dissertation in the mentioned field and your response to the below questions shall be appreciated.

Please note that your answer to the questions shall be treated with utmost confidentiality. Respondent needs not mention his/her name.

Yours truly

....

J S MOTSEPE (Miss)

QUESTIONNAIRE QUESTIONS AND RESPONSES FORM PARTICIPANTS: A SAMPLE

TRANSCRIPTION GUIDE

Q = QUESTION

R = RESPONDENT

Q = What type of toilet facilities are available at your home (pit toilet, water closet, or bush).

R = At home, I have a pit toilet.

Q = What type of toilet facilities are at your school? (pit toilet, water closet or bush)

R = There are both pit and water closet toilets.

Q = How do home practices impact on the school usage of sanitation facilities? (I easily cope, I cannot cope at all. I manage to cope)

R = I manage to cope, because even at home I am using a pit toilet but the only difference is that the toilet at school are too smelly.

Q = How often are the facilities at your school being cleaned? (often, occasionally, or not at all).

R = They are occasionally cleaned because water is very scarce.

Q = How comfortable are you with the facilities? (very comfortable, fairly comfortable).

R = I am not comfortable with the facilities because the toilets are smelly and occasionally cleaned instead I prefer using the bush.

Q = How often do you get water at school? (often, occasionally, not at all, from home with water) please specify.

R = most of the time we do carry water from home because if you do not do so you will stay thirsty for the whole day at school.

Q = During shortage of water, how do you cope with the situation?

R = I feel as if I am in a desert place. I stay thirsty for the whole day and can you imagine, in summer when it is hot, it is so difficult to survive.

Q = Have you ever heard about health education? (Yes or No) If Yes through which media? (TV, Radio, newspaper, classroom, lecture, etc).

R = I have heard about health education in the classroom lecturer. Our teachers do teach us about being clean and to take care of our bodies.

Q = How often do you use the facilities at school? (often, seldom, occasionally, not at all)

R = I seldom use the facilities at school.

Q = Do you usually get irritated and nauseated when using these facilities (very irritated, manage to cope, I do not get irritated).

R = I get irritated because I cannot use the toilet facilities as I wished to.

Q = Have you ever been treated for dysentery, cholera, diarrhoea, or typhoid? (Yes/No) please specify. If Yes when?

R = I have not been treated for any of these illnesses.

Q = How do you think the toilet facilities of your school can be improved?

R = I think if the government could take the responsibility of installing more water at school, that can alleviate the problem of the smelly toilets and they can be properly cleaned.

QUESTIONNAIRE

INTERVIEW QUESTIONS AND RESPONSES FROM PARTICIPANTS: A SAMPLE

1. Who according to your opinion may address the link between diseases such as cholera and unhygienic toilets?

2. How can the school manager and staff provide a healthy panorama of the surrounding of this institution?

3. Do hawkers in the school receive health education lessons?

4. What, in your opinion, do you think may be done to reduce the health risk between hawkers and the school?

5. How does the school relate to the environmental staff?

6. Have you ever raised the issue of sanitation with the educational authorities?

Response 1:
The guidance teacher, community and health professional staff can be in partnership in order to solve health problems.

Response 2:
By growing trees, lawns, cleaning of the classrooms, school grounds to be well cared and the yard to be fenced for the safety of all.

Response 3:

The hawkers never receive any health education lessons.

Response 4:

If the government could provide stall for the hawkers, health monitors should be available in order to inspect the food. Dieticians should be invited to orientate the hawkers.

Response 5:

The school and the environmental staff do not relate.

Response 6:

Yes. Various letters were written to the educational authorities, but no response showed up.

QUANTIFICATION OF DATA

To improve the clarity of the interpretation of the research data, I will in this addendum present a quantification of the responses of both teachers and learners to questions in the questionnaire and also to questions featuring in the interviews.

1.   RESPONSES TO QUESTIONNAIRES

Q = Question

R = Respondent

Q: What type of toilet facilities is available at your home? (Pit toilet, water closet or bush)

R: 73 of the interviewees responded by saying: Pit toilets. 12 of the interviewees use water closet toilets and the other six interviewees use the bush.

Q: What type of toilet facilities is at your school? (Pit toilet, water closet or bush)

R: There are both toilets (that is, Pit and water closet toilets). The teachers are the ones who use the water closet toilet whereas the learners use the pit toilet. During shortage of water, the teachers also use the pit toilets. There were 11 teachers and 80 learners in the sample.

Q: How do home practices impact on the usage of sanitation facilities? (I easily cope, I cannot cope at all, I manage to cope)

R: In this question, 59 interviewees responded by saying that they managed to cope and the other 32 said that they cannot cope.

Q: How often are the facilities at your school cleaned? (Often, occasionally, or not at all)

R: Here the interviewees responded to all the three answers. 35 said that, the toilets were not cleaned at all, and 16 of them said that, the toilets were cleaned often, and the last 40 responded by saying that, they were occasionally cleaned; the reason being that water is very scarce.

Q: How comfortable are you with the facilities? (Very comfortable, fairly comfortable)

R: 38 of the interviewees responded by saying that, they were fairly comfortable with the facilities at school whereas the other 53 said that, they were very comfortable with the facilities.

Q: How often do you get water at school? (Often, occasionally, not at all, from home with water) Please specify.

R: 40 interviewees responded by saying that, the school occasionally gets water. 38 of them responded by saying that, they carry water from home because if they do not do so, they will stay thirsty for the whole day at school and the other 13 responded by saying that, they often get water at school.

Q: During shortage of water, how do you cope with the situation?

R: 27 interviewees responded by saying that, they carry water from home, 21 mentioned that they stay thirsty until school out, 23 said that they go home at lunch break and fetch water and the other 20 interviewees responded by saying that they felt as if they are in a desert place.

Q: Have your ever heard about health education? (Yes or no) If yes, through which media? (TV, radio, newspaper, classroom, lecture, etc)

R: 22 of the interviewees said that, they heard of health education through the radio, and nine said that, they heard from the television and the other 60 interviewees responded by saying that, they got it in the school classroom lessons. They also said that, their teachers taught them about being clean and about how to take care of their bodies.

Q: How often do you use the facilities at school? (Often, seldom, occasionally, not at all)

R: 29 interviewees responded by saying that, they often use the facilities at school. 38 stated that they seldom use the facilities and the other 24 said that they occasionally use the facilities.

Q: Do you usually get irritated and nauseated when using these facilities? (Very irritated, manage to cope, I do not get irritated)

R: 43 interviewees responded by saying that, they manage to cope, whereas the other 48 stated that, they get irritated and nauseated because they cannot use the toilet facilities as they wished to.

Q: Have you ever been treated for dysentery, cholera, diarrhoea, or typhoid? (Yes/No) Please specify. If yes, when?

R: 88 of the interviewees responded by saying that, they haven't been treated for any of these illnesses. Only three interviewees said that, they were treated for cholera when they were still at primary school.

Q: How do you think the toilet facilities of your school can be improved?

R: (1) In this question the interviewees responded by giving four different responses. 40 of the interviewees said that, they wished that the government could take the responsibility of installing more water facilities at school, and that can alleviate the problem of the smelly toilets.

(2) The other 10 interviewees stated that, the adequate supply of water to the school will improve the water closet facilities.

(3) 31 interviewees stated that, by building many water closet toilet facilities, and by cleaning them regularly and having water on a daily basis can be the solution.

(4) The last 10 interviewees responded by saying that, the government should make a point of employing caretakers in each and every school.

2. RESPONSES DURING INTERVIEWS

2.1 Interviews with teachers

I: Do you think that the endemic disease such as cholera is caused by unhygienic toilets?

T: (Teacher) All the 11 teachers (interviewees) responded positively towards this question. They further said that, most people use pit toilets and the bush. There are no tap water pipes where they should clean their hands after using the toilets. The same hands are used in buying from the hawkers.

I: How can the school manager and staff provide a healthy panorama of the surrounding of this institution?

T: All the interviewees responded positively to this question by saying that, if they can grow trees, lawns, and the learners clean the classrooms, and if the school yard be kept clean at all times, and also if there could be a fence to protect everyone, that the situation could improve.

I: What in your opinion, do you think may be done to reduce the health risk between hawkers and the school?

P: (Principal) "I think that if the government could provide stalls and they should have enough ventilation and be free from dust."

I: Have you ever raised the issue of sanitation with the educational authorities?

P: "Yes. Various letters were written to the educational authorities, but no response showed up."

I: Who according to your opinion may address the link between diseases such as cholera and unhygienic toilets?

T: Eight interviewees responded by saying that, the guidance teacher is the one who can address the linkages between diseases and unhygienic toilets. The other three interviewees suggested that, if the community and health professional staff can be in partnership, it would contribute to solving health problems.

I: Do hawkers in the school receive health education lessons?

T: All the 11 interviewees agreed that, the hawkers never receive any health education lessons.

I: What in your opinion do you think may be done to reduce the health risk between hawkers and the school?

T: Four interviewees responded by saying that, if the government could provide stalls for the hawkers, it would be better. Another four interviewees responded by suggesting that, health monitors should be available in order to inspect the food and only three interviewees suggested that dieticians should be invited to the school in order to orientate the hawkers.

I: How does the school relate to the environmental staff?

T: All the 11 interviewees agreed that, the school and the environmental staff do not relate or communicate.

2.2   Interviews with learners

The learners were only asked a few questions, which I thought will be suited to their reasoning level.   I used mostly English, although I sometimes translated in Tsonga and Sepedi.   Some learners even struggle with their schoolwork because their parents are uneducated, therefore they are unable to assist them concerning school related issues.

Therefore, the learners were only interviewed on the following:

I: Do the Department of Health and Welfare provide health awareness in this school?

L: (Learners) All 80 learners responded by saying no.

I: Who usually keep the school surrounding clean?

L: All the 80 interviewees responded positively by saying that, they are the ones cleaning the surroundings.

I: Do both educators and learners smoke on the premises?

L: 50 learners responded by saying that, the teachers sometimes smoke, especially during free periods and the other 30 learners said that they never saw their teachers smoking on the premises.

I: Do hawkers (women sellers) in the school receive health education lessons?

L: All the 80 interviewees responded by saying that, the hawkers do not receive any health education lessons.

GLOSSARY OF CODES

M.P.T	=	Many pit toilets
M.T.C.	=	I manage to cope
OCC	=	Occasionally
N.C.	=	Not comfortable
TV	=	Television
NP	=	Newspaper
OF.CL.P.T.	=	The often cleaning of pit toilets
A.D.S.W.	=	Adequate supply of water
I.W.C.T.FAC.	=	Improve water closet toilet facilities
M.W.C.T	=	Many water closet toilets
P.T.	=	Pit toilets
I.E.C.	=	I easily cope
F.C.	=	Fairly comfortable
PERS.T.C.	=	Perseverance helps us to cope
RD	=	Radio
N.A.A	=	Not at all
D.G.I.	=	Don't get irritated
B.WC.T.FAC.	=	Building many water closet toilet facilities
CL.T.OF.	=	Cleaning the toilets very often
S.PT.	=	The school uses pit toilets
WC.PT.	=	Water closet and pit toilets
C.C.A.A.	=	Cannot cope at all
OF.N.C.	=	Often not comfortable
FE.IN.D.P.	=	Feels as in desert place
CI.LEC.	=	Classroom lecture
EM.CT	=	Employing caretakers
SMS	=	Sometimes

SDL	=	Seldom
B.W.F.H.	=	Brings water home
CW.F.H.	=	Carry water from water
TH.W.S.	=	To have more water at school
ST.C.T.	=	Need water closet toilets
V.I.	=	Very irritated
GH.L.B.	=	Go home at lunch break
CT.H.E.W.	=	Cleaning toilets and have enough water
HW.C.T.S.	=	Having water closet toilets at school

MAPS OF RESEARCH AREA

MAP 1

The Mhala/Mapulaneng District

Former Lebowa Homeland District

Former Gazankulu Homeland District

KEY:
colleges
Hospital
Health Centre
Clinic
Mobile point

MAP 2

Proposed outer boundary of Ward 10 of Local Municipality CBLC6 In terms of Item 5 of Schedule 1 of the Local Government : Municipal Structures Act, No 117 of 1998.

MAP 3

PROVINCIAL BOUNDARIES

BUSHBUCKRIDGE

NORTHERN PROVINCE

MPUMALANGA

KWAZULU-NATAL

GAUTENG

NORTH-WEST

FREE STATE

EASTERN CAPE

NORTHERN CAPE

WESTERN CAPE

MAP 4

Bushbuckridge rural