WATER USE, SANITATION PRACTICES, PERCEPTIONS AND HYGIENE EDUCATION IN PRIMARY SCHOOL CHILDREN IN THE NORTHERN PROVINCE AND WESTERN CAPE, SOUTH AFRICA

Khalipa M Bility • Hans Onya

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Report to the Water Research Commission

by

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EXECUTIVE SUMMARY

Background and motivation

The World Health Organisation has shown that a significant proportion of disease burden throughout the world is due to poor environmental hygiene. This global picture also applies to South Africa where it was estimated that 21 million South Africans did not have access to adequate sanitation and 12 million had no easy access to safe and adequate water supply in 1994. As an increasing number of South Africans gain access to both sanitation services and safe water supply, it is important to document the hygiene perceptions and behaviours of vulnerable groups in schools and community settings. Empirical evidence gathered from studies about the health impact of water availability in many countries points to the necessity of linking improved sanitation and water supply to hygiene education, especially for children and other vulnerable groups. However, there is considerable debate about the content and process of hygiene education in primary schools in developing communities.

In the original conceptualisation of the study Phase 1 was to have been a situational analysis of hygiene education curriculum in schools and a review of existing primary school hygiene education curriculum in selected countries. This was to be followed by Phase 2 when a selection of a sample of schools, teachers and communities in Northern Province and Western Cape would be made. Phase 3 would involve the collection and analysis of data on perceptions of children, teachers and parents about water hygiene and sanitation and a survey of the resources at the selected schools. This would lead to Phase 4 which was to have been the development of a framework to improve hygiene education and sanitation practices of the life skills learning area of Curriculum 2005. These developments would then require Phase 5 in which methods for monitoring and evaluating innovations in hygiene education curriculum would be developed.

This report covers aspects of phase 1, and the whole of phases 2 and 3. The literature review covers the background to water and sanitation as a health issue; the situation of health and hygiene at schools and finally issues of curriculum development related to health and hygiene. It, however, is not a complete critical review/situational analysis of specific teaching materials and methods, from South Africa or internationally, on which new materials could be based. The bulk of this report concentrates on the results of phases 2 and 3.

Aims, objectives and methods

To investigate the availability, adequacy and appropriateness of water and sanitation resources and hygiene education materials in schools in two provinces of South Africa. To explore current hygiene practices and perceptions in order to make recommendations concerning infrastructural development and hygiene education in primary school curricula.

1 To carry out a situational analysis of hygiene education materials and methods being used in primary schools in South Africa, and critically appraise materials obtained from other selected countries

2 To undertake a literature review of issues related to primary school learners and water and sanitation practices and education

3 To establish a matrix for the selection of schools in the two provinces

4 To involve fieldworkers in the planning of the data collection instruments and the actual data collection in such a way that their research knowledge and skills are improved

5 To carry out data collection in the schools and surrounding communities regarding the perceptions of learners, teachers and adults in the community of water and hygiene practices.

6 To make recommendations on infrastructural and curricula changes based on the findings.

The sample of schools included 30 schools from the Northern Province and 6 schools from the Western Cape. They represented a stratified sample from each province.

The data collection methods included a school survey; focus group discussions with learners, teachers and parents, draw and write technique with learners, and community mapping exercise with community members.

Results and conclusions

Infrastructure

In the Northern Province, one-third of the schools, mainly the rural schools, did not have access to water. The lack of water was the main problem in the rural schools, whereas maintenance of water and sanitation facilities was the major problem in the urban, peri-urban and private schools. Dams, rivers, boreholes, and communal taps are the major sources of water. In schools where water is not available, learners and teachers carry water to school. There are few schools where guidelines for healthy water storage and use are enforced. Even in urban areas, where water is more available, the learners have to drink out of their hands or with their mouths directly on the tap, and often have to queue to use the tap.

In the Western Cape all schools surveyed had access to water, however, on the farms there are sometimes restrictions due to the farmer's control over the water sources. In some of the schools learners also have to queue to use the tap.

The sanitation situation is unacceptable across all schools mainly due to poor maintenance and overuse. Although most peri-urban, urban and private schools have flush toilets, they are little better off than the rural and farm schools where pit latrines are used, as the flush toilets are in a poor state of repair. The fear of using the toilets due to the possibility of finding insects or reptiles in the toilets seems to pervade all types of schools, as does the objection to using smelly and dirty facilities. In the Western Cape a specific problem was the bullying and vandalism which occurs in the facilities.

Nearly all the schools do not have adequate hygiene education materials. The range of materials available was limited with those who have some materials mainly reporting books and teachers guides. Very few have posters, pamphlets, signs or any other more innovative materials.

Perceptions

There is remarkable consistency throughout the schools in what learners perceive 'keeps you healthy' and what can cause ill health. Eating fruit and vegetables, personal cleanliness and good clothes featured most strongly for keeping healthy, with some emphasis on exercise, fresh air, clean water, and social activity. Most of the negative factors include smoking, drinking alcohol, eating sweet foods, drinking dirty water, and being bitten by a reptile or insect. The threat of knives and guns only featured in the urban and peri-urban perceptions. There is seldom a connection

made between environmental resources, other than water, or interpersonal relationships and good health.

Gender differences in the use of toilets are apparent. The lack of privacy and potential harassment in the toilets, and the poor conditions of the toilets, deter the female learners from using the toilets at school. Absenteeism rates are therefore higher amongst girls especially during menstruation.

In both provinces communicable diseases related to water and sanitation were common among the learners. Diarrhoeal diseases, skin problems, ring-worm, and worms were the most common conditions cited in the school survey.

Capacity building

About 25 people in the Northern Province and 5 in the Western Cape benefited from participating in research skills training and gained experience in data collection fieldwork by visiting the schools in small teams. Various training and feedback workshops were held with the fieldworkers, some of which were presented by British experts.

Conclusions

1 Water and sanitation provision at public schools, particularly in rural, farm and periurban areas, is generally grossly inadequate. This almost certainly has a negative impact on learners' health and also interferes with their learning. Urgent action is required from the relevant government departments, with the participation of the affected communities.

2 Although health and hygiene awareness are fairly reasonable at a superficial level, practice does not accord well with knowledge. This may in fact be due to inadequate learning, especially of problem-solving skills. This underlines the urgency to move forward with the implementation of Curriculum 2005., and the development of appropriate materials and methods in the area of health and hygiene.

3 Both the context and the practice of health and hygiene awareness is similar in both the home and school environment. This points to the need for an integrated approach to solving both the infrastructural as well as the learning deficits. Here the 'health promoting schools' approach has much to offer and should be actively supported and resourced by government.

Recommendations

1 The results of this study should be urgently presented to the relevant government departments (Education; Public Works; Water) so that motivation for the infrastructural improvements necessary in terms of access to water and sanitation facilities can be supported.

2 Curriculum development should focus on the development of teaching materials and methods that can address the gap between understanding of health and hygiene knowledge and their practice in reality.

3 Innovative materials and methods developed inside (especially by non-governmental programmes) and outside South Africa should be referred to when designing the new materials and methods of teaching.

4 The 'health promoting schools' initiative should be supported by the relevant government departments (Health; Welfare; Education) so that learners and teachers are motivated to take some responsibility for the improvements required in the water and sanitation infrastructure and the maintenance thereof.

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1 SECTION I

1.1 INTRODUCTION

1.1.1 Background and motivation

The primary rationale for undertaking a study of this nature was to address the hygiene and health education needs of the large number of South Africans who do not have adequate water supply and sanitation services. Among this group, school age children, especially in the rural areas, are the most disadvantaged. Although considerable effort has been made during the last few years to provide everyone with access to sufficient, clean, easily accessible and affordable water, the behavioural change components of water supply and sanitation schemes lag far behind. Improved public health, productivity, and wellbeing resulting from water supply and sanitation facilities can only be expected when ways and means are put in place to improve hygiene and sanitation behavior and practices at home, school and in other settings. The earlier and younger children are exposed to and made aware of the importance of personal hygiene, the more likely it is to instill health promoting hygiene behaviours, habits and practices. The school curriculum provides a means for translating important personal hygiene messages into learning content and activities.

Very little is known about how to translate children's perceptions of hygiene and sanitation into developmentally appropriate health education curriculum. Evidence about the impact of children's health education curriculum varies considerably across developed and developing countries. Studies conducted in numerous developing countries indicate the need for developing children's hygiene education materials which are informed by an understanding of the context and content of the primary school curriculum.

In South Africa, with increasing numbers of children enrolled in pre-primary and primary schools, the school has an important role to play in hygiene education. School can alter inappropriate attitudes and contribute to changing common unhygienic behaviors. Schools provide unique opportunities to introduce and facilitate the acceptance and spread of new forms of social behaviors related to life skills. These pertain to the collection, storage, handling, and use of water and disposal of waste water and human waste. Schools can act as change agencies in helping to modify attitudes and habits established in the community, or at least sensitize a new generation to the health, social, economic, and ethical consequences of poor hygiene practices. In addition to providing the necessary infrastructure for hygiene education, otherwise lacking in many communities, schools can at the same time increase vulnerability and risk of spread of many diseases among children and thus contribute to academic underachievement.

Improving water quality and building better water supply and sanitation infrastructure alone is not sufficient to obtain the health and other benefits of clean water. Changing poor hygiene behaviours is necessary to realize the health benefits of improved water quality. This study is designed to collect, analyse and present data on the water and sanitation resources at the schools and on the perceptions of primary school children, teachers and parents about water, hygiene, sanitation practices and health behaviour. The data will inform the development of appropriate curriculum materials and teaching methods for Curriculum 2005.

The project originally consisted of five phases:

Phase 1 was to be a situational analysis of hygiene education curriculum in schools and a review of existing primary school hygiene education curriculum in selected countries. This was to be followed by Phase 2 when a selection of a sample of schools, teachers and communities in Northern Province and Western Cape would be made. Phase 3 involved the collection and analysis of data on perceptions of children, teachers and parents about water hygiene and sanitation; and a survey of the resources at the selected schools. This would lead to Phase 4 which is the development of a framework to improve hygiene education and sanitation practices of the life skills learning area of Curriculum 2005. These developments would then require Phase 5 in which methods for monitoring and evaluating innovations in hygiene education curriculum would be developed.

This report covers **aspects of phase 1, and the whole of phases 2 and 3.** The literature review covers the background to water and sanitation as a health issue; the situation of health and hygiene at schools and finally issues of curriculum development related to health and hygiene. It, however, is not a complete critical review/situational analysis of specific teaching materials and methods, from South Africa or internationally, on which new materials could be based. **The bulk of this report concentrates on the results of phases 2 and 3.**

1.1.2 Aims

To investigate the availability, adequacy and appropriateness of water and sanitation resources and hygiene education materials in schools in two provinces of South Africa. And, to explore current hygiene practices and perceptions in order to make recommendations concerning infrastructural development and hygiene education in primary school curricula.

1.1.3 Objectives

1 Carry out a situational analysis of hygiene education materials and methods being used in primary schools in South Africa, and critique other materials obtained from other selected countries
2 To do a literature review of issues related to primary school learners and water and sanitation practices and education
3 To establish a matrix for the selection of schools in the two provinces
4 To involve fieldworkers in the planning of the data collection instruments and the actual data collection in such a way that their research knowledge and skills are improved
5 To carry out data collection in the schools and surrounding communities regarding the perceptions of learners, teachers and adults in the community of water and hygiene practices.
6 To make recommendations on infrastuctural and curricula changes based on the findings.

1.2 LITERATURE REVIEW

1.2.1 Introduction

This survey of the literature examines water, hygiene and sanitation practices and related diseases in developing communities and their implications for improved curriculum for primary school children. Hygiene education and the improvement of sanitation practices in primary school are essential components of the strategy for improving primary health care, healthy behaviours and wellbeing of children, families and communities

Improving school health education through school curriculum innovation has become an important intervention in many developing countries. However, with a few notable exceptions (Hubley, 1997) health educators have displayed very little interest in adopting an integrated approach to the understanding of children's beliefs and practices as the basis for improving hygiene education and sanitation practices in schools. Adopting a child development and integrated approach to improving children's hygiene in school has three related components:

(1) understanding water, hygiene, and sanitation related diseases

(2) curriculum innovations to improve and promote hygiene, healthy behaviors and sanitation practices among primary school age children.

(3) linking intervention strategies to the context of children's experiences and the resources available to practise healthy sanitation behaviour

1.2.2 Water hygiene, sanitation practices and childhood diseases

Estimates of the prevalence of water and sanitation related diseases vary considerably. However, the importance of water hygiene related diseases, as a priority public health problem in developing countries is well documented in the literature. The incidence of specific diseases and general morbidity and mortality patterns have been linked to the quality, quantity, access, use and disposal of water (Feachem, 1978)

In Africa, it is estimated that 263.91 million people in rural and urban areas are without adequate water supply and sanitation services. Most of these people live in rural areas. In South Africa, although the situation is improving, it was estimated in 1994 that 21 million people were without adequate domestic sanitation. Ninety percent of rural schools have inadequate sanitation and 80% of the disease burden in the rural areas is related to unsafe and inadequate water and sanitation (MRC, 1997).

In 1996 the percentage of households in South Africa with sanitation was 87.6 %. However, if analysed per province, the Northern Province and Western Cape have sanitation facilities for 78.8% and 94.6% of their households respectively. The discrepancy is larger when reporting the situation of drinking water available in each household. Nationally 44.8% of households have drinking water on tap in the dwelling, while in the Northern Province it is as low as 17.8%, and in the Western Cape it is as high as 76.4% of dwellings. (Bradshaw 1998)

The burden of water and sanitation related diseases is most acute among Africans and the rural population. A SALDRU report in 1995 showed that poverty in South Africa has a strong rural dimension with 75% of the poor people living in rural areas. Two thirds of

these poor people live in three provinces: Eastern Cape (24% of the poor people), Kwa Zulu-Natal (21%) and the Northern Province (18%).

Age and gender are additional aspects of water and sanitation related diseases. About 38% of the country's population is under 16 years old with a disproportionately high percentage living in poverty, resulting in over 45% of the poor being children below 16. (SALDRU,1995)

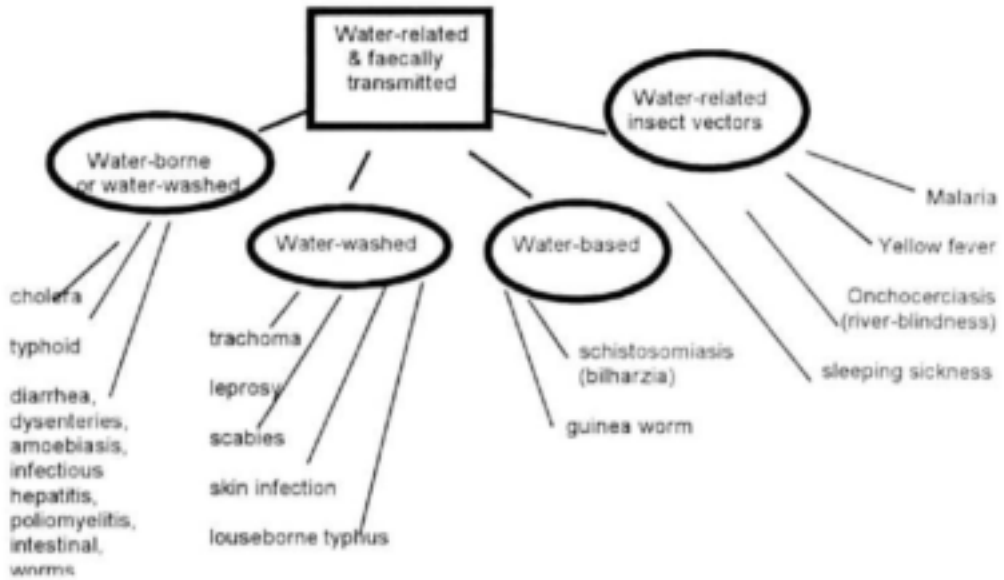
1.2.3 Relationship of water and health

A water related disease is one which is in some gross way related to inadequate water supply, limited or insufficient water quantity, poor water quality or impurities in the water. The burden of ill health due to water related disease is particularly heavy among children and includes diarrhoea, worm infestation, oral health problems, and other health conditions that are aggravated by poor sanitation.

Another common condition in primary school children is ringworm. According to Louw et al (1996) the prevalence rate in the rural areas of the northern parts of South Africa ranges from 10 – 15% in children with an average age of 9 years. Simpanya (1998), who did a study in Zambia, explains that the rate is influenced by a number of factors such as socio-economic level, and way of life. Contact at school is considered to be the most important factor in rapid spread of scalp ringworm, with overcrowding in classrooms exacerbating this.

Cairncross and Feachem (1993) describe four categories of water related diseases: *water-borne, water-washed, water based, and water vectored* .It is important to evaulate water and water sources with these categories in mind because the prevention strategies for specific diseases will depend on the category in which they fall.

Figure 1. Water-related and faecally transmitted diseases



Source: D Sanders, M Clifford. Primary Health Care and Restructuring the Health Sector

1.2.4 Water availability and quality

Human consumption of contaminated water, especially with faecal pollutants is one of the sources of most of hygiene related diseases. Clean, accessible, sufficient and affordable water supply is critical for realising the health benefits of water. Human behaviour is a key element of all stages from handling at water source to disposal of wastewater. Knowledge and practices related to the chain of events from water source, handling, storage ,and use, to disposal.

At the outset it is important to have a common understanding of what is meant by safe water. Kirkwood (1998) describes four criteria for declaring that water is safe for human consumption. 1 – free from microbiological contamination; 2- does not have chemical concentrations greater than prescribed limits, 3- it is available in sufficient quantities to enable adequate domestic hygiene, and 4 – it meets local standards for taste , odour and appearance. In South Africa it is points 1 and 3 that are most pertinent, especially in the rural areas. The most common microbe found in unprotected water is the faecal coliform. If this microbe is in sufficient concentration in infected water, diarrhoea is the most common result.(water quality) In general ground water and springs are far superior in quality to surface water and water from open wells.

According to Schreuder (1997) in South Africa the average annual rainfall is 470mm compared to the international average of 857mm. In rural areas only a small percentage of the rainfall is actually captured and made available for use. Besides a problem of water quality, there is therefore also a dire shortage of water (quantity)

Absolam (undated) indicated that in rural Kenya three-quarters of water collectors were women, of whom 90% carried water on foot. However, when wheelbarrow, donkeys, or bicycles were used for water collection, 59% were men and 41% were women. The greater burden of water and sanitation issues therefore falls on women and children in the rural areas in Kenya. A similar picture is to be found in South Africa.

1.2.5 Sanitation and health

The disposal of human excreta and the hand washing practices after defecation are critical factors in the spread of water borne, water-washed diseases and insect vector spread diseases. Issues such as the location of defecation sites, latrine maintenance and availability of hand washing facilities all need attention if these common, yet sometimes fatal, diseases are to be prevented.

Domestic flies are important vectors in the transmission of trachoma and diarrhoea. In areas where there is sufficient water to wash children often and rinse any food before preparation the rate of these conditions is reduced. Long-term sustainable control of flies can be achieved through trapping flies in the vent of a Ventilated Improved Pit (VIP) latrine, screening windows, using covering nets for food and sleeping babies. To control the breeding of flies the amount of animal manure and rotting garbage that lies around needs to be limited.(Curtis, 1998)

Moreover, the synergy between poor sanitation and malnutrition further increases the burden of ill health among children, especially in poor communities.(Essey ??) A study in the Northern Province (Vermeulen, 1997) documented how the lack of sanitation and hygiene predispose individuals to infection and re-infection with helminths and nutritional impairment.

Saywell (1998) reports on a large scale social development programme in Mozambique targeting the poor urban population. Sanitation animators were trained and various other community activities such as theatre and radio campaigns were organised as

integral parts of the programme to build thousands of low cost sanitary facilities. The combination of simple technology and health and hygiene education has been successful in involving people in improving their access to and use of sanitation facilities. The Mvula Trust (1995) state that not everyone is convinced of the advantages of latrines, and that persuasion is required in most successful programmes. Almedom (1995) proposed a more incremental approach to sanitation promotion whereby step by step improvements in excreta disposal were to be encouraged rather than advocating the immediate implementation of radical changes.

1.2.6 The relationship between resources and hygiene practices

Kirkwood (1998) states that great progress has been made in developing specific interventions for reducing the prevalence of water-related disease. However, less progress has been made in combining water, sanitation and hygiene education activities into integrated strategies. This view is supported by Seager, et. al. (1996) in a cross sectional study in Khayelitsha near Cape Town. They documented increasing levels of risk of water contamination and episodes of diarrhoeal diseases from indoor tap, on site tap, stored water, communal tap, and poor hygiene at child care centers. They concluded that rather than just concentrating on in house water quality and sanitation, increased attention should be paid to the child caretaker's knowledge of the causes and prevention of diarrhoea. Almedom (1995) reports that recent studies have suggested that hand washing reduces rates of diarrhoeal infection by 35 to 48%.

Almedom (1995) summarises the situation well saying that "*improvements to water and sanitation infrastructure are excellent methods for controlling intestinal infection in the long term, but only if they are used as intended; they need to be locally needed, acceptable and affordable. Similarly, health and hygiene education efforts are effective only if they are designed on the basis of sound socio-cultural knowledge of the target population.*"

1.2.7 Health and hygiene education at schools

There are a number of reasons for targeting the school as a setting for health promotion initiatives. In most communities the school has a central position in the lives and activities of the people. The high enrolment of children in primary schools provides an easily accessible target group where they meet regularly and are involved in learning activities. Teachers can play a role in supporting health education activities and reaching out to adult community members through the school children. For these reasons it is also deemed cost-effective to provide hygiene education in school.(IRC, 1995)

A model proposed by Green et al (1980), often used for planning health education programmes, is the Precede/Proceed model. It has grouped the factors that influence people's behaviour into three categories called: predisposing factors, enabling factors and reinforcing factors. The predisposing factors include the knowledge, attitudes, beliefs, and perceptions of people, and also fixed characteristics such as gender, socio-economic class, etc. Enabling factors are the environmental conditions and available resources. Reinforcing factors are related to the approval and disapproval of a certain behaviour by people who are important. This study recognises the importance of understanding the beliefs, resources and reinforcing factors pertaining to hygiene practices of school children in order to plan any intervention programme.

Evidence of effective health education interventions based on a well defined research and development strategy is not common in the developing world. The literature suggests a number of factors that are important for effective interventions: content and method of the curriculum; the role and training of the teacher (Dwivedi et al,1975); support of the education authorities (Hubley, 1997); integration of school

and community support and activities, and the degree of cooperation home and school. Within limits, schools play a major role in improving sanitation behaviour and practices. Four major functions can be identified: creation of a general awareness of the link between water and sanitation on one hand and health and development on the other; dissemination of information; support for and reinforcement of school based projects; and diffusion of innovative practices.
UNICEF also suggests that in order for a health education intervention to be effective a number of basic criteria should be considered:

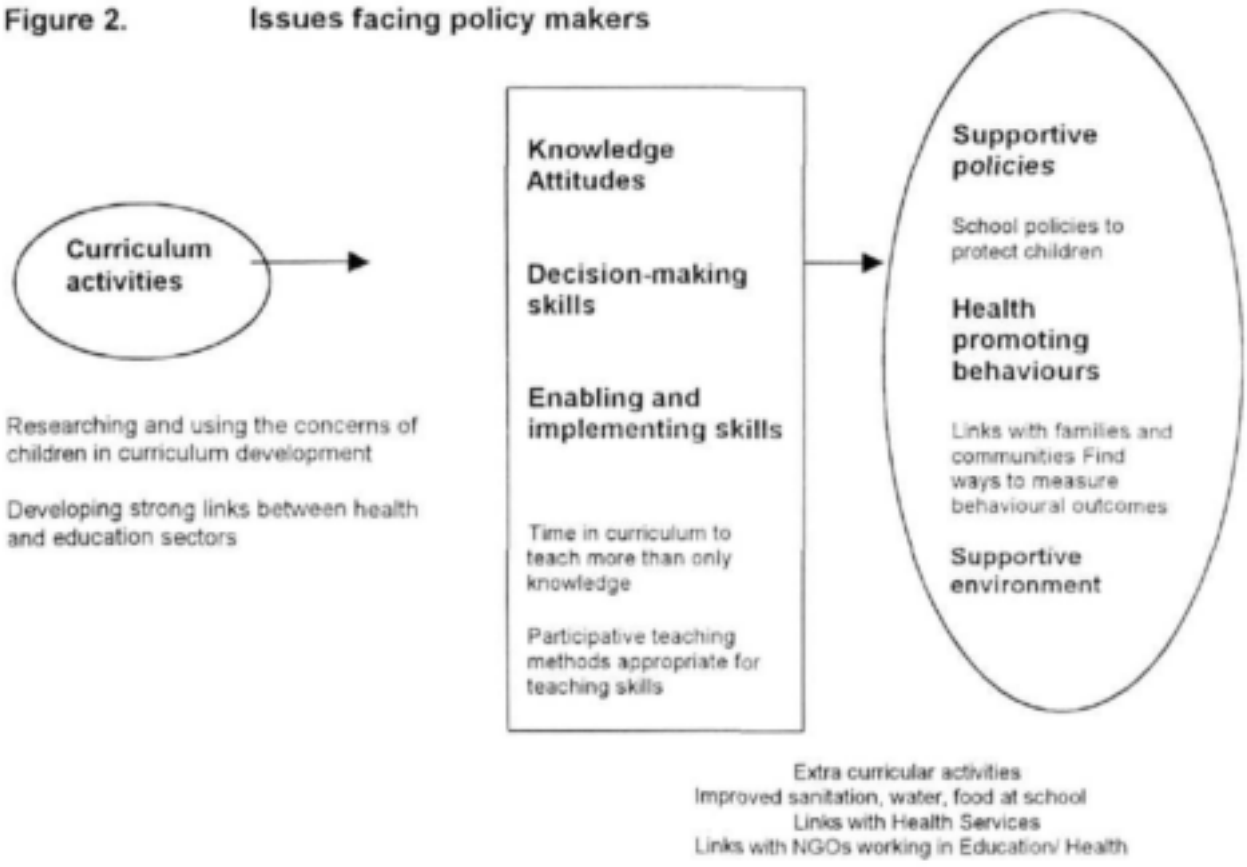
- it has to be practical and make the link between knowledge, attitude and behavior
- it has to be action oriented
- its messages need to be relevant, simple and understandable and acceptable in the local context and environment
- it should stimulate reflection by students about their behavior
- it should repeat and reinforce messages over time and in a variety of ways
- it should make use of local communication methods

1.2.8 Curriculum innovations for improved hygiene, health behaviors and sanitation practices among primary school age children.

Haynes (1990), of the Yale Child Study Centre, provides a good introduction to child development stating that healthy child development in the physical, psychological and cognitive domains is important. He stresses the importance of families, schools and communities working together to develop programmes to promote and support total child development. In their School Development Program they have used schools as the focal point of intervention to foster collaboration among school professionals, parents, and community teachers, in meeting children's needs.

The complex issues being considered in this study are well summarised by the diagram adapted from Green et al by Barnett et al. (1996)

Figure 2. Issues facing policy makers



1.2.9 The design of the curriculum

Curriculum refers to the array of both formal and informal activities designed to promote teaching and learning in school. Traditionally, schools have been structured to achieve academic goals. But increasingly, schools are finding that before their students can achieve academically, emotional, social and health needs must be addressed. In the school setting, the curriculum provides the mechanism for translating educational philosophy, theory, methods, objectives and assessment strategies into tangible learning activities.

A developmental and child-centered approach to curriculum design, as envisaged in Curriculum 2005 in South Africa, requires meaningful understanding of children as both learners and thinkers with a unique view of the world. The new curriculum which is gradually being implemented in South Africa uses Outcomes-based Education (OBE) as a central philosophy.

Curriculum 2005 does not provide detail about content, but rather each learning area has stated outcomes that ensure that the learning can be contextualised. What matters is the achievement of broad outcomes and not the mastery of specific bits of isolated information or skills. The practical implications of the changes in the education system need to occur in three main areas: teaching and learning, assessment, and, school management. Learners need to be involved in learning activities that engage their critical thinking and sharpen and extend problem-solving abilities - 'activity-based learning' (Dept of Education, South Africa, 1997)

The weight of research evidence (Blenkin and Kelly,1996) and commonsense observation overwhelmingly suggest a complex view of young children as learners. Antiquated metaphors such as "blank slates" and "empty vessels" are unsustainable in the face of evidence describing how, why and when young children make sense of encounters with person, objects, images, events and ideas.

With few exceptions, (notably Hawes and Scotchmer, 1993), health educators have not displayed much interest in applied research designed to harness the views of children to inform curriculum development in hygiene education for primary schools. The developmental age and grade inappropriateness of teaching and learning materials (Hubley, 1997); children's lack of interest in most of the teaching aids currently in use (Grieve & Hughes, 1990); and the mismatch between children's health concerns and school health education activities, partially explain this phenomenon. However, a positive example in South Africa is the development of the "Roxy" comic, where the materials were based on authentic experiences of young people. (Mathews 1993)

The 'Health Promoting School' has become an international concept which originated from work in the United Kingdom. The concept covers three main elements: the school curriculum; the school environment (hidden curriculum) and the school interaction with the home and the wider community (school outreach) (Nutbeam 1992) In South Africa a school is said to be 'health promoting' if it applies the following principles: healthy policies; a healthy physical and social environment; health education in the classroom; early detection of problems which can affect health and learning and the on-going programmes to treat, remediate and provide care for children with problems. ('Health Promoting Schools in South Africa: Challenges for the 21st Century', Conference in Cape Town,1996)

The health promoting school approach was also supported by Young (1992) in a comparison between traditional school health education and the 'Health Promoting School'. Additional points made relate to the importance of the physical environment of the school in terms of aesthetics and the direct physiological effects on pupils and staff. Young considers parental support and cooperation as central to the health promoting school.

1.2.10 Health content in the curriculum

There is evidence from a number of African and Asian countries to indicate that health education is included in curricula – but that it is generally very limited. There are examples of both "separate subject" and "integrated" health education. The latter appears to be more successful in ensuring that children receive some teaching in this area. A study by Barnett et al (1997) compared 4 countries in terms of the policy, teaching and student perceptions regarding health in general and AIDS in particular. Uganda stood out as an example where there is a well established School Health Education Programme and many examples of innovation and development in the curriculum. The researchers found that young people show insight into a wide variety of health issues, and their concerns include environmental health and sanitation.

Typically, throughout the developing world the content of hygiene education focuses on knowledge of specific disease factors, eg hand washing, germs and transmission of cholera. Facts about how to prepare drinking water, personal hygiene and how to protect water sources, storage and handling facilities from being contaminated are disseminated, very often without consideration of the barriers to practice in everyday real life situations.
This approach assumes that the existence of poor hygiene practices is due to the lack of knowledge. (International Reference Centre for Water and Sanitation, 1988)

A review of curriculum materials from neighbouring countries indicates that health topics are not integrated across other subjects. In the case of Lesotho, health topics are taught as Health Education, while in Botswana all these topics fall in the Science syllabus. There is, however, a large number of publications in these countries as well as in Zimbabwe and Mozambique, which are not produced directly by the education departments, but are available and are designed for flexible use and in a participatory way.

The Western Cape Education Department's 'Instructional Programme for Environmental Studies' curriculum.(1996) is to be used in an integrated fashion in history, geography, science and health education. It is not clear whether a participatory learning approach is encouraged. Although hygiene is taught in most schools across South Africa, however, the materials and methods have not been collected and reviewed specifically for this study.

1.2.11 Teaching methodology and materials

In South Africa, the HEATT (1996) report on school health and hygiene education and promotion activities draws attention to training and infrastructure issues in the context of the school environment. The authors suggest that health and hygiene education is still very didactic and based on knowledge transmission only, but opportunities exist to influence training curriculum. They note the few children's perception studies and conclude that "the development of policy and strategy for health and hygiene education and promotion will be incomplete without taking perspectives gained from such research into account."

In general, it is well documented that primary school approaches are didactic rather than participatory due to many factors, including the lack of training, materials, and the lack of sanitary facilities which makes practical teaching difficult. To overcome these content and methodological problems of hygiene education in school, the Child-to-Child Trust is advocating more child-centered approaches to learning in schools. (Hawes & Scotchmer 1993) There are three goals of this approach: 1) it helps to link health and education together within communities and so improves the lives of both children and adults 2) It involves children and adults in actively improving health in communities 3) It encourages children to take action both individually and as a group so they can benefit both them selves and others, without giving themselves extra burdens. However, there is a need for more long term evaluation of the use of activity-based and participatory learning methods in the classroom.

The failure of conventional school health and hygiene education initiatives can be attributed to many factors. Haynes (1988) attributes high failure rates to mitigating school climate factors working; Young and Durston (1987) to the gap between school hygiene education and the lived experiences of children in the community; UNICEF (1990) highlights inadequate teacher preparation and support at higher levels in the educational system.

It has been suggested that narratives, stories, poems, role play, essay competitions, quiz contests, dramas, debates, radio and television programmes can be effective tools for children to test existing sanitation practices and encounter different and new hygiene behaviors and practices. In a short term environmental awareness programme carried out in the North West Province Toens (1996) concluded that the children liked the range of media and teaching methods used, and that they are keen to take forward the idea of conservation clubs at the schools.

Another innovative programme, reported on by Schreuder (1997), is the South African based Schools Water Action Programme (SWAP). This is a low-cost water quality monitoring programme which is being applied in formal and informal education situations. The SWAP materials include test kits, printed resources like worksheets, teacher guidelines and background materials. It uses a hands- on problem solving approach to environmental education and it is suggested that SWAP can be used in topics related to ecology, science, political literacy, and environmental understanding.

Evidence from the evaluation literature on school hygiene, health and hygiene education suggests that hygiene education substantially improves knowledge of health topics, but is less effective in changing behavior, especially when health educators do not pay sufficient attention to the broader "health environment" of the school.

1.2.12 School and home environment

The Mvula Trust Review (1995) links successes and failures of health education to the lack of understanding of priority and demand. It suggests that " improvement of sanitation in schools should follow a demand driven approach" and " user commitment to sanitation is less likely to be present, compared to a water supply scheme".

The roles and partnerships of teacher and parents are crucial. Hubley (1997) indicates that *"implementation of what is learned at school depends heavily on the home environment including both the understanding of parents and the resource constraints parents face"*. He further points out that the attitude of the teachers was the most important determinant of the state of latrines. Therefore it is important to find out not only what the teachers know about a topic, but also to explore their attitudes and feelings towards participation in school sanitation programmes.

In summary, key factors influencing curriculum innovations include: the involvement of children in the design and teaching of the content; parent participation in developing an appropriate home environment for reinforcing hygiene practices; curriculum space and time allocated for health education. The timing of educational input, in terms of pupil age and sequence of learning activities in the curriculum, teacher and staff development and supportive school policies are important factors for promoting appropriate behaviors and practices. Traditional didactic teaching methods can be replaced by a variety of creative ways of encouraging a more participatory learning environment. Much of the literature points to the need for research - based curriculum design as well as more evaluation of health education programmes.

To evaluate behaviours related to sanitation, water, food and the environment, the WHO has narrowed the range of priority behaviours to be evaluated:

1- safer disposal of human excreta;
2- hand washing after defecation, before preparing and eating food; and
3- maintaining drinking water free from faecal contamination in the home and at the source.

1.2.13 Conclusion

It is clear that most of the health problems being experienced by children in South Africa, especially in the rural areas, are preventable, and that many relate to provision and appropriate use of water and sanitation resources. With the primary school attendance being very high, this is an ideal target group for the improvement of attitudes towards and skills in healthy hygiene practices. The current developments towards Curriculum 2005 provide a window of opportunity for research based curriculum development to occur.

A range of useful literature has been reviewed and leaves no doubt as to the importance of developing innovative curricula for school pupils which take into consideration the context and experience of the learner. As stated in the 1996 HEATT report "It can only be assumed that many health education programmes are conducted without adequate preliminary research, programme planning or evaluation procedures. Significant improvements in health status for many communities in South Africa will only be realised by combining the provision of technology infrastucture with appropriate and focused health and hygiene education."

2 SECTION II

2.1 METHODS

2.1.1 Introduction

The study was co-ordinated by Dr Khalipha Bility of the University of the Western Cape. He chaired a committee made up of representatives of the collaborating institutions which met at various stages of the project, and took responsibility for the implementation of the phases of the study. Reports were periodically submitted to the Steering Committee which was chaired by Dr Mjoli of the Water Research Council.

Capacity building in project co-ordination and research fieldwork was done by involving a number of people in both the Northern Province and the Western Cape in preparatory workshops and the actual data collection and analysis. Also, a British Council funded link with the Leeds Metropolitan University and the Liverpool School of Tropical Medicine enabled an exchange of expertise through visits to and from those universities.

The sampling of the schools was done through a matrix being developed in conjunction with the Human Sciences Research Council (HSRC), after permission was granted by the Departments of Education in each province. Thirty schools were included in the study in the Northern Province and 6 schools in the Western Cape. Within each school a random sample of 36 learners was selected through the use of the class registers.

A mix of qualitative and quantitative methodologies was necessary. Data were collected both on the perceptions and beliefs of children, teachers and parents, as well as on the physical resources in the environment and school to ensure curricular design which will have the most impact on hygiene practices in the whole community.

A survey of water and sanitation resources and education practices was conducted at each school by means of a questionnaire administered to the principal or a senior teacher.

Community mapping exercises were arranged with selected parents and community members at a convenient time and location near each school.

The "draw and write" technique was carried out with the sample of learners at each school, followed by focus group discussions (FGDs) with grades four to seven pupils. Focus group discussions were held with 6-8 teachers in each school. All the data collected pay particular attention to the concerns and perceptions of children in water, hygiene and sanitation practices with the aim of informing "learner centered and developmentally appropriate" hygiene education materials.

In most schools in the Western Cape, both "Draw and write" technique and focus groups were conducted in Afrikaans. In the Northern Province most of the focus groups were conducted in Sotho. Data were first transcribed in either Afrikaans or Sotho and translated into English.

2.1.2 Planning and capacity building in preparation for the study.

The project committee chair and members representing the collaborating institutions met at various stages of the project to plan, implement and evaluate capacity building

activities.Various workshops and meetings were held to involve and train the fieldworkers, while other meetings were held for co-ordination purposes.

2.1.3 Fieldworker training

The 20 field workers in the Northern Province were predominantly former students of the Diploma in Health Education and Promotion for Primary Health Care of the University of the North 1997/98 group. Their usual employment was in one of the following: environmental health; nursing; community liaison; sanitation and health inspection and education. After agreeing to be involved they attended two day workshops on two occasions. (22/23 August 1997 and 21/22 May 1998) At the first workshop the purpose of the project and study design were explained, and at the second one data collection was finalised. Dr Korrie de Koning of the Education Resource Group at the Liverpool School of Tropical Medicine facilitated these workshops. Participants undertook practical exercises using the instruments to be employed so that they were aware of potential difficulties and became competent in their use.

The four fieldworkers in the Western Cape were students visiting from the USA or Masters students based in the Western Cape. They participated in the training based in the Northern Province.

1997 - March 24/25	Consultative meeting in Cape Town
1997 - May 21	Steering committee meeting
1997 – August 22/23	Workshop Research Team, Northern Province
1998 - January 8	Meeting, Transkei
1998 February12/13	Consultative meeting, Northern Province and National Steering Committee
1998 March -24	Meeting of field workers, Northern Province
1998 May- 21, 22	Workshop Research Team, Northern Province
1998 - August 5	Pilot study planning
1998- September 28	Research Team, Progress report
1998 -November 10	Research Team Study Report
1998 - December 4	Workshop, Qualitative analysis

Ruth Kekana, Northern Province Project Coordinator and Ms Edith Andreas both attended a winter school course at Western Cape University on School- community water and sanitation from 13 –17 July 1998.

Progress reports were written regularly and cover the following specific periods:
March – September 1997; April – June 1998

Link with Leeds Metropolitan University

Dr. John Hubley, Senior lecturer at Leeds visited the project site in the Northern Province in July 1998, and then co-convened a UWC Public Health Programme – Winter School course on *School-community water and sanitation*.

Ms Tania Vergnani (UWC Education Faculty) and Dr June Copeman (Leeds Health Promotion programme) did visits to the respective partner country during 1999.

Ruth Kekana, the Northern Province Project Co-ordinator, attended a 10 weeks course in Health Promotion at Leeds from Sept – December 1998. All of these link activities were sponsored by the British Council.

2.1.4 Sampling

2.1.4.1 School sampling

In this study where the conditions and curriculum issues were to be researched quantitatively in schools from different socio-economic and geographical locations a stratified random sample was appropriate. Ideally the schools should be categorised into strata and then individual schools selected randomly form each strata. Often the number selected from each stratum is proportional to the size of the stratum in the target population ie. Proportional stratified sampling. (Katzenellenbogen 1991)

Selection of schools in Northern Province

Four factors influenced the selection of the schools in this study in the Northern Province.

- 92% of the population in Northern Province is rural and the sample therefore needed to reflect this demography
- The National Community Water and Sanitation Training Institute had details of all schools including their geographical location
- Data were available from the Environmental Health Section of the Department of Family Health and Welfare about the water supply and toilet provision in many schools
- All regions in the province were to be involved. Unfortunately region 7 could not be involved as it was newly created and did not have the administrative infrastructure in place at the time of the start of the study.

Initially schools were classified into four categories; i.e.
Schools with water and sanitation facilities
Schools with water without sanitation
Schools with sanitation without water
Schools without sanitation and water

Schools were therefore selected on the basis of whether they were rural, farm, peri urban, urban and private. Although 35 schools were selected initially, 5 in the Northern Province Region 7 were not included in the report because of the insufficient data.

Table 1. Categories of the 30 schools in the Northern Provicne

REGION	1	2	3	5	6	TOTAL
RURAL	Motlhasedi Seleka	Segole Thutlwane Modisha Kgabagare	Ambergate Seshane Sehlare Dipuwe	Hosana – Mavele Thabeng Bombeleni Mavhumba Khujwana	Kabishi Serokoloane Mapogo	18
FARM	-	Gabotse	Papkuil	-	Lehlasedi	3
PERI-URBAN	-	Makgubuketsa	Toronto	-	Mapalagadi	3
URBAN	Nylstroom	-	-	-		2
PRIVATE	-	Hebron	Polokwane Academy	Meridian	Zebediela	4
						30

Selection of schools in the Western Cape

Schools from the Western Cape were selected to represent a wide variety of regions and types of schools – farm (1), peri-urban (1), and urban (4).

Approaching the schools

The Provincial Department of Education gave agreement to this study being undertaken. Written permission was then obtained from each Education Circuit Manager. Finally the project co-ordinator for each region visited the school to explain the purpose of the study to staff, obtain permission and arrange for a mutually convenient time for the field visit to occur. No school declined involvement.

2.1.4.2 Learner sampling

From the classroom registrar, pupils were randomly selected. Three boys and girls were selected from each of grades one and two. From grades three to seven, fifteen boys and fifteen girls were selected, making a total of 36 learners selected per school

2.1.5 Methods of data collection

2.1.5.1 Surveys

Surveys are the most widely used method of data collection in public health research. Interview surveys collect data orally, while questionnaire surveys collect data in written form and may be self administered.

Surveys are relatively economical regarding cost and researcher/ interviewee time. They can collect qualitative as well as quantitative data. The limitations of surveys mean they are most suited to questions with a narrow range of meanings and to the collection of factual data. Questions may be factual, behavioural or attitudinal.

The analysis of quantitative data involves setting up a coding guide, coding the collected information, putting it into a computer file and then analysing it. Frequencies and percentages can describe the factual data.
Analysis of the data according to different subgroups in a total sample requires ensuring that the subgroups are of sufficient size to allow generalisations.

The School survey was administered in all study schools. The questionnaire was completed by the school principal or head of department. The instrument consists of four sections: (1) Water, (2) Sanitation, (3) School factors and health education and (4) Health education resources.

2.1.5.2 Draw and Write Technique

To increase the participation of children in curriculum design, the novel, but increasingly acceptable "Draw and Write" data collection technique was introduced and widely used in the United Kingdom (Williams, Wetton & Moon, 1989). The application of this technique highlights two main lessons. One important lesson concerns the "*need to consider the whole child when trying to discover what the child understands or is capable of*". The second lesson concerns the "*need to consider the situation from the children's point of view and paying heed to the child's ability in everyday contexts*". The major advantage of this technique and the lessons learned is that it enables children to express ideas about health and sanitation in their own words and images, without imposing an external constraint on their views.

In this study, the *draw and write* technique was employed to understand the coherence and purpose of children's representation of water, hygiene and sanitation conditions. The drawings which very young children produce do not fit into any major categories of depiction used by adults. Barnett et al, (1989) suggest that if these drawings are used to inform curriculum, a new mode of thought and understanding are possible. The use of children's drawing and writing may provide a window on ideas about the state of sanitation, hygiene and associated behavioural practices and attitudes at both home and school. These drawings may form the raw materials for developing more effective modes of communication by identifying those ideas and concepts that children intuitively gravitate towards in a child-centered learning environment

The use of drawing tasks to explore water, hygiene, and sanitation practices and behavioural issues in this study was designed to engage and gain insights from children in primary school grades one to seven. In this open-ended exercise, children were invited to ***" draw or write about (1) anything that makes you happy and keeps you healthy and happy and (2) anything about water and cleanliness that makes you happy and keeps you healthy."*** The first task allowed any drawings and the second task was specifically focused on aspects of water and cleanliness (hygiene and sanitation) that makes them happy and keeps them healthy. Children unable to write were encouraged to whisper in the ears of the facilitators, who would then write down on paper verbatim what the child said. Thus the process was as follows: (1.) Introduction to the activities, (2.) Explanation, (3.) Drawing, (4.) Writing.

In each group, common and exceptional drawings were identified. A sample of children (not more than five) whose drawings were exceptional and common or children whose drawings facilitators had questions about were interviewed about their drawings. After a demonstration lesson on the blackboard, each child provided the following information on the sheet of paper with their drawings.
Name, grade, age, sex, name of school, and, the name of the village or town of residence.

2.1.5.3 Focus Groups

Focus group discussions (FGD) involve open-ended interviews with between five and ten people (usually a homogeneous group) on a particular focussed issue for up to 2 hours. Participants are asked to reflect on the interviewer's questions. Generally the discussion gives rise to insights and solutions that would not be generated in individual interviews. (Brown, Schwaller 1989) Data from a focus group are most easily recorded on audio tapes, which then need to be transcribed. The information, like other textual data, may be analysed according to its content, and themes drawn out.

The groups can be used to both supplement and validate quantitative and other qualitative techniques, or as self contained means of data collection. The results can be triangulated with those of other data collection methods. (Baum 1998)

Students

The selected grades three to seven children were asked to remain in the classroom for the focus group discussion after the "draw and write" exercise. Researchers selected about eight pupils to participate in each focus group discussion. Each discussion group was recorded on a tape. Field notes provided additional information for curriculum design.

Teachers

A sample of teachers was selected to participate in the FGD. One teacher was selected from each grade level, even when the grade level consisted of several classes. Facilitators conducted the FGD in a classroom. Sessions lasted for about an

hour and thirty minutes. The research team consisted of a moderator and recorder for each interview. The FGD guide was structured to provide opportunities for probing. Variations in the depth and nature of the responses to a particular probe was allowed to evolve freely within the group. An interview guide consisting of an introduction, the purpose of the interview, and the rules guiding the focus group discussion, including anonymity and confidentiality was used for all interviews.

Parents
Similar to the teachers' FGDS, parents related to each school were included in a FGD.

2.1.5.4 Community Mapping

The purpose of community mapping is to: *(a) find out what types of water sources and sanitation facilities people in the community use; (b) identify problems associated with these services and (c) ascertain how these conditions might influence the thinking around water, hygiene and sanitation curriculum development.* In some schools, the mapping exercise was used as an ice breaker for the parent focus group discussions.

Community mapping exercises were arranged with selected parents and community members at a convenient time and location. The small group was asked to draw a map locating where houses, water, toilets, school, clinics, are and what happens to refuse in the community. After the mapping was completed, community members were asked various questions concerning their drawings, especially highlighting issues around sanitation and hygiene. Researchers focused particular attention on the concerns of parents in relation to the children's hygiene behaviour and practices.

2.1.6 Analysis

Collecting data using a variety of methods and tools presents the researchers with the difficulty of analysing the data in such a way that each method contributes valid and reliable information.

The analysis of the draw and write data can involve coding the children's work into categories so that a better insight may be gained into the connection children make between their actions and their health and into what they perceive as being healthy.

In applied research, where the issues are fairly clear at the outset, the analysis and reporting of focus group data can be done through a grid system that systematically summarises what each group said in response to each question.(Morgan 1997) This then makes comparison between different segments possible. Eg. Comparison of schools located in different areas – rural, urban. When analysing the data a detailed examination of one or two transcripts will give an initial set of theme codes to be applied to the other transcripts. Interpreting the data requires distinguishing between what participants find interesting, and what they find important. Ideally a final question to the focus group should be 'what do you think the most important points are?'

An interesting method used for analysis in a study on hygiene behaviour in Pakistan was the matrix proposed by Green et al (1981), in which behaviours can be classified according to importance and changeability. A four cell table is used to record the behaviours under four categories; high priority for programme focus; low priority; priority for innovative programme; and, no programme. All the data collected on about six different aspects of hygiene behaviour were presented in this way and informed the researchers' final selection of target behaviours for programme design.

2.1.7 Implementation

2.1.7.1 Piloting the instruments

To pilot the instruments each fieldworker was asked to select a school not in the study and use as a pilot. The choice of schools was made collectively so that duplication was avoided and more rural schools were included. At least one of the other types of schools was included. Subsequently the fieldworkers attended another training day to share experiences and modify the instruments in the light of the pilot and discussion.

2.1.7.2 Field visits for data collection

Ideally three fieldworkers with the regional co-ordinator would visit each school to collect all the data within one day. For logistical reasons in practice less field staff were involved in some of the visits.

2.1.7.3 School Survey

The school survey questionnaire was given to the head teacher to complete for their school. This provided information about the water, hygiene and sanitation facilities and some information about the school population. The proforma used has been called the school observation sheet on occasions.

2.1.7.4 Draw and write activities with children

The target number of children for this activity was six children for grades 1 and 2, consisting of three boys and three girls. For grades 3 to 7 every third child from a random starting point on the class register was selected until 15 boys and 15 girls had been identified. If a child was absent another child was selected using the same process. The additional child meant that if one of the children subsequently had to withdraw another child was available. The activity proceeded according to the agreed guidelines. (draw and write procedure)

2.1.7.5 Focus group discussions with children and teachers

These focus group discussions involved children from grades 3 - 7. Two focus groups were held at each school, one for boys and one for girls. The previously agreed student focus group interview guide format was used throughout. The focus group discussions were generally taped and later transcribed, but a reporter also took notes of the discussion as it occurred. Later the notes and transcriptions were compared. At each school the teachers were gathered together to form a focus group discussion. The attendance was opportunistic rather than selective.

2.1.7.6 Community involvement

When the fieldworker(s) arrived at the school, they met with the local leaders to request a meeting with local people to discuss the activity. This was generally held at the local council hall, and took the form of a question and answer session, where the fieldworker posed questions and individuals replied. This occasion also provided an opportunity to answer queries about the activity and its purpose.

The community mapping exercise took place in a village or township near the selected school in the Northern Province and Western Cape. A community mapping exercise with small groups of men and women in the community started with establishing good relationships with community members. In some instances, to get

a sense of water sources in the community and a feeling for what it is like to live there, the researcher walked around the village informally, helping people to get water and do other tasks and asks questions when the community gathers in a group. This process enriched the study by giving the fieldworkers better insight into the conditions and concerns of the adults.

2.1.7.7 Post fieldwork analysis

After the fieldwork had been completed all the fieldworkers met for a two day workshop, during which time they discussed the principles of data analysis and were provided with practical support from the project team. The data obtained from each school were transcribed and collated. After training and general discussion to identify common themes the fieldworkers were encouraged to locate examples in the text of their focus group discussions.
Subsequently the data were combined by type of school, and the focus group discussion data combined.

2.1.8 Difficulties encountered in the Northern Province

Timing: The actual data collection dates coincided with the Expanded Programme on Immunization survey. This delayed the progress of the study, and therefore delayed the meeting of deadlines.

Manpower : Although fieldworkers were trained and agreed to participate in the study, some failed to cover all the phases of the study undertaken.
Poor cooperation and communication among field workers resulted in some fieldworkers not attending meetings/workshops.

Co-ordination: The misplaced data documents taken to Western Cape after every workshop delayed compilation and analysis of collected data. Some school surveys had to be repeated.

Logistics: Distance between schools, poor road structures made it difficult for researchers to cover two schools in one day therefore data collected exceeded the set deadlines. Transport to carry out the fieldwork posed a problem for fieldworkers. Also, communication between the provincial co-ordinator and the fieldworkers did not always reach them. A suggestion was made that in the future community matrons be included so that the fieldwork can take place more smoothly.

2.1.9 Difficulties encountered in Western Cape

Focus Group Discussion

Language Barriers - In the Western cape, researchers encountered three languages: English, Xhosa, and Afrikaans. Lwazi Primary School, in Guguletu, is an English medium school and the teachers and principal said that students could understand and express themselves in English. However, during the Draw and Write Session and the Focus Group Discussion, researchers found that the students felt more comfortable expressing themselves in Xhosa, which posed language problems for the researcher.
Because of the language barrier in Lwazi Primary School, a teacher was engaged as a translator during the student focus group discussion. However, the teacher's presence might have influenced students' responses; also, the teacher might have interpreted children's responses in a way that does not reflect their original meaning.

Mixed gender: Focus Group Discussions among students, teachers, and community members in the Western Cape were conducted with both males and females together. The presence of the opposite sex might have influenced the quality

and nature of responses coming from both males and females, especially in the student focus groups discussions.

For example, during the student focus group discussion at Lwazi Primary School issues around the menstrual cycle emerged. The girls in the group were visibly uncomfortable with the subject and consequently reticent to discuss it. This was perhaps because there were boys present.

Confidentiality: Despite promises of anonymity and confidentiality, participants of community focus group discussions often felt uncomfortable speaking because they were afraid that there may be negative repercussions.

Timing: The field work was carried out in the last two weeks of the school year, during the students' examination period. This might have also affected the quality of students' responses.

Tangential discussions: Teachers often moved away from the central theme of discussion to issues that they were more concerned about.

3 Section III

3.1 Results

The results of the focus group discussion (FGD), the school surveys and draw and write exercise are reported in an integrated way under standard themes for each type of school. The summary of community involvement and the capacity building process carried out is presented separately under the implementation section.

3.1.1 Northern Province

Thirty schools are included in these results

Rural	18
Farm	3
Peri-urban	3
Urban	2
Private	4

3.1.1.1 Rural Schools

This group of 18 schools provided the richest data due to the fact that they represent the largest segment of the total sample across the province (30 schools) The average number of learners at the rural schools is 615 with an average of 16 teachers. The teacher-learner ratio is 1:39.

Personal Health and Hygiene

Perceptions of health and cleanliness

The drawings most frequently showed that the learners correlate food with health. Porridge, milk, cheese, fruits, and vegetables feature among the foods that they consider nourishing.

"I feel healthy after I eat pap and milk." (caption of drawing)

From their responses in the FGDs it appears that they are extremely aware of the importance of cleanliness – of self and environment – to maintaining health. Some learners commented that they feel healthy after bathing, combing their hair, washing their ears, wearing clean clothing, maintaining their nails, and brushing their teeth; using clean dishes and sitting in clean places. Exercise is a popular association as well. Drinking uncontaminated water was also frequently mentioned as a way of maintaining health.

Learners also associate feeling healthy with social activities. These activities might be playing soccer, attending church, or socializing. A few associate health with fulfilling academic activities – such as reading, attending school, and following school rules.

Practices around bathing

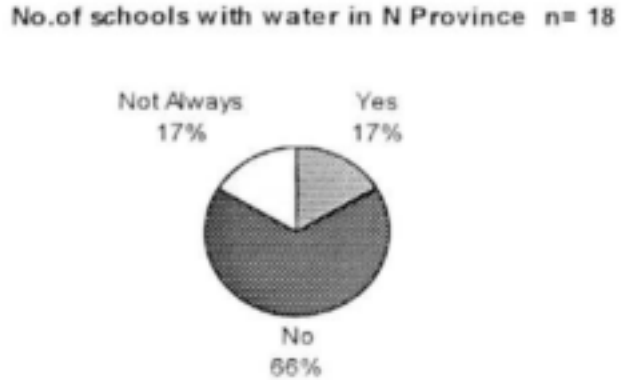
Learners conceive of an important relationship between keeping clean and maintaining health; and describe habitually bathing and washing.

"Wash your body regularly because if you don't diseases can attack you"
(caption of drawing by 10 yr old)

When speaking about their parents, however, learners explain that their mothers and fathers do not necessarily bathe on a daily basis.
Although rural area learners and adults might know the importance of bathing and cleanliness to their state of health, in reality bathing regularly is difficult because of the lack of available water.

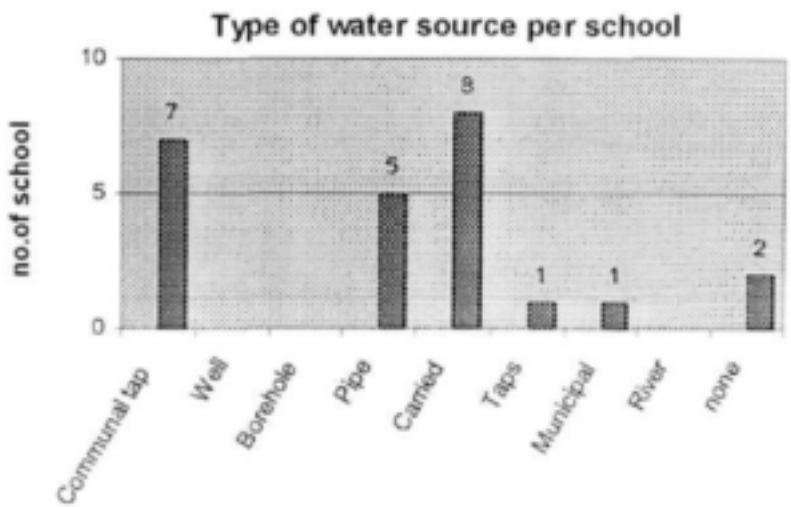
Water Sources and Associated Problems

Figure 3.



According to figure 3 the majority of children (66%) in schools in the rural Northern Province do not have access to water, and 17% have access to water irregularly. Only 17% have ongoing access to water at school.

Figure 4.



(Note that a school may have more than one source of water)

According to figure 4 one third (8) of the schools in rural areas have to carry water to school for personal or communal use. About another third (7) schools rely on communal taps and piped water. Futhermore, in the FGD, learners said that some

schools depend on nearby rivers or dams for water. One school studied receives its water supply from a nearby shop, while another depends on a water source located 2 km away. At the few schools that do have water taps on their grounds, learners explained that the facilities are either broken or undependable because of frequent water shortages.

From learners' responses in FGDs, it appears that the water that schools do have, regardless of where it might come from, is generally used for cleaning purposes. Learners and teachers carry their own drinking water from home to school in one or two liter bottles. Schools usually do not have water available for hand-washing.

Some homes in rural areas share communal taps; between 5 and 10 homes typically share one tap among them. In other areas, homes do not have access to nearby water taps. Instead, households collect water from bore-holes, wells, dams, reservoir or area rivers that are often long distances from home.

Learners at many of the schools explained that fetching water is the responsibility of the boys of the households, while house cleaning is a female role. However, in most rural areas, both men and women are involved in water collection. At schools where there are nearby water sources, teachers supervise learners collecting water

Many social problems arise from the water situation. Learners are often absent from school because they are responsible for collecting water for their homes; the long distances they need to travel and the time they need to spend in queues to fulfill this need keeps children away from school. In some areas fights were reported to break out around communal taps.

In the survey twelve of the 18 school respondents said that their pupils walk a long distance to school and 7 felt that there was high absenteeism, despite the fact that all the schools reported high pupil motivation to learn. Learners also comment that collecting water for school takes away from time that could be spent learning.

Regardless of the original source or the proximity of the source, all rural areas share a common problem – the water at home and at school is limited. This water limitation forces people to prioritize how that water is used. From learners' responses in FGDs it appears that bathing takes lower priority than using water for drinking or cooking. Learners mentioned that when water is unavailable, households do not have water for cooking. Many bathe in dirty water from wells or rivers. At school, water for hand-washing holds very little importance. According to the survey only 5 of the 18 schools have hand-washing facilities and only 3 of these provide soap. Learners are naturally more inclined to use the water they bring to school for drinking rather than for hand-washing purposes.

Water Quality

Water can become contaminated at any point in the water collection process. First, the source of water, itself, is often contaminated. Water can become contaminated as people collect it or in storage. In the survey the schools with water reported the main contaminants to be animals and dirt. Drinking water is kept separate in a third of the schools and half of the schools said the drinking water is clean.

> "people bring dirty water to school"
> (caption next to a drawing of a person with a bottle)

Learners in the FGDs appear to understand the necessity of purifying water either by boiling or chemical additives. Learners from one school described purifying water with Jik or Javel; other learners explained that they boil water for mixing juice.

Health Consequences

Use of river water, or water from some other contaminated source, for washing, bathing, and in some cases, for drinking , is seen by the learners as the underlying source of many of their health problems.

Table 2. **Five Most Common Health Problems Among The Learners**

HEALTH PROBLEM	RURAL	FARM	PERI URABN	URBAN	PRIVATE
Diarrhoea	6	1			
Scabies	6	2			
Nutrition related conditions	6	1			1
Lack of proper hygiene	5				1
Vomiting	4				
Poor environmental hygiene	3		1		
Lack of water	3				
Sores	3	1			1
Poor sanitation	2				
Diseases	2				1
Colds/flu	2	1		1	
Psychological problems	2		1		
Ringworms	2	2			1
Cough	2	2			1
Bilharzia	2				
Kwashiorkor	2				
Lack of food	1				
Skin problems	1	1	1	1	1
Epilepsy	1		1		
Measles	1				
Mumps	1				
Chicken Pox	1				
Haematuria	1				
Fainting	1		1		
Nasal bleeding	1				
Hearing problems	1				
Eye problems	1		1		
Minor injuries	1				
Headaches		1			
Dental problems			1	1	2

From the survey (see table 2) the most common health problems reported in the rural schools include: diarrhoea; scabies; nutrition related conditions; vomiting; sores; ringworm; colds/flu and bilharzia. Most of these conditions are directly related to

either the quality of water or the quantity available Inadequate water is just as commonly seen as the underlying reason for health problems at school.

> "Sometimes children suffer from diarrhoea and lack concentration in the class, because of a lack of water" (teacher)

Toilets, Toilet Use, and Sanitation

Figure 5. *Types of toilets per school in rural Northern Province (n=18)*

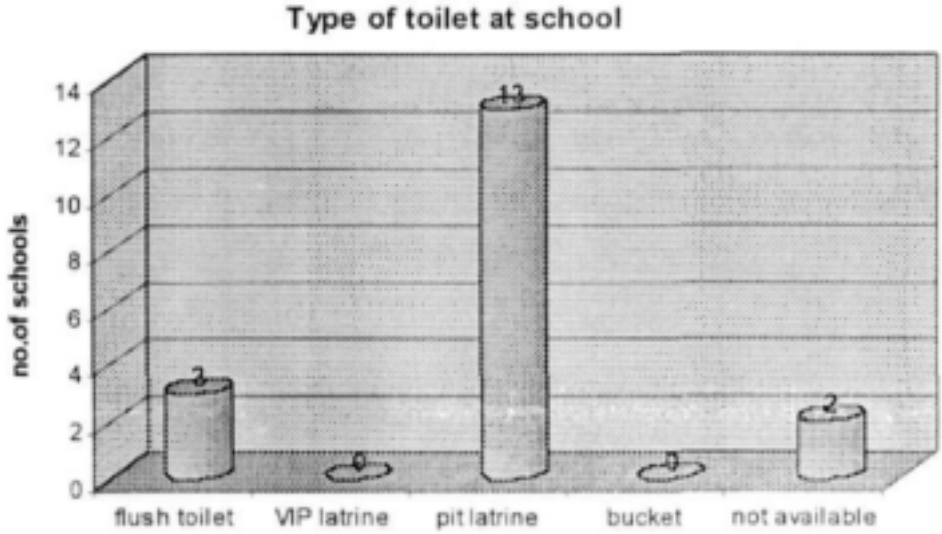


Figure 5 shows 2 different types of sanitation facilities in different school: flush toilet (3) and pit latrine (13). There were no schools with VIP latrine or bucket system.

3.2 Conditions of Toilets at School

> "The toilets are horrible. They look too bad ... We built toilets a month ago. But it has collapsed." (learner in FGD)
> "There are germs in the toilet, and smells" (caption to grade 5 drawing)

With the exception of one school which recently built new pit latrines, the toilets at all the rural schools studied were in poor condition. Some (2) of the schools did not have toilet facilities for students. (see figure 5) On average there are 83 pupils to each toilet.

A similar story is found at most rural schools. Learners complain that their toilets are full, broken, or smelly. At some schools, the toilets have collapsed; at others, students complain that the toilet seats are worn out. Toilets available to teachers are generally in better condition; however, even they are often dirty, full, or inadequate in some other way. Privacy is difficult to attain in school toilets. At one school in particular, the girls' toilets were missing a roof; at another, the toilets have screens, instead of walls, between toilets – which affords users very little privacy.

"I can't go to the toilet because the door can't be closed" (drawing of 10 year old)

In some areas, the outside community trespasses into school grounds to use the toilet facilities; the community is thus sometimes to blame for the condition of the toilets.

Both learners and teachers report that students avoid using school toilets. Alternatively, students use the bush or veld. In some cases, learners squat on the toilet floors to relieve themselves. At one school, learners reported that some pass stools in the classrooms after school hours. Some learners use nearby dongas or visit nearby homes with toilets; others wait until school ends to go home to relieve themselves.

"children lose periods to go and defecate in the bush"
(caption to grade 7 drawing)
"small children defecate on the floor" (caption to grade 1 drawing)
"people defecate on the refuse heap" (caption to grade2 drawing)

According to one teacher, using the bush can be dangerous or embarrassing for girls; female learners are usually the ones who wait until home to relieve themselves. Male students are probably more inclined to use the bush or veld. From observations and FGDs, it appears that the absence of proper toilet facilities at school is more problematic for learners than for teachers and more problematic for female learners than for male learners.

Students also often indicated in the drawings related to the use of toilets that they were afraid of snakes, mosquitoes, and flies in the toilets.

"I am afraid of this" (caption of a grade 2 drawing of a snake)
"Lizards and snake can kill me." (caption of grade 3 drawing)

In the FGDs, girls, specifically, indicated that they are afraid of encountering criminals and rapists in the toilets; some explained that they have no privacy in the toilets – boys peep through the window. Rural schools do not provide female students with sanitary pads. Consequently, girls stay away from school when menstruating. Rural schools and homes often do not have toilet paper. In the survey only 3 of the 18 schools reported providing toilet paper. Newspaper, stones, or sticks are used instead.

The main limitation to toilet cleaning at rural schools is water. At most schools, teachers supervise children in cleaning the toilets. In one case, a caretaker is responsible for toilet maintenance.

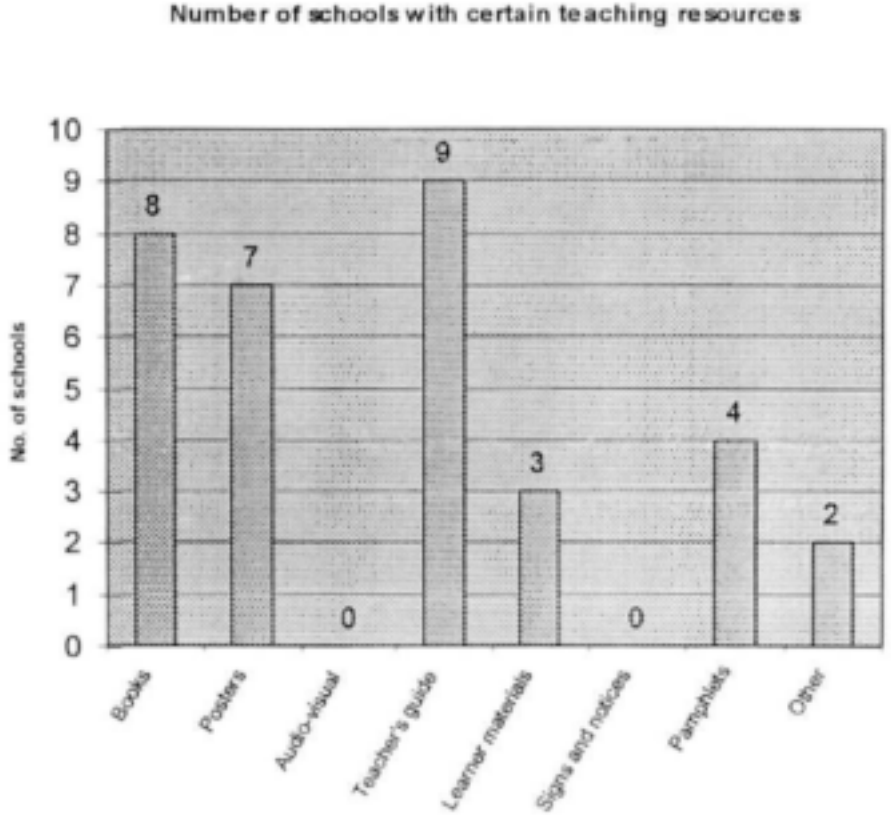
Many children expressed that they fear falling into the pit of the toilet. Both boys and girls expressed a fear of pinkie-pinkie – a make-belief creature or ghost that allegedly harms children.

Some learners seem aware of the environmental hazards of using the veld instead of toilet facilities; one learner in the FGD understood that when they use the veld and then it rains, germs get into the river, which causes disease.

Learning materials and methods

A range of hygiene education learning materials to help to explain the links between water, sanitation and disease should be available in schools. The most basic range includes books, posters, audio-visual materials, teachers guide, learner materials, signs and notices and pamphlets. These were listed on the survey questionnaire.

Figure 6.



(Note that each school could have a number of the types of material.)

Figure 6 shows 8 school representatives said they had books, 7 had posters, 9 had teacher's guides and a few had learner materials and pamphlets. Eleven of the 13 respondents said the materials they have are not appropriate. According to the school survey respondents the lack of learning materials is the most problematic of the educational issues in the schools, with 5 schools having no teaching materials on hygiene at all, followed by the lack of water. Other issues related to infrastructure and numbers of teachers.

Inconclusive information was gathered about the teaching methods and activities used. When asked in an open ended question what teaching methods or activities are used,few replies were forthcoming; however, when presented with a checklist including: Child- to child; group discussion; music/dance; lecture; role play; and, participatory learning; then most of the respondents said the teachers used almost all of them. Without actual observation by the researchers of teaching, it is impossible to know what really happens in the teaching programme and these results should therefore be approached with caution.

School management and extramural activities

Eleven of the 18 schools said the teachers are involved in the management of the school, while only half said that parents are involved in school activities. Apparently pupils participate in extra mural activities in all the schools. Three schools cited the lack of parental involvement as a limiting factor in the running of the educational programme.

Suggestions for Improvement

> "If the government can provide us with water, other school children outside our premises can share with us. We can't live without water. We ask the government to supply us with water that will enable us to clean our toilet." (caption to drawing)

Suggestions coming from teachers are usually targeted at the Department of Education, Water Affairs, or Health. Their major concerns are around the availability of water and building better toilet facilities. They also expressed the need for more health promotion at school as well as in the outside community.

Whereas teachers expressed concern over making more facilities available, students' suggestions are centered around toilet cleaning, toilet use, and water availability. It seems students are more interested in having stricter rules and guidelines for toilet cleaning than are teachers. The need for teaching proper toilet use was expressed. Learners also would like to have both more and better toilet facilities and an improved water supply.

3.2.1 Farm Schools

Three farm schools were included in the sample. The average number of learners was 231 with an average of 9 teachers, resulting in a teacher-learner ratio of 1:27 .
According to the fieldworkers the farm school learners were extremely subdued and taciturn during the focus group discussions, unlike their urban and rural counterparts. This might be because of the cultural environment of farm areas. Consequently, much of the information comes from teachers.

3.2.1.1 Personal Hygiene and Health

Perceptions of health and cleanliness
Like learners from other areas, farm children perceive a close relationship between being clean and being healthy. Learners identify wearing clean clothes, washing, combing hair, and preventing infection as ways of preventing illness; eating also emerged as an important theme in maintaining health.
Learners claim that they do live out their beliefs of keeping healthy. However, during FGDs teachers expressed doubts over whether learners really do put what they know and learn about health and hygiene into practice. In fact, learners frequently come to school dirty and hungry.

> "At the farm schools I don't think that they are implemented because you find a family in one room. They've got one bedroom. They share resources like soap, washrag. You'll find the whole family with one washrag." (Teacher in FGD)

The main obstacle to maintaining hygiene and health is economic. These learners' parents are farm workers who earn very little; they come from circumstances where an entire family might share one room. If parents do have the money to purchase soap, washrags, or food, they often opt to spend it on immediate pleasures instead.

> "Parents are very much into [alcohol and drugs.] If they get a little bit of money , instead of buying soap and so on, they drink it." (teacher in FGD)

The failure to practise regular hygiene habits might be a matter of misplaced priorities and lack of resources rather than an absence of knowledge.

Hand-washing
Like schools in many other parts of the Northern Province and Western Cape, farm schools usually store water for hand-washing in basins and buckets, in which learners wash their hands. All 3 farm schools reported in the survey that hand-washing facilities are available, and 2 provided soap.

> "We do have about four buckets. We put water in them outside"

The obvious problem with this system is that the water in the bucket is used and re-used; since the water is changed infrequently, learners consequently wash their hands with dirty water.

3.2.1.2 Health consequences

According to the survey the common health problems experienced by the learners include: diarrhoea; scabies; nutrition related conditions; ringworms; coughs and

headaches. (see table 2) Many of these are directly or indirectly related to the quality and or quantity of water available.

> "After winter when I am no more coughing" (girl in FGD talking about health)

3.2.1.3 Water Sources and Associated Problems

Sources of Water

Respondents in one of the schools said there is no water available, while the other two cited communal taps and borehole water as sources. Learners carry water to the school where there is no water available. Like the rest of the Northern Province, farm areas encounter frequent water shortages. The water situation on farms, however, is unique in that the farm owner has control over the entire water supply. For example, one farm school has easy access to both a tank and a water tap. However, the farmer allows the school only to use the water from the tank. The water situation is more troublesome at another school where the water supply is sometimes turned off. Some farm households have access to nearby water taps, whereas other households have to travel far to obtain water.

Drinking Water

In the survey two of the schools' drinking water was rated as being clean. However, in the FGDs the teachers describe how learners usually either place their lips on the tap or use cupped hands to drink water. Conscious of the health implications of these practices, teachers encourage learners to use containers instead. At one particular school, there was a pile of tin cans at the base of a tree. Researchers observed learners picking up one of these old cans, filling it with water, drinking, and tossing the can back. Teachers at the school admitted that even this practice is probably not safe, but explained that there was no alternative.

> "I don't think it's healthy because you just pick it up. We are trying to discourage them to put their mouth on the tap. So that's why we use tins. But still, it is unhealthy" (teacher in FGD)

Generally, farm-school teachers say they are very careful about encouraging water conserving practices although this was not reflected in the survey when asked if the school has a water conservation programme. Teachers supervise children's use of water.

3.2.1.4 Toilets, Toilet Use, and Sanitation

Sanitation is a more pressing issue for farm areas than is water. The three schools lack adequate toilet facilities. The toilets that are available are usually pit latrines that are full or smell so bad that people would rather use the bush. According to the survey 2 schools have pit latrines and have the problem of flies, while 1 school has flush toilets. Apparently all toilets are poorly located and generally in poor condition. The school with a flush toilet has inadequate water. Teachers have to bring water to the school to flush the toilet.

> "There's only one toilet shared by all the school children and villagers. They were maybe meant for the school children or the villagers, I don't know." (teacher in FGD)

When teachers take their complaints about toilet facilities to the farm management they receive no answers and no promises. Farm homes face similar issues in solving their sanitation problems. Children in farm areas usually come from homes

without private toilets. These households usually have access to communal pit latrines.

Learners usually clean teacher and learner toilets under the supervision of teachers. However, at one school, in particular, nearby villagers use school toilets. Thus, cleaning these learner toilets seems fruitless because villagers use the toilets and leave them in a mess.

Since many households do not have toilets, many learners probably do not use toilets habitually at home. At school, teachers have to teach many of the younger learners how to use the toilet and discourage them from using the bush.

> "Teachers supervise pupils not to go too far as they use the bushes, therefore there is a danger of snake bite" (teacher in FGD)
>
> "Most of the pupils help themselves [in the field] because the toilets are smelling of urine."
> "The toilets are dirty. Only big boys use the communal toilets." (teacher in FGD)

Farm schools do not provide students with toilet paper. Students use newspaper or grass as alternatives.

3.2.1.5 Learning materials and methods

In the survey two of the 3 schools were reported to have some teaching materials on hygiene and water available. One of these had 4 different materials. The appropriateness of these materials seemed to be acceptable to the respondent. These 2 schools, like the rural schools, ticked almost all the teaching methods on a list as being in use, although when questioned earlier could not report on any methods except lectures and role plays.

3.2.1.6 School management and extramural activities

Teachers are involved in the management at all the schools but only in one school are parents involved in activities. Learners participate in extramural activities in all the schools.

3.2.1.7 Suggestions for Improvement

Farm teachers and learners most frequently commented on improving sanitation facilities and water access.

> "I would take school fees to repair toilets" (learner in FGD)
> "I would ask the farm to fill toilet pits with water to allow them to sink;"
> "There should be donations or something that will help to drill water and erect a pit toilet." (teacher in FGD)

Teachers at farm schools feel that the government overlooks and ignores their schools.

3.2.2 Peri-Urban Schools

Three schools were visited, with an average of 821 learners per school and an average of 26 teachers. The average teacher : learners ratio is 1:31.

3.2.2.1 Personal Hygiene and Health

Perceptions of health and cleanliness

In the drawings learners most frequently associated health with a healthy diet, cleanliness, nice clothes and exercise.

The practices that learners describe in the FGDs as healthy demonstrate that they place much emphasis on cleanliness – both of their home environment and of themselves. They describe the importance of wiping fruits and vegetables before consuming. They also often mention completing common household tasks and chores, such as cleaning windows, toilets, and dishes. Brushing teeth, bathing, and combing hair were identified as ways of keeping themselves clean and healthy. However, similar to learners from farm areas, learners described their family members as occasionally neglecting their cleanliness.

> "Our brothers sometimes don't wash frequently, while others sponge regularly, because they're lazy and untidy." (girl in FGD)

> "Fathers keep themselves clean at all the times. [But] some don't bathe frequently." (boy in FGD)

A few learners in the FGDs described avoiding sharp instruments, fire, guns, and paraffin as ways to keep themselves healthy.

Common health problems of the learners were reported in the survey related to : skin, respiratory, fainting, epilepsy, dental, eye and environmental hygiene (see table 2) . Schools do not have health workers or nurses who regularly visit schools. Often learners first show signs and symptoms of an illness at home but these are disregarded and the child comes to school ill. However, a sick child does not receive the proper attention at school either.

> "You might find that child might come to me not feeling well. Then what I have to do is to send the child to the sick-room. The child then sleeps there without getting any attention." (Teacher in FGD)

Teachers observed that unkempt learners is a common occurrence.

> "In one case, a girl is nearly 12 years old, but she comes to school so dirty. When you try to ask what the problem is, the problem is at home."
> (teacher in FGD)

This inconsistency between what learners report and what teachers observe, demonstrates that the learners are not as attentive to personal cleanliness as they claim.

Barriers

Economic limitations and water shortages are the most important barriers to personal health and hygiene. Although peri-urban areas do not often lack water, when they do, people have to travel to another community, often several kilometers away, to obtain water. People's first priority is to use this water for drinking and cooking. Cleaning becomes a relatively low priority during water shortages. Although learners

describe a healthy diet as consisting of fruits and vegetables, they often do not get those foods because of a lack of money.

Economic limitations are also an underlying factor in the lack of proper hygiene. Parents cannot afford to supply their children with cleaning materials or fresh clothing; in many cases, parents cannot afford the time to oversee their children's cleanliness.

The fear of offending parents also limits the action of teachers. If a child comes to school dirty, teachers are often unwilling to clean the child or let the child clean himself at school.

> "Sometimes you'll try to clean the child and then when he gets home they ask what happened, why are you like that? The child says 'madam says I must go and must wash' ... then, the parents feel they are cleaning their child and are disgracing the child." (teacher in FGD)

3.2.2.2 Water Sources and Associated Problems

Water Sources at School

Two of the three schools surveyed had water on site through a communal tap or pipe. Only one depended on learners carrying water to school.

Depending on location of these schools and the frequency of water shortages, teachers have to organise an alternative source of water. At one school, the nearest water source is about 2 kilometers from the school. Consequently the school buys water, and teachers and learners each bring 2 liters of water to school – thus the school gets its water from several different sources. Learners usually use containers or cupped hands to drink water

Water Sources at Home

Learners who attend peri-urban schools come from many different kinds of areas – peri-urban, urban, and rural. Urban and peri-urban households usually have indoor taps. Occasionally homes in peri-urban areas do not have water, in which case the household buys water from some nearby location. Obtaining water, however, poses a daily challenge for rural households. Since these homes usually do not have indoor taps, people in these areas have to travel long distances to obtain water.

Water Availability

During FGDs teachers and learners claimed to observe water conserving practices. At two schools, teachers supervise learners putting a bucket of water inside the classroom for drinking water and buckets of water for hand-washing. Teachers developed this system to keep learners from wasting both time and water by playing with water. In the survey one school reported having a water conservation programme and conducting a water audit. The older learners at this same school are allowed to visit the taps when they are thirsty, as an exercise of practising water conservation habits on their own.

Water shortages are a reality at most schools; the frequency of these shortages, however, varies according to where the school is located. For example, the water supply at one particular school depends on electricity; hence, water comes and goes with the availability of electricity.

3.2.2.3 Toilets, Toilet Use, and Sanitation

All three of the schools had toilets, with one having two types ie. flush and pit latrine. According to the survey data the toilet : pupil ratio is as high as 1:51.

The condition of the toilets often depends on how frequently the toilets are cleaned and on who is responsible for cleaning the toilets. All the schools reported non-specified problems with the toilets in the survey. The most common complaints from the discussions were that toilets are full, and there are too few; the flushing toilets do not work properly, and the toilets leak, smell bad, and the floors are messy. One school uses alternative pit toilets because there is no water for flush toilets.

> "When water is not available in homes, toilets become filthy and has a bad smell." (boy in FGD)

Learners and teachers at schools with caretakers had few complaints about the state of their toilets.

Toilet Use

Most learners in peri-urban schools come from homes with toilet facilities. They usually use toilet facilities both at home and at school. However, both teachers and learners explained that there are cases of children who do not. A common fear expressed through the drawings was that of finding bugs, spiders, snakes and cockroaches in the toilets.

Boys urinating outside, in the school grounds instead of using toilets, is a frequent problem. Often, in peri-urban schools, boys seem to engage in this practice more out of habit than for any other reason.

Usually the younger primary school learners – in grades one and two – do not use the toilet. This might be because they are too small for the toilet or they are afraid to ask for permission.

Much of the poor toilet conditions that learners complain about, however, are the result of bad behavior. Many learners play with water in the toilets, do not flush the toilet, or flush the toilet too frequently.

> "Small children use toilets, but some urinate against the toilet walls and then cause toilets to smell badly."
>
> "As you know, how children behave ... They go [to the toilets], tear the toilet paper on the floor, and they don't flush ... that is when we have a few problems; where the toilets are blocked sometimes." (learner in FGD)

Learners who try to stop other learners from misbehaving in the toilets might become the target of bullying.

> "People in grade seven ... they sometimes play with water by blocking drains with toilet paper. We're unable to advise them because they may thrash you or tell you that the water doesn't belong to your home ... He may follow you at home and thrash you. These elderly boys also flush our heads into the toilet. In most cases, they flush shoes." (boy in FGD)

Toilet paper is usually available to learners in the toilets or in the classroom on request. Some learners admit that learners frequently misuse the supplies by playing with them or taking them home. According to the survey two of the three schools provide hand-washing facilities with soap.

3.2.2.4 Learning materials & teaching methods

Interestingly the peri-urban school without water on site is the one with the greatest variety of teaching materials relating to hygiene and sanitation ie. books; teachers guide; learner aid material; and, signs and notices. All three schools had books. The school which only had books regarded the materials as not appropriate. Barriers to learning were listed as not enough toilets, a lack of water, poor conditions of the schools and general poverty.

3.2.2.5 School management and extramural activties

In all the schools there is participation by teachers in management, but parent involvement in only one. Learners participate in extramural activities in two of the schools.

3.2.2.6 Suggestions for Improvement

Both teachers' and learners' suggestions for improvement reflected the need for a more available and adequate water supply and better sanitation facilities.

> "I would get a person to watch the use and cleaning of toilets who will report those who cause problems." (boy in FGD)

Learners want toilets in better condition. They recommended better cleaning methods, more cleaning supplies, or stopping children from practising bad behavior. They suggested that boreholes, truck transported water, and buckets to catch rain-water be used to solve water shortage problems.

Teachers also recommended that water be made more available. However, teachers' reasons tend to be more expansive than the learners'. For example, one teacher would like to see

> "a borehole within the school premises so that teachers can be able to teach pupils about cleanliness." (teacher in FGD)

Teachers most frequently expressed the need for more teaching aids – textbooks, learning materials, and visual aids – from the Department of Education.

Teachers would like to have some form of health-care at schools.

> "The government needs to send health workers to come to our school once a month because you find that sometimes we have problems with the health of the kids." (teacher in FGD)

3.2.3 Urban Schools

Only two urban schools were surveyed and a focus group discussion was held at one school.
The average number of learners is 387, with an average of 10 teachers, resulting in a teacher-learner ratio of 1:39.

3.2.3.1 Personal Health and Hygiene

Perceptions of Health and Hygiene
In the FGDs and the drawings boys and girls associated being healthy with good foods, such as porridge, fruits and vegetables.
In addition, boys associated health with exercise, and girls with the environment.

> "When exercising, when I am at ease with no parental disturbance." (boy in FGD) "When we stay in a clean environment, where there is no dirt." (girl in FGD)

Mothers are seen as the ones who should be responsible for washing, cleaning, and keeping the home environment tidy. Fathers, on the other hand, are uninvolved in keeping the home environment clean.

All groups described regularly washing themselves and their homes.

Health consequences
The most common conditions affecting the learners were reported as colds/ flu, skin problems, dental problems, asthma, and allergies. (see table 2)

3.2.3.2 Water Sources and Associated Problems

Sources of Water
According to the survey water was available from a tap at one school and a borehole at the other. Unfortunately, the tap was often left open, wasting water. Consequently, the staff had to start bringing water to school in a bucket and the pupils had to go home at break for water.

> "If there is no water we go home during break time to fetch water. I go home during break and drink juice." (learner in FGD)

Respondents at both schools said there were rules regarding the use of water facilities, and one had done an audit and put a conservation programme in place.
Learners recognize that failure to close the water taps is a problem and would encourage a guard and a system to report misuse. They also believe that they should be taught the importance of water.

> "Dirty water makes you go to the toilet" (learner in FGD)

3.2.3.3 Toilets, Toilet Use, and Sanitation

Condition of Toilets
The flush toilets were rated as acceptable by the school representatives in the survey, but as dirty and smelly by the pupils in the FGDs. The toilet –learner ratio is 1:23.

No system of cleaning toilets appeared to be in place at the schools studied. Learners suggested that other pupils should be engaged to clean the toilet. Lack of maintenance, blocked toilets, difficulties with the flushing system were all mentioned as problems.

Toilet Use

Learners tended not to use the toilet because it was dirty and smelly.

> "Mostly girls do not use the toilet. They urinate at home before coming to school. If they are pressed, they urinate outside the toilet. It makes the place smell."
> "There are children who do not use the toilet because they are dirty."
> "They [some children] are also afraid of infection by worms in the toilet holes."
> (girls in FGDs)

Toilet paper was available in the toilets or in the classroom but according to some learners others were afraid to ask for it.

> "Some children throw stones into the toilets to block them. Some use the stones to wipe themselves after using the toilets, although there are toilet papers kept in the classrooms. Some children are afraid to ask for toilet papers from the teachers." (girl in FGD)
> "Some [children] use dirty socks, pages from exercise books, sticks and stones."
> (boy in FGD)

According to the survey hand-washing facilities and soap were available at both schools.

3.2.3.4 Learning materials and methods

Both schools had posters relating to water hygiene and sanitation, and one school had books and pamphlets. One school rated their resources as inappropriate while the other felt that they were very appropriate.
The educational problems being experienced were reported in the survey as a lack of learning materials, the need for more toilets, not enough teachers, a lack of office equipment and computers, and, no life skills education. As with many other schools, when asked what teaching methods are used very little other than 'telling' or lecturing is mentioned. However, when presented with a checklist of ideal teaching methods, the respondent ticked all or most of the possibilities as being used at the school.

Both schools reported that their pupils are eager to learn; there is a low absenteeism rate and no problem with lateness.

3.2.3.5 School management and extramural activites

The teachers are involved in the management of the school, and parents participate in school activities. Pupils participate in extra curricular activities.

3.2.3.6 Suggestions for Improvement

Repair and maintenance of toilets were seen as key issues by learners and teachers.

3.2.4 Private Schools

Four private schools were included in the sample, with the average number of learners being 380, and average number of teachers was 16. The teacher-learner ratio was therefore 1:23.

3.2.4.1 Personal Health and Hygiene

Learners from private schools share the same perceptions of health as their counterparts from other areas. Among the foods that they consider healthy are more expensive items – such as wheat-bix, mangoes, meat, and coffee – which children from other areas usually do not mention. These learners also frequently mentioned that visiting the doctor is important, and several associated social activities, such as attending school and relating well with parents as part of health.

> "When I go to school, eating well and relating with my parents well." (boy in FGD)
>
> "We must drink clean water, if not, we must boil to kill germs" (learner in FGD)

Dirty Children at School

Like other schools, private schools have frequent cases of learners coming to school unkempt. This is rarely the consequence of economic hardship. At one particular school, it is usually the learners who board who come to school untidy. It is likely that these learners come to school unkempt because of an absence of parental guidance.

According to one teacher, the absence of certain minor hygiene practices might come from an absence of knowledge

> "I don't know they know that if in two days the dirt comes out with their food then that is what makes their stomach ache. They know that their stomach aches but I don't know whether they know where it is coming from." (teacher in FGD)

The most common health problems reported in the survey were varied and include nutrition related conditions (being overweight identified specifically), sores, general diseases, ringworm, cough, skin problems, dental problems, and stomach problems.

3.2.4.2 Water Sources and Associated Problems

Sources of Water at School

Private schools all have taps on the school grounds. The water that comes from the taps is usually of good quality.

Sources of Water at Home

Learners at private schools come from a variety of backgrounds. Learners from rural areas might use water from a nearby river, while those from urban areas have taps inside their homes.

Water use

Teachers at private schools are generally very conscious of water conservation and describe taking measures to conserve water at school. Teachers explained that they teach learners to drink clean water and make sure that they do not waste water. Learners at the same school said that teachers direct prefects to monitor water use, and three of the schools reported having rules regarding the use of water.
Despite these efforts, learners still waste water by playing with it at school.

"School children waste water in the school. They leave the tap running after drinking. Some boys play with water by showering the others during break. Some boys break and remove taps and threaten that we should not report them." (girl in FGD)

Learners usually use containers to drink water from or place their mouths on the water taps.

"Most of the time they use containers that they buy cool-drink in (to drink water)... Some put their mouths on the tap which of course is unsafe because that is how germs are spread." (teacher in FGD)

Although most of the water that comes from the taps is clean, some learners complained that the water has a funny taste and causes stomach aches. These learners also reported seeing toilet paper in the taps.

Having inadequate water or contaminated water leads to other problems. Learners at one particular school, for example, drink water from the toilet when the tap is dry or when the water does not smell right.

3.2.4.3 Toilets, Toilet Use, and Sanitation

Conditions of Toilets at School

All the schools have flush toilets and the area around the toilets is reported to be clean with no flies present. The toilet- learner ratio is 1:40.

The condition of toilets varies with each private school. At some schools, neither learners nor teachers have complaints about the condition of their toilets. At other schools, learners describe smelly, broken, old, or graffiti- covered toilets. However, in the survey all school representatives rated the toilets as good or acceptable.

Toilet Use at Schools

At schools with toilets in bad condition, not all learners make use of the toilets. At one such school, some learners, particularly the younger ones, use the bush.
Learners do not want to use the toilets because they smell badly; smaller learners are afraid of falling into the toilet; and, in many cases children fear 'pinkie-pinkie'.

Even at schools with toilets in good condition, teachers find boys urinating outside.

"I think that they just don't want to go down to the toilets; because it is so easy if you're living outside in the rural areas to just go outside." (teacher in FGD)

Most of the problems associated with toilets have to do with their condition. However, the source of the bad condition of the toilet is often learners' misbehavior. Teachers report that learners often do not flush the toilet and throw toilet paper around.

According to the survey at the two schools where there is toilet paper available, it is in the toilets or obtained from teachers upon request. At the other schools, learners are required to bring their own toilet paper. There are hand-washing facilities available at all the schools, but soap is only provided at one of them.

Private schools usually have cleaning staff who are responsible for keeping the toilets and classrooms clean. At a few schools, learners have cleaning tasks that

they fulfill under teachers' supervision. However, one teacher observed that making learners clean their school would be more useful in teaching them to maintain environmental cleanliness.

3.2.4.4 Learning materials and methods

All of the schools have books available to promote hygiene and sanitation learning. Half of the schools had posters, teacher's guide, learner aid material, and, signs and notices. Only one had audio-visual materials. All these materials were rated as very appropriate or somewhat appropriate; however when educational problems in the school were listed, the lack of learning materials was highlighted. Other problems listed included (each mentioned by one school) lack of water, not enough teachers, limited parental involvement, lack of computers, demotivated learners and teachers, poor discipline, lack of boarding facilities, and some learners having difficulty with English.

Most schools reported that learners are eager to learn and that there is no problem with absenteeism. Learners come to school late sometimes at 2 of the schools but this is not due to long distances to walk as in other types of schools.

Health topics presented in the private school classroom, like everywhere else, include lessons on personal hygiene, nutrition, road traffic, first aid, and environmental health.
Teachers consistently complained that health education is too theoretical; they feel they need models, posters, and teaching aids to make their lessons more concrete. For example, in teaching personal hygiene, teachers usually show pictures and explain how learners should wash themselves, keep their clothes clean, and explain the importance of sanitation. However, it is difficult for learners to understand these theoretical lessons, without demonstrations.

3.2.4.5 School management and extramural activities

Three of the four schools said that the teachers are involved in management. Only half of the schools have parents participating in school activities, and learners participating in extra- curricular activities.

3.2.4.6 Suggestions for Improvement

Learners' suggestions were primarily concerned with improving the condition and cleaning of toilets.

> "I would make sure that there are enough chemicals and brushes to clean the toilets."
> "I would punish children who mess the toilets."
> (learners in FGDs)

Teachers believe that routine health checks or visits by school nurses would prevent more serious health conditions in learners. One teacher recommended that learners' cleanliness be checked regularly at school as well.

> "If you check their nails and hair ... we can also reduce the disease."
> (teacher in FGD)

3.3 Western Cape

The results for the Western Cape are presented in a similar way to those of the Northern Province. The data from the school survey, focus group discussions (FGDs) and draw and write exercise are integrated under themes which are consistent across all the schools.

A total of 6 schools were included in the study sample in the Western Cape:

Farm	1
Peri urban	1
Urban	4

3.3.1 Farm School

Only one farm school was visited in this province. It has about 200 learners and 6 teachers.

3.3.1.1 Personal Hygiene and Health

From their descriptions and responses in the FGDs, it appears that learners understand the importance of maintaining their personal cleanliness: however, from teachers' descriptions, it is evident that learners do not necessarily put that knowledge into practice for a variety of reasons.
Adults in the learners' communities also appeared to understand the importance of personal cleanliness.

Learners described starting each day by bathing with soap and water or with salt or Dettol, when soap is unavailable, because, to use their words, "it kills the germs."
However, teachers relate contradictory evidence. They describe cases of learners frequently coming to school looking dirty, wearing soiled clothes, or with open sores. These dirty learners tend to be the younger primary school-aged learners, usually in grades one and two.

In the drawings of 'what keeps you healthy?' fruit and vegetables were the most common depictions.

Learners and community adults describe hand-washing as a vital hygiene practice. According to one learner, people should wash "before we eat ... before and after you go to the toilet."
However, often learners do not have soap at school. This was contradicted by the school representative who said there was soap with the hand-washing facility.

Families in the farm community usually rent their homes from the local farmer and do not own their own homes; thus their living environment – the homes they live in as well as their community area – belongs to the local farmer.

The farmer controls and oversees refuse disposal in the farm community; refuse is disposed of in bins which are then emptied into covered holes. Although residents have no complaints about the method of disposal, observations of the refuse pits indicate that this method is unhygienic and might pose a threat to the health of the community.

Learners could clearly identify two aspects of their community environment – dirty stagnant water and flies – as being unsanitary and dangerous to their health. This emerged in the draw and write exercise as well as the discussions.

Community members attach a great deal of importance to cleanliness inside their homes. Although learners consider their homes to be clean, adults recognize that their home environment is not as clean as it might be; they identified financial constraints as being the biggest challenge to maintaining ideal conditions of cleanliness at home.

3.3.1.2 Water Sources and Associated Problems

The farm school and farm homes are supplied with water by communal water taps. People have to carry water in buckets from outside into their homes and school.

Although water shortages are not a problem at the farm visited for this study, the quality of water households and schools receive is questionable. Learners' drawings focused on the problem of contaminated drinking water. One teacher described seeing a snail crawl out of a water tap. Learners complain of stomach pains that they ascribe to drinking dirty water. Community adults explain that the water supply is easily contaminated because the water storage dams are open to the elements. They also blame pesticides that contaminate the drinking water supply as a common cause of disease. Although learners claim that they do not place their mouths directly on taps to drink water, .casual observation demonstrated otherwise

> "it has a lot of germs," (learner in FGD)

Many catch water in their cupped hands to drink water.
The only health problems reported in the survey were colds/flu and tuberculosis.

3.3.1.3 Toilets, Toilet Use, and Sanitation

There are 10 toilets for the learners and 2 for the teachers. The toilet-learner ratio is 1:20. According to the survey respondent there are unspecified problems with the toilets. Surprisingly, neither learners nor teachers complained about the state of toilets at their school. Students simply mentioned graffiti on toilet walls and unflushed toilets, but these did not appear to be pressing concerns.

A few of the farm homes have toilets. In a cluster of twenty homes only five had indoor toilets, and the rest have outdoor pit-latrines. The condition of these toilets is poor. Some of the toilets do not have doors. According to one adult, this makes toilet use uncomfortable.

> "you never know when someone might walk in on you." (adult in FGD)

Community adults do not always use the toilet facilities. During work hours, the farmer only allows his workers to visit the toilets during lunch hour, going at any other time means a wage deduction. Therefore, many simply relieve themselves in the fields. The poor conditions and lack of privacy in the toilets probably also drives people to relieve themselves outside. Some, community members explained, find relieving themselves outside relaxing.

A similar behavior pattern seems to emerge at school. Learners admit that not everyone uses school toilets because they are too dirty or have not been flushed. Popular alternatives are to relieve themselves in the field or in the corner of the toilet.

The lack of complaints about the toilets seems to indicate an acceptance of the situation and readiness to use alternative places for toileting.

Household toilets are inadequately kept. When the pit toilets are full, they are cleaned out. However, only this minimal level of cleanliness is maintained. This might arise from the absence of a clear sense of ownership of the toilets and the consequent absence of a clear responsibility for toilet cleaning.

Teachers and the survey respondent claim that the school provides learners with toilet paper, however learners claim that they bring their own paper to school. There was no mention of using newspapers or stones at school.

Because farm workers start early and work late in the fields, there is very little parental involvement in farm schools. Parents do not reinforce school lessons at home and do not interact with teachers. In fact, teachers identify parents as the source of many children's lack of hygiene.
Community adults, however, appear to desire to be more involved.

Community members speak of the teacher's role with esteem and respect. They perceive them as the primary source of hygiene information.

3.3.1.4 Learning materials and methods

According to the survey respondent health education is part of the curriculum and there are posters, teacher's guide and signs and notices available for the promotion of water hygiene and sanitation. It was reported that the materials were 'somewhat' appropriate. The only teaching method reported on was lecture mode.

3.3.1.5 School management and extramural activities

Teachers are involved in the management of the school and parents participate in school activities. Learners participate in extramural activties.

3.3.2 Peri-Urban School

One peri-urban school was researched. It has 850 learners and 19 teachers making the teacher :learner ratio 1:45.

3.3.2.1 Personal Hygiene and Health

Learners seem to understand what constitute proper hygiene practices. Similar to farm schools, teachers describe frequent cases of learners – usually from grades one and two – coming to school with dirty clothes and open sores. The reasons for this are similar to those found in farm schools. Parents leave home early, leaving their young children to wash and to dress themselves. In many cases, families simply can not afford soap, towels, handkerchiefs, and other resources necessary to observe proper hygiene.

Factors which are negative for health were illustrated in the drawings and include drinking alcohol and drunken driving, dangerous knives, and snakes.

Community adults also pointed out pools of stagnant water in the community that children play in. Although children know the dangers of playing in dirty water and in sand, they continue to do so. Because children from these areas generally can not afford to visit the beach to swim or have access to swimming pools, they use their only local options.

Litter in peri-urban areas is ubiquitous. Although some community adults recognize that littering is unhealthy and irresponsible behavior, most litter habitually. Littering might result from a lack of waste disposal facilities.

Health problems

Common health problems reported on in the survey include flu, stomach ache, fractures and sores.

3.3.2.2 Water Sources and Associated Problems

The quality of water in peri-urban areas is generally good. The most common problems associated with water are related to water waste and cleanliness and not its availability. In fact, water contamination usually occurs as the result of poor practices around water – such as improper water handling, unsuitable water storage, or disposal of waste water near living areas.

Sources of Water

Peri-urban homes had access to outside taps that may be communal. It is usually the women's responsibility to transport water to their homes in buckets. Water is stored in the house in a covered container.

The school has taps on the grounds.

> "During the summer months, kids rush to the few taps that are there."
> (Teacher in FGD)

The number of taps in this school is inappropriate for the population of learners. Moreover, the Department of Education no longer provides schools with soap.

One learner described the popular methods of drinking water from school taps.

> "The water runs into your hands and you drink it from your hand or you just put your mouth to the tap." (learner in FGD)

Learners know that the latter practice is unhygienic, yet they continue "because of thirstiness." Often the height of the tap makes water inaccessible for young children, and they often have to climb on to something to reach the tap to drink water.

Field workers observed dogs drinking from school taps situated in the school courtyard. Animals can easily gain access to the water taps because they are situated so close to the ground.

Learners describe playing with hose pipes and leaving taps open. They are conscious of water wastage.

> "[Children] are playing with water ... they use hose pipes ... We are wasting water every time we leave the taps opened and leaking ... they leave the taps like that, they don't tell others about the taps." (Learner in FGD)

In the FGDs teachers also identified water wastage as a serious problem and identified the need for 'water conservation talks' at their school.

3.3.2.3 Toilets, Toilet Use, and Sanitation

Learners have many complaints about the state of their toilets at school – ranging from bad smells, to overcrowding, to flies in the toilet, to graffiti on the walls. In the school surveyed there were 53 learners per toilet on average. Over- use by learners of the few toilets available to them is probably the basic reason for the bad condition of the toilets. The toilets available to teachers are generally in better condition, mainly because of fewer users.

Toilets available to learners at home are usually in a separate area outside their homes. In some regions of the peri-urban area studied, toilets are privately owned, in other areas, households have access to communally shared public toilets. The public toilets are in bad condition.

At school, toilet cleaning is a learner responsibility. The peri-urban school studied does not have employed cleaners who maintain the toilet facilities. Teachers supervise students who clean both student and teacher toilets. Everyone, however, agrees that the toilet cleaning that occurs at school is hardly sufficient. The toilets are dirty and smell bad despite student efforts.
Toilet cleaning at learners' homes varies, depending on whether their households have access to private toilets or public toilets. The public toilets are usually dirty because no one takes responsibility for cleaning; in the absence of clear ownership of the facilities there is also an absence of clear responsibility for maintenance and upkeep.

According to learners, not all of them use the school's toilet facilities. It appears that male students are more likely than female students not to use the toilet facilities. Teachers at school try to change the boys' behavior.

> "Usually the boys go [urinate] anywhere. I see it coming from the bottom right up. I try my best to stop it." (teacher in FGD)

However, learners are exposed to this behavior constantly in their communities.

"When it comes to urinating, men just lean at any fence. The problem is men."
(Learner in FGD)

A lack of facilities or the lack of clean, well-maintained facilities in the community might encourage this behavior. Despite efforts of school teachers to discourage learners from urinating outside, these learners see adults in their communities practise such behavior. Thus, children are conditioned to accept such behavior as normal.

Both learners and teachers report that children often play in the toilets with water and mud; in some cases, learners even eat in the toilet. According to teachers, some younger learners come to school not knowing how to use the toilet properly, perhaps because they come from homes that do not have toilets.

Peri-urban schools often cannot afford to provide their learners with toilet paper. At the school studied, school teachers asked learners to bring their own toilet paper from home. However, again because of financial constraints, many households do not have toilet paper. Learners often use newspaper, stones, and grass as substitutes. Parents do not realize that their children use stones to clean themselves.

Some families in peri-urban areas have recently relocated from a farm community. Consequently, the children find themselves in an alien situation where they need to adjust from a farm/rural lifestyle to the urban lifestyle found in peri-urban locations. This relocation also presents particular challenges in terms of hygiene behavior.

3.3.2.4 Learning materials and methods

In the survey the only teaching material relating to hygiene was a teacher's guide. However in the FGD teachers felt that textbooks at schools are designed on the assumption that learners come from certain backgrounds.

"The textbooks assume that you are learning in your house, and that it has certain facilities." (teacher in FGD)

For example, many peri-urban homes do not have electricity. When textbooks refer to appliances such as washing machines or microwaves that many peri-urban children have not experienced, however, learners might feel estranged from the content of the lesson. The main teaching methods referred to were 'telling', group discussion and music or dance. Educational problems reported on in the survey included discipline problems, punctuality, coping with large numbers and needing more teachers.

3.3.2.5 School management and extramural activities

Apparently teachers are involved in the school management and students participate in extramural activities. Similar to farm schools, teachers would like to see increased parental involvement at school. Due to work responsibilities that extend from the early hours in the morning to late hours in the evening, parents have little time to commit to their children and schools.

3.3.3 Urban Schools

Four schools were researched. They have an average of 885 learners with about 23 teachers. The average teacher-learner ratio is 1:38

3.3.3.1 Personal Hygiene and Health

A pattern similar to that in farm areas and peri-urban areas emerges from urban schools around learners' hygiene behaviors and practices. From FGDs with learners, it appears that they have a clear understanding of the importance of being clean and well-kept. The drawings emphasised fruit, vegetables and brushing teeth and bathing as keeping them healthy.

However, teachers report frequent episodes of children coming to school dirty and unkempt. Again, the reasons are often economic; in many cases, busy parents leave their children to care for themselves in the mornings. As might be expected, the frequency of such instances is related to the economic level of the area.
At school, teachers attempt to rectify the situation by reporting the learner to the principal or speaking to the child.

Health problems reported in the survey as occurring most frequently were nutritional and dental problems. Some schools reported throat/ coughing and skin/ sores and problems. One reported TB to be a problem.

3.3.3.2 Water Sources and Associated Problems

As in peri-urban areas, the quality of water in urban schools and homes is good. When problems are encountered in the quality of water used, they are usually associated with water handling, storage, and disposal of waste water.

All urban schools receive water from water pipes and communal taps on their premises. Classrooms usually do not have taps; they are, instead, located in a courtyard, or some other communal area. Teachers usually keep a basin of water in the classroom for hand-washing purposes.

> "For the five taps we've got 240 children to use those taps for drinking water. It's terrible to see them queuing and fighting to get to the taps, especially during the hot summer months." (teacher in FGD)

The source of water in urban households, however, varies according to the socio-economic level of the area. One particular area studied was remarkably similar to peri-urban areas in that some homes did not have running water or electricity; consequently, these households transported water in drums from outside taps. Higher socio-economic urban areas receive water from taps inside their homes and rarely encounter problems related to water supply.

The state of environmental cleanliness in urban areas varies among communities. In one area studied, sand is the pressing environmental problem; in another, a local sewer plant is the source of repugnant smells and attracts flies to the area. At a third school, community members burn and melt rubber off tyres to sell the metal inside, which results in black clouds of smoke and a gas-like smell.

The greatest problem for schools – especially in lower economic areas – is trespassing by the community. Teachers at one school complained that the local

community uses the school grounds as a thoroughfare during the week and as a hall over the weekends, leaving the school a mess. Community members used to frequently steal the water taps from one lower economic area school to sell. The school resolved this problem by locating all water taps in one room that is unlocked only during school hours.

3.3.3.3 Toilets, Toilet Use, and Sanitation

According to the survey the toilets are flush type and are generally reported to be clean, with one school reported to have an unspecified problem with the toilets. Two schools had flies in the toilets. Two schools had handwashing facilities and only one provided soap. All provided toilet paper.

At all of the urban schools studied, learners complained about toilets that are broken, that smell badly, and that are dirty. Often the walls of the toilets are covered by graffiti; in one school, learners had smeared faeces on the walls.

3.3.3.4 Learning materials and methods

In terms of learning materials all the schools had posters, and 3 of the schools had books, learner aid material and teacher's guides. Two schools had audio-visual material and signs and notices, while one school had pamphlets. The representative from two schools felt that the materials were appropriate, while the other two said 'somewhat appropriate'. The newspaper was commonly used as a medium for teaching, and television was used in one school.

When asked an open question about important educational problems being faced in the school the most common response related to limited parental involvement in the school. Other responses concentrated on the learning environment such as problems with the state of the buildings; crowded classrooms and a lack of materials. Further comments related to pupil behaviour such as a lack of discipline; high absenteeism and home environments that are not conducive to learning.
Only two schools gave information on the methods of teaching used. They both reported the use of child-to child; group discussions; role play; and participatory learning.
All school representatives felt that students are eager to learn, and most said absenteeism is low. However, half reported tardiness as a problem, and all reported suspensions to be low.

3.3.3.5 School management and extramural activities

All schools reported teachers being involved with management of the school. Three said parents are involved in school activities and all said pupils do extra- curricular activities.

Table 3 Summary of learner and infrastructural information from school surveys in both provinces

	NORTHERN PROVINCE					WESTERN CAPE		
	Rural	Farm	Peri-urban	Urban	Private	Farm	Peri-urban	Urban
No of schools in sample	18	3	3	2	4	1	1	4
Average no of learners per school	615	231	821	387	380	200	850	885
Average no of teachers per school	16	9	26	10	16	6	19	23
Learner–teacher ratio	39	27	31	39	23	33	45	38
Learner – toilet ratio	83		51	23	40		53	63
Teacher – toilet ratio	6	5	5	5	7	2	6	6
No of schools: Availability of water	Yes=3 No=12 Sometimes=3	Yes=2 No=1	Yes=2 No=1	Yes=2	Yes=4	Yes=1	Yes=1	Yes=4
No of schools: Source of water C-communal tap B-borehole P-pipe L-learners carry R-river water N-none	C = 7 P = 5 L = 8 N = 2	C = 3 B = 2	C = 1 P = 1 L = 1 R = 1	C = 1 B = 1	C = 4	C = 1	C = 1	C = 1
No of schools: Type of toilet P – pit latrine F – flush toilet N – none	P = 13 F = 3 N = 2	P = 2 F = 1	P = 2 F = 2	F = 2	F = 4	P = 1	F = 4	F = 1

3.4 Summary of hygiene perceptions and practices across both provinces.

The results of the study described for each type of school in both provinces can be summarised under the main themes. There are strong similarities in many aspects, and a few differences, regarding the hygiene perceptions and practices of the learners and teachers, and the water and sanitation resources. These similarities and differences are summarised below.

3.4.1 Personal Health and Hygiene

There is remarkable consistency throughout the schools in what learners perceive 'keeps you healthy' and what can cause ill health. Eating fruit and vegetables, personal cleanliness and good clothes featured most strongly for keeping healthy, with some emphasis on exercise, fresh air, clean water, and social activity. Most of the negative factors include smoking, drinking alcohol, eating sweet foods, drinking dirty water, and being bitten by a reptile or insect. The threat of knives and guns only featured in the urban and peri-urban perceptions. There is seldom a connection made between environmental resources, other than water, or interpersonal relationships and good health.

The phenomenon of learners attending school without washing and wearing dirty clothes occurred in all types of schools. The explanation in most cases related to poverty and lack of parental presence in supervising children preparing for school. The absence of parents was due to their long working hours or, as in the private schools, the children being in boarding school.

The common health problems reported on did reflect the difference in access to water and the general level of poverty. Conditions in the rural area are more common communicable diseases (diarrohea, scabies, colds) and nutrition related conditions (stunting, sores, kwashiorkor) Contrasting with this, the problems in the private school were reported to be dental problems, sores and skin problems. Conditions such as coughs and colds and skin problems featured in most schools. Tuberculosis was only mentioned in one school in the Western Cape.

3.4.2 Water sources and associated problems

Clearly the rural Northern Province has the most drastic shortage of water provision with only 17% of the schools surveyed having ongoing water supply on site. All other schools have some access to water, albeit sometimes irregular. In the farm areas of both provinces the shortage is more related to the access control exerted by the farmer, than the absolute unavailability of water. The peri-urban areas sometimes have shortages but carrying water to the school from community sources is easier than in the rural areas due to shorter distances to water sources.

All schools which have water use communal taps, and a few have additional sources such as boreholes and municipal delivery. The quality of the water from the source is only of concern in the rural and farm areas where sources other than taps are used. Contamination of the water can occur at most schools where communal hand-washing buckets are provided, and where drinking water is not kept separate from other water. Where there are water shortages the priority is drinking and cooking, resulting in personal cleanliness sometimes being neglected.

With few exceptions an attitude of respecting the use of water was prevalent, although there were also stories of how learners like to play with water or carelessly leave taps running. This is an example of the learners knowing what is right but not necessarily practising it at all times.

Problems were reported at a variety of the schools related to the use of the communal taps. Teachers are concerned with the practice of drinking water straight from the tap with the learners' lips making contact with the tap. Where containers are used for drinking some were judged to be as unhygienic as the tap, eg. communal tin or cooldrink bottle. Another problem mentioned was the queuing for water and collecting of water sometimes resulting in fights between the learners. A further concern, especially in the rural schools, was the teaching time lost while learners fetch water or go home to drink water.

3.4.3 Toilets, toilet use and sanitation

Almost all rural and farm schools have pit latrines, if there are any toilets at all (2 of the rural Northern Province schools had no toilets), while peri-urban schools have either pit or flush toilets or both. Urban and private schools all have flush toilets. The toilet – learner ratio varies between 23 (urban northern Province) and 83 per toilet (rural Northern Province) The private schools have a ratio 1:40, which could be seen to be an acceptable average in this study. There is no problem with the toilet – teacher ratio which is fairly consistently between 5 and 7 teachers per toilet.

The most consistent issue in all the schools is the unacceptable state of the toilets. This relates to the state of repair of the toilets and to the poor state of cleanliness. Whether schools have pit toilets or flush toilets the stories are the same. A shortage of water has a negative effect on schools where there are flush toilets as they are then non functional. At some schools the learners are expected to clean the toilets, but the poor state of the toilets persists. At the few schools where a caretaker takes responsibility for the toilets their condition is more acceptable. Some teachers and learners referred to the lack of implements and chemicals for toilet cleaning. There seems to be no one responsible or able to carry out toilet maintenance. There are cases of toilet structures collapsing and rendering them totally unusable, while others are dangerous.

A gender difference was clear regarding the learners' coping strategies with the state of the toilets. Both sexes tended to avoid using the toilets when possible, with the males choosing to urinate outside of the toilet, against a wall, fence or in a corner or bush. The females are a lot more careful and modest and try to only urinate at home or find a far away area of veld or community toilet. It was mentioned that females stay away from school when menstruating due to the unacceptable facilities. Some females also expressed a fear of interpersonal interference and lack of privacy when using the toilets. This acts as a further deterrent to using the school toilets

Another common theme across all schools , but more prevalent in the rural, farm and peri-urban areas, is the fear of various reptiles and insects. Snakes, lizards, scorpions, mosquitoes and flies were most commonly depicted in relation to reasons for not using toilets.

3.4.4 Learning materials and methods

All schools reported that health education is part of the curriculum. It is evident that the urban and private schools have more materials available for hygiene- related teaching. However, without more detailed questioning or observation of how these were used, it is difficult to evaluate their appropriateness. Similarly with the teaching methods used, the questionnaire provided inconclusive evidence of the range and effectiveness of the teaching methods being used in health education. Didactic methods seemed to be most commonly used.

3.4.5 School Management and extramural activities.

There are few data related to aspects of school management. The survey measured the extent to which teachers and parents are involved in school management, and whether learners have the opportunity for extramural activities. Most respondents said that teachers are involved in school management, but there was no detail as to what this involved. Similarly, in some schools parents are involved in school activities, and not in others. Teachers find the poor parental involvement a barrier to good education. Learners in all schools except one peri urban school and two private schools participate in some form of extramural activtiy.

3.4.6 Suggestions for improvements

The majority of suggestions for improvements focussed on the availability of water and the state of repair and cleanliness of toilets. It was mainly teachers who recommended that the relevant state departments such as Education, Water Affairs and Public Works provide better facilities. The learners made suggestions on bettering the situation using strategies such as a roster for cleaning the toilets by learners, access to more cleaning materials, punishing learners who misbehave or soil the toilets or waste water.

There is some concern about the school health service. Some teachers suggested that health checks should be done more regularly so that treatment for the learners can be accessible.

In a few instances teachers referred to the need for more teaching materials, but this was non-specific.

4 SECTION IV

4.1 DISCUSSION

4.1.1 Introduction

The study set out to ascertain the perceptions and practices of learners in schools in the Northern Province and Western Cape, with a view to informing curriculum development in health education in the new national Curriculum 2005. While there is evidence in the study pointing to the need for more teaching resources, without analysing exactly what is being used currently and what teaching methods are really being utilised, detailed recommendations on the nature and content of new curriculum design cannot be made.

However, the study does provide insights into the perceptions and practices of learners with regard to hygiene, and the facilities available for water and sanitation in their schools and communities.

4.1.2 Infrastructure

The results point to the fact that across all types of schools in both provinces the water and sanitation infrastructure is inadequate. The water situation is worst in the rural Northern Province schools where there is a lack of water in at least two thirds of the schools, necessitating alternative strategies such as learners and teachers carrying water to the school or learners leaving the premises during the teaching programme to find water. In other schools communal taps are used but are often inadequate in number, or run dry, and learners do not use satisfactory vessels for drinking the water. At the farm and rural schools the quality of the water is not always acceptable as it is drawn from tanks, rivers or dams. The common water-borne (diarrhoea, worms) and water-washed (diarrhoea, scabies, trachoma) diseases experienced by the children could be substantially reduced if more water, of good quality, was made available, especially for hand washing after toileting. (Almedom 1995) In order to provide a healthy environment in which learning can take place the availability of water for drinking and washing hands should be a priority.

The sanitation facilities at all schools are in a poor state of repair, not kept clean, and there is no co-ordinated effort at the schools to limit the abuse of the toilets. The toilet to learner ratio is very high and leads inevitably to non-functional flush toilets or full pit toilets. Learners will continue to use alternative places for toileting, such as the veld, unless more adequate facilities are provided. It cannot be expected of learners to practise good sanitary habits unless adequate facilities are provided. Also, learners could be encouraged to take more responsibility for the cleanliness of the facilities, if cleaning materials were made available, and a fair system of carrying out and controlling the cleanliness was implemented by the teachers.

The most common type of toilet is the pit latrine in rural and farm schools. A more acceptable pit latrine design which traps flies and provides better air circulation to reduce smells is the Ventilated Improved Pit (VIP) (Curtis 1998) .This type of toilet should replace the ordinary pit latrine whenever they are being rebuilt or when new toilets are being built.

The added discomfort and fear expressed by female learners needs to be taken into account in the integrated approach which is being proposed. Their need for privacy and ability to use the toilets without fear of interference by males or by insects and reptiles

need to be effectively addressed through improved toilets and education of the males (and perhaps disciplinary measures) in terms of acceptable behaviour.

The suggestions made by the participants should be taken forward, and the various government ministries responsible for water and sanitation provision should be urgently informed and asked to rectify the situation. This may require an advocacy campaign by the communities concerned to lobby the Department of Public Works to make funds and resources available for the necessary infrastructure. In some areas, like rural Northern Province, the water and sanitation problem is not restricted to the schools, but affects the local communities also. It would therefore be ideal if the implementation of any new infrastructure takes into account the needs of the community and the schools. Lessons could be learnt from projects such as the one described by Saywell (1998) in Mozambique where community participation and health education was central to the building of low cost sanitary facilities.

Another strategy could be to set up a non-governmental organisation similar to the Gauteng Integrated Schools Sanitation Improvement Programme (GISSIP). This initiative is a co-operative venture between the departments of Health, Public Works, and Education, and the Mvula Trust. They have facilitated the provision of toilet facilities in over 30 schools and carried out a health, hygiene and maintenance education programme, amongst other activities. They use a participatory approach in building the toilets and carrying out the education.

4.1.3 Curriculum Development

The perceptions and practices of the learners which can inform the need for specific curriculum developments did not emerge as clearly as was originally anticipated. Learners in all the schools have an acceptable understanding of what is healthy and what is not healthy, albeit restricted mainly to bodily health and not environmental or interpersonal interactions. They broadly know what good hygiene and sanitation practices are, but are unable to practise these due to the lack of resources and sometimes the lack of parental supervision.

There is a lot of scope within the Curriculum 2005 objectives to integrate health education issues so that hygiene and sanitation practices are covered in theory and practice. The teachers make a plea for more teaching resources, but without a detailed audit of what is available to them, proposals for further materials cannot be made. There may well be some materials in use in some of the schools or being produced by non-governmental agencies such as Mvula Trust which are suitable but not widely enough available. There are some South African and foreign materials which appear innovative and would engage learners in advocating for improved infrastructure as well as reinforcing good practices. However, these need to be evaluated in a school situation before any comment can be made on their worth or need for improvement.

The study does identify a possible gap in the learners' understanding of broader issues of environmental sustainability and the impact this has on their health. The learners regard keeping healthy as eating the right things and doing exercise etc. but do not seem to make the broader connection with the reasons for difficult access to good food, clean water and an environment free from the threat of violence. Through the problem –solving methodology inherent in curriculum 2005 it should be possible for the learners to understand the connection between access to resources and health, and how they can be instrumental in improving their access to the desired resources.

4.1.4 Health Promoting Schools

The notion of health promoting schools is becoming better established in South Africa with the beginnings of a joint initiative between the Departments of Health and Education taking place during 1999. If the principles of promoting health in the curriculum, the school environment, and the surrounding community could take root, many of the problems identified in this study could be alleviated. Issues such as the toilets not being cleaned, of community members over utilising or abusing the school facilities could be limited if the school takes a more proactive approach in managing and developing the essential water and sanitation facilities.

Teacher training has not been explored in this study, but is an essential element of capacity building if the health promoting schools philosophy is to be taken forward. Besides the need for skills in participatory teaching methods (identified by many authors and summarised in the HEATT report 1996), there is a need for teachers to learn how to integrate health education into all that the learners do. This could be an area for specific teacher training development. Using the experience of schools where Child-to child methods and materials have been utilised could be one way of encouraging teachers to be creative in their presentations and to encourage learners to take more responsibility for health promotion.

The issue of parental involvement in the school is pertinent because the school relies on parents to be the link between the school and the home environment. This study suggests that there is a low level of parental involvement in the school activities. There are therefore many missed opportunities for improving the school – community linkages and improving the health of the learners.

4.2 Limitations of the study

1 Five phases were planned in the original proposal, but only three were included or partly included in this project. The study did not significantly explore the current content and methods used in health and hygiene education and the reactions of learners to these. This has imposed limitations on the recommendations that can be made regarding the content of new curriculum design. The development and piloting of new materials based on the outcomes of the initial phases of the project have not yet been achieved.

2 The study period was extended because deadlines could not be reached timeously. The initial planning was possibly ambitious and did not take into account the logistics of the data collection and the time required if the objective of capacity building in research skills was to be achieved

3 The sample in the Northern Province did not include Region 7 as they could not submit the data for the sampling matrix on time. This reduced the number to 5 regions. The sampling in the Western Cape was not carried out in the same way as the Northern Province both in terms of the overall number of schools included in the sample and the criteria for selection. This makes comparison between the two provinces difficult.

4 The" draw and write" seemed not well understood by some researchers hence it was conducted differently at different schools e.g. mixed sexes and separate sexes, all grades or some grades, varying instructions. The overall quality of the information from this technique is therefore questionable.

5 The mapping exercise was not systematically recorded, therefore served the purpose of introducing the fieldworkers to the local community, but did not contribute specifically to the overall results.

6 The fact that the final report was substantially written by a person who was not involved in the conceptualisation or implementation of the study, although with access to the co-ordinators and some fieldworkers, may have reulted in possible gaps in the reporting of the research process and results.

4.3 Conclusion

4 Water and sanitation provision at public schools, particularly in rural, farm and periurban areas, is generally grossly inadequate. This almost certainly has a negative impact on learners' health and also interferes with their learning. Urgent action is required from the relevant government departments, with the participation of the affected communities.

5 Although health and hygiene awareness are fairly reasonable at a superficial level, practice does not accord well with knowledge. This may in fact be due to inadequate learning, especially of problem-solving skills. This underlines the urgency to move forward with the implementation of Curriculum 2005., and the development of appropriate materials and methods in the area of health and hygiene.

6 Both the context and the practice of health and hygiene awareness is similar in both the home and school environment. This points to the need for an integrated approach to solving both the infrastructural as well as the learning deficits. Here the 'health promoting schools' approach has much to offer and should be actively supported and resourced by government.

4.4 Recommendations

5 The results of this study should be urgently presented to the relevant government departments (Education; Public Works; Water) so that motivation for the infrastructural improvements necessary in terms of access to water and sanitation facilities can be supported.

6 Curriculum development should focus on the development of teaching materials and methods that can address the gap between understanding of health and hygiene knowledge and their practice in reality.

7 Innovative materials and methods developed inside (especially by non-governmental programmes) and outside South Africa should be referred to when designing the new materials and methods of teaching.

8 The 'health promoting schools' initiative should be supported by the relevant government departments (Health; Welfare; Education) so that learners and teachers are motivated to take some responsibility for the improvements required in the water and sanitation infrastructure and the maintenance thereof.

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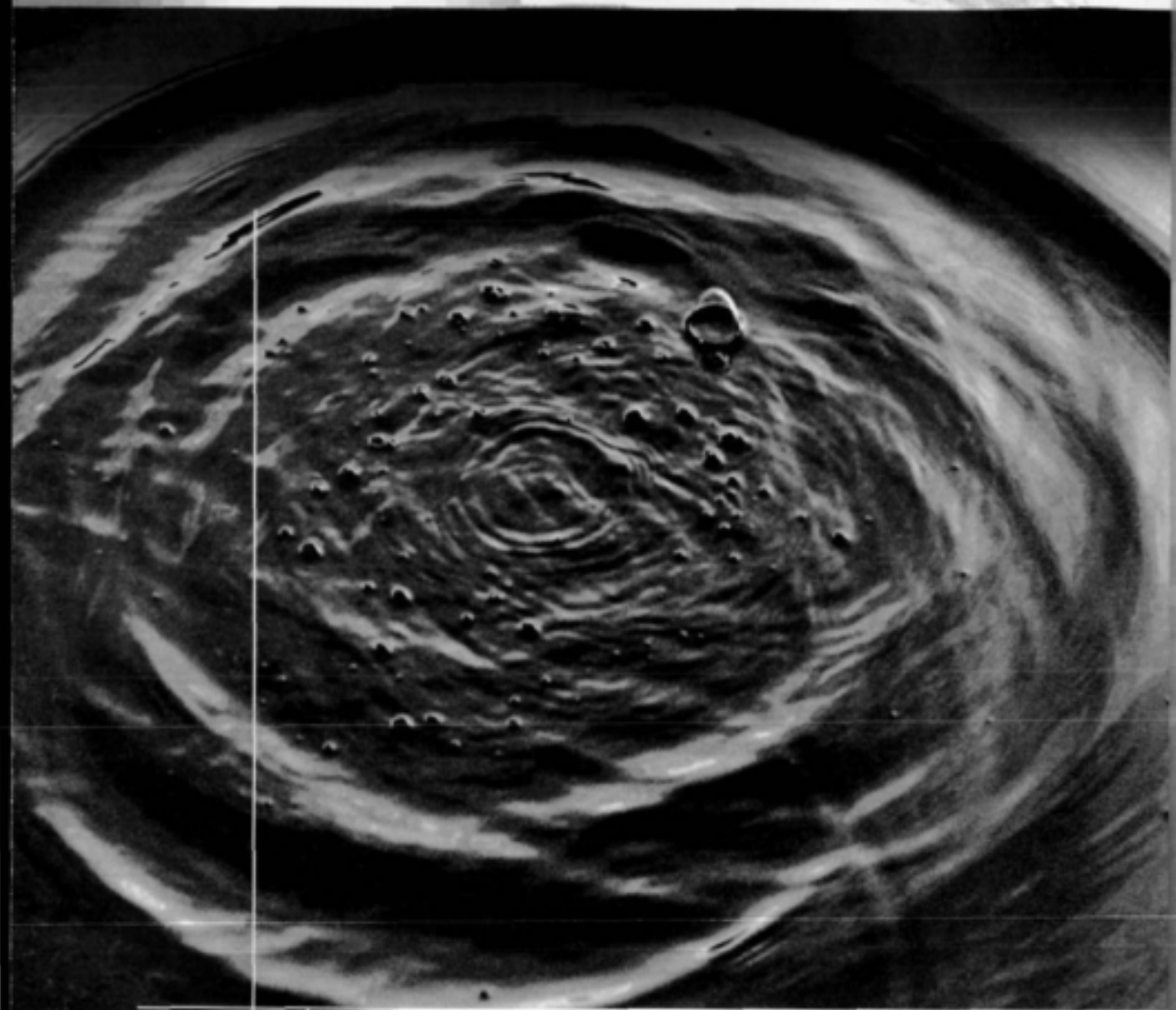

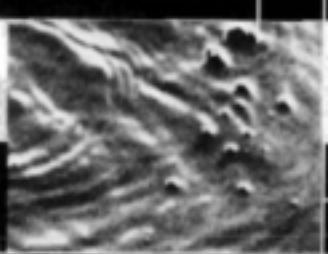

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