HOW AN ECO-SCHOOL SANITATION COMMUNITY OF PRACTICE FOSTERS ACTION COMPETENCE FOR SANITATION MANAGEMENT IN A RURAL SCHOOL

The case of Ramashobohle High School Eco-Schools Community of Practice in Mankweng circuit Polokwane Municipality Capricorn district in Limpopo Province, South Africa

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ABSTRACT

Providing adequate sanitation facilities for the poor remains one of the major challenges in all developing countries. In South Africa, an estimated 11,7% of the schools are without sanitation. The South African government has a constitutional responsibility to ensure that all South Africans have access to adequate sanitation. When sanitation systems fail, or are inadequate, the impact of the health of the community, on the health of others and the negative impact on the environment can be extremely serious.

In rural South African schools, many Enviro-loo toilets are available today. They are designed to suit a variety of water scarce areas and where there is a high risk of contamination of ground water resources. It is important to realize that any Enviro-loo system programme requires an education programme to ensure that the principles of use and maintenance are clearly understood by the user group. Their maintenance requires more responsibility and commitment by users.

This study is an interpretive case study that indicates how sanitation in a rural Ramashobohle High School in Polokwane municipality was managed through an Eco-Schools Sanitation Community of Practice, and how this developed action competence for sanitation management in the school. The study established that the earlier practice and knowledge of the Ramashobohle Eco-Schools community of practice exercised in maintaining Enviro-loo systems was inadequate; unhealthy and unsafe according to the data generated through focus group interviews, observations, interviews, action plan, workshops and reflection interviews.

The data generated also indicates that the Eco-Schools community of practice was not committed to maintaining sanitation in their school because they were not sharing sanitation knowledge; they were not communicating and not updating one another concerning Enviro-loo systems maintenance as they had no adequate knowledge as to how to maintain the facilities; and the school management was also not supportive and was not taking responsibility. The study shows how this situation was turned around as an Eco-Schools Sanitation Community of Practice focussed on developing action competence in the school community. It provides a case based example of how knowledge and action competence, supported by an Eco-Schools Community of Practice, can find and implement solutions to inadequate sanitation management practices in rural schools, and shows how members of the school community can be engaged in learning how to manage and maintain school sanitation systems through a participatory process that develops action competence.

The study points to important dimensions of developing action competence, such as providing knowledge and demonstrations, inviting experts to the school, involving learners in observations and monitoring and in ensuring that adequate facilities are available. In particular, a workshop conducted by Enviro-loo consultants, organised and supported by the Eco-Schools Sanitation COP, together with a follow up action plan, provided the main impetus for changes in practice in the school and served to support action competence development. Finally the study provides research findings and recommendations for further research.

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LIST OF ABBREVIATIONS AND ACRONYMS

AGES	Africa Geo-Environmental Services
COP	Community of practice
DOC	Danish Outdoor Council
FEE	Foundation for Environmental Education
FIFA	Federation of International Football Association
IAs	Implementing Agency
KOEE	Kenyan Organisation for Environmental Education
NGO	Non Governmental Organisation
SADC	Southern Africa Development Community
SGB	School Governing Body
WESSA	Wildlife Environmental Society of Southern Africa
WWF	World Wild-Life Forum

WSSD World Summit on Sustainable Development

GLOSSARY OF WORDS AND TERMS

Adequate

Satisfactory or acceptable or enough

Bacteria

A group of very small living things, related to plants or other living organisms, and that can cause disease

Dilute

Make thinner or weaker by adding water or some other liquid

Disinfect

Clean with a chemical that will destroy bacteria

Enzyme

Living organisms or substance which will bring about a particular reaction when added to another substance

Inspection

Careful examination of something

Legal

Allowed and approved by law

Maintenance

The repairs necessary to keep in good condition and working order

Monitor

Carefully watch and check a situation to see how it changes over a period

Occupational Health and safety

Health and Safety Procedures related to a particular job

Sanitation

The protection of public health by removing and treating waste and dirty water

Sewage

Mixture of human waste and liquid

CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION

In this chapter, I introduce the context of the study. In this study I am investigating how an Eco-Schools community of practice fosters action competence in managing sanitation issues; in this case the Enviro-loo systems provided at Ramashobohle High School. Eco-Schools (see section 2.2) is an international programme managed in South Africa by the Wildlife and Environmental Society of Southern Africa (WESSA). It is a programme to which different organizations such as schools and enviro-clubs are affiliated. The programme encourages hands on participation which in this study I regard as being central to a community of practice (COP) approach to improving sanitation conditions of Ramashobohle High School.

My interest in this study is to understand how the Eco-Schools community of practice in Ramashobohle High School manages sanitation. It is hoped that this study and reflection on the sanitation practices can provide insight into how sanitation in rural schools can be improved, particularly how such engagement can foster action competence in stakeholders.

This study aims to answer the following question:

> *How does an Eco-Schools community of practice foster action competence in managing sanitation issues in a rural school?*

1.2. CONTEXT OF THE STUDY

In this section, I present a brief background of Ramashobohle High School, the school where I teach. The profile starts with a short historical overview of the school and some of the environmental issues and risks that the school is facing. Ramashobohle high School is situated in a rural area in the Mankweng Circuit, 1,7 km east of the University of Limpopo in the Capricorn District in Limpopo Province, South Africa. The school has 562 learners, and 17

teachers. The school also has 3 building blocks (3:4:4 classrooms), one classroom is used as an office and the other 10 classrooms as classes, a shack, 4 mobile classrooms (for exchanging periods) and 5 blocks of toilets. The Limpopo Province, together with KwaZulu Natal and the Eastern Cape hosts a large number of rural schools, many of which experience similar conditions to those of Ramashobohle High School.

Sanitation is one of the prevalent environmental issues and risks that the school is facing. The school was provided with Enviro-loo systems (an onsite, water free sanitation system) by the government in 2007. These were subsequently vandalized. In December 2008 the MvulaTrust donated five blocks of Enviro-loo systems to the school. In February 2009 the toilets were completed and before they were used, a handing over and orientation workshop on how to operate and maintain the facilities was conducted by WSM Leshika Consulting (Pty) Ltd Engineers. After the workshop, the school management did not take any action or plan how to maintain the toilets. The toilets were used and they were neither cleaned nor monitored.

In 2007, while I was studying for an Environmental Education senior degree I researched the methodologies and strategies that are employed by Eco-Schools. That was when I first encountered the Eco-Schools programme and in 2008 I told my principal about the programme, and that I was interested in affiliating our school. Fortunately I contacted the node co-ordinator and told him that I was interested in enrolling our school in the programme and I succeeded. Unfortunately at the end of October the same year I could not submit the Eco-Schools portfolio due to some communication breakdowns between the school and the node co-ordinator. In 2009 our school joined the Eco-Schools programme on its own. This was also the time I enrolled for the Masters Degree in Environmental Education at Rhodes University, which gave me a further opportunity to research the context and practice of the Eco-Schools programme in our school, hence this study.

Eco-Schools programme is a programme designed to encourage curriculum based action for an improved healthy environment. The programme played a vital role in addressing the schools'

environmental issues and risks. Sanitation was one of the issues identified that needed attention in the school. In this study, I use the Eco-Schools programme because it encourages a community of practice approach to improving environmental conditions of the school.

1.3. ECO-SCHOOLS COMMUNITY OF PRACTICE

According to Wenger (2007), community of practice (COP) is defined as a group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (see section 2.4). For this study, the Ramashoobohle High School eco-committee shall be regarded as a community of practice, and is later referred to as the Eco-School Sanitation Community of Practice. The eco-committee as stipulated in the Eco-Schools Pack (Eco-Schools, 2009) is responsible for the improvement of the schools' environment. After the school joined the Eco-Schools programme in 2007 there was a slight environmental improvement in the school. Because of the practices, efforts, passion and the mark the eco-committee exercised in improving the schools' environment, the eco-committee was then regarded as a community of practice. At the start of the study the eco-committee consisted of the following members: 3 teachers, 6 learners and 3 SGB members. These were the main participants in this study (see Chapter 3), but as the study took place, more learners and teachers joined the activities of the COP (see Chapter 4).

After the school was provided with Enviro-loo systems for the second time, the school community tried to manage the toilets but they were not sure whether they were operating and maintaining the toilets according to the way they were meant to be managed, because the service provision was characterized by a lack of consultation and buy-in from the stakeholders (see section 4.2). The history of the school showed that there were Enviro-loo systems operation and maintenance problems because some people were not interested in the new form of sanitation provisioning as the provisions of Enviro-loo facilities were different from the pit toilets the school was familiar with, and the facilities ended up being a challenge to the school community at large because the operational procedure was not used correctly according

to the system. Consequently, and as mentioned in section 1.2 above, the first provision of the Enviro-loo system facilities did not last; they were vandalized.

The Eco-Schools programme in the school played a vital role in environmental education awareness in the school, but that was not enough because sanitation was still a very big challenge. Operation and maintenance were ineffective and as such the systems were not functioning well because no user education and regular monitoring were done (see section 4.2). It was only through Eco-Schools community of practice that we were subsequently able to begin to address the rural sanitation challenges as they were manifest in the school (see Chapter 4).

1.4. SANITATION IN A RURAL CONTEXT

Water, Sanitation and Hygiene are regarded as key issues for the achievement of poverty eradication and economic development (WSM Leshika, 2009). The South African government is committed to ensuring that the entire population has access to adequate sanitation. The government further intends to improve on the Millennium Development Goal to halve the sanitation backlog by 2015, by completely removing the backlog by the year 2010 (ibid, see also section 2.3).

Sanitation facilities in South Africa are currently being constructed at schools with inadequate sanitation facilities. The Department of Water Affairs (DWA) initiated and embarked on a national initiative of constructing and upgrading sanitation facilities in schools nationwide. (AGES (Pty) Ltd, 2010). The programme initiated by the Department of Water Affairs seeks to address the need for sanitation facilities and the improvement of sanitary conditions in schools; particularly in rural areas of the country.

In collaboration with the Department of Water Affairs, the Department of Education has identified schools nationwide where there is a need for the construction and upgrading of sanitation facilities. In Limpopo province in water scarce areas the Enviro-loo systems are

supplied. In this study, sanitation will be referring to Enviro-loo systems. Ramashobohle High School was one of the schools which was identified and provided with Enviro-loo systems facilities because the school was experiencing the water scarcity challenge. Such provision of toilets requires consideration of technological alternatives to ensure the development of sustainable infrastructure (ibid).

The Department of Water Affairs appointed Council Science Industrial Research (CSIR) and Mvula Trust as implementing agents to facilitate an integrated social awareness programmes for the ongoing operation and maintenance of sanitation facilities at schools in the Limpopo province (AGES (Pty) Ltd., 2010). Africa Geo-Environmental Services (Pty) Ltd. (AGES) was appointed by the implementing agents to develop and implement a school sanitation social awareness programme to promote stakeholder participation in the correct operation, maintenance and management of the Enviro-loo water free sanitation system (ibid).

1.4.1. Enviro-loo toilet system: how it works

As indicated in WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010) manuals, the Enviro-loo system is a dry system designed to provide sanitation solutions where water is scarce and where there is a high risk of contamination of ground water resources. The system does not use water to operate. The system is odourless under normal operating conditions and as a result there are no flies. It is a sealed system that cannot leak; storm water cannot penetrate and flood the tank (ibid). (See Appendix 18 which shows a visual illustration of how Enviro-loo system works).

In short, the Enviro-loo system as indicated in WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010) manuals works in the following way:

- The liquid is separated at the initial stage when waste enters the tank through the toilet pan.
- Solids accumulate on top of the perforated drying plate.
- The liquid drains into the bottom of the container to the liquid holding area.

- By separating the solid and liquid waste, aerobic conditions are achieved and maintained by the evaporating process.
- Evaporation of the liquid occurs due to the airflow over the liquid surface.
- As the solid waste migrates down the sloped, ridged, perforated drying plate, it is subjected to continuous ventilation thereby promoting dehydration of the solids and evaporation of the liquids.
- The forced extraction ventilation system causes a continuous airflow through the unit, encouraging aerobic bacteria which kill the disease pathogens and allows decomposition of solid and evaporation of solid and evaporation of liquid waste.
- The forced extraction system also creates negative pressure within the container, thereby preventing the escape of odours through the toilet pan.
- Sunlight absorbed by the black inspection cover increases the temperature within the container, promoting airflow through the system, causing the hot air to rise.
- The airflow is assisted by the ventilation extraction unit positioned on top of the outlet vent pipe with the air being drawn into the holding and drying areas via the inlet pipes and the toilet pan (8, 6).

In this study, it is the AGES consultants that have played a vital role in improving sanitation in Ramashobohle High School by:

- Supplying information about the specific technology to be applied,
- Furnishing the Ramashobohle community of practice with information regarding the correct and safe use of the system,
- Educating Ramashobohle community of practice regarding the correct operation and maintenance procedures,
- Providing information about safety precautions regarding the operation and maintenance of the system, and
- Instructing the Ramashobohle community of practice on correct, hygienic maintenance procedures.

It is through the AGES consultants and through the Eco-Schools community of practice that stakeholders in Ramashobohle High School, including the School Governing Body (SGB), educators and users were provided with correct utilization, maintenance and cleaning procedures of the sanitation facility.

1.4.2. What will prevent the Enviro-loo system from functioning effectively

According to WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010) full solid waste drying areas prohibit adequate airflow through the system. Adequate airflow is essential to ensure that liquids evaporate and excrement dries out. Drying areas need to be monitored on a regular basis and the drying areas need to be emptied before they are completely full (ibid).

Common causes - according to WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010). - for drying areas filling up faster are:

- Disposal of foreign objects in the toilet pan,
- Higher user ratios per toilet, and
- Drying areas not timeously emptied (29, 37).

These issues and processes are discussed in more detail in the context of the school and its sanitation practices in the thesis (see Chapter 4).

1.5. RESEARCH GOALS

To address the research question outlined in section 1.1, the following research goals were developed. These formed the focus of the data reporting in Chapter 4 of the study:

- To investigate the interests of different members of the Eco-Schools community of practice in Ramashobohle High School with specific reference to the sanitation issues being addressed.
- To investigate what current and previous knowledge and insight the members of the community of practice have on sanitation management practices in the school.

- To investigate the vision that the community of practice has for resolving sanitation management problems in the school.
- To investigate the action experience of the community of practice and what actions are undertaken in the community of practice and why.
- To investigate emotional responses, critical thinking and reflections on the practice of improving sanitation management in the school.

1.6. OVERVIEW OF THE STUDY

In Chapter 1 I present the introduction and the context of the study. I also present a brief background of sanitation, in this case the Enviro-loo system facilities provided in rural schools in Limpopo province and how Eco-Schools community of practice in Ramashobohle High School had, to date, been engaged with the sanitation challenge. I further present the research question and the research goals of the study.

Chapter 2 presents the literature review. The chapter reviews Eco-Schools in South Africa; in Africa and internationally. The chapter also presents literature on sanitation, community of practice; situated learning and constructivism and finally action competence.

Chapter 3 explains the methodology and the research design decisions used to investigate the research question. The research methodology is presented as an interpretive case study of the Ramashobohle community of practice. The chapter also describes the methods used to generate and analyze the data. I also explain how data was managed. I further explain how I have dealt with validity, trustworthiness, ethics and values.

Chapter 4 presents data. The chapter is organized into three sub-categories to present the toilet cleaning practices by the Ramashobohle High School Eco-School community of practice (COP) before the workshop (see section 4.2); toilet cleaning practices by the COP after the workshop (see section 4.3) and what should still be done according to Ramashobohle

community of practice (see section 4.4). I present the data based on analytic memos drawn from initial categories of the study, providing a thick description.

Chapter 5 further analyzes data that was presented in Chapter 4, and summarizes the main findings of the study using analytical statements which address the research question. The analytical statements relate back to literature review presented in Chapter 2. The chapter also presents conclusions and recommendations drawing on the discussion in the analytical statements presented in the chapter.

CHAPTER 2

LITERATURE REVIEW

2.1. INTRODUCTION

In this chapter I present the literature review of the study. Literature on Eco-Schools internationally and in Africa, South Africa and the role played by Eco-Schools in environmental education and how Eco-Schools operates is presented first (section 2.2). This is followed by a discussion on sanitation issues (section 2.3) particularly in the context of rural schools. I then consider the learning dimensions of this study, namely communities of practice (section 2.4), constructivist and situated learning approaches (section 2.5) and the development of action competence (section 2.6) as these were identified as being significant to a learning orientation to enabling improved sanitation practices in the school.

2.2. ECO- SCHOOLS

Eco-Schools is a fully developed concept within environmental education discourses of learning. It emerged strongly after the 1992 Rio Earth Summit also known as the United Nations Conference on Environment and Development (UNCED) held from 3-14 June 1992 in Rio de Janeiro, Brazil. Eco- Schools is a programme that developed as a response to some of the needs for engaging local action in addressing environmental concerns, identified at the Rio Earth Summit (Haingura, 2009: 6). The international context of the Rio Earth Summit lead to the emergence of an internationally networked programme focusing on school based action learning and sustainability practices, named 'Eco-Schools'. Eco-Schools is an international environmental award programme for schools, clubs and education centres overseen by the Foundation for Environmental Education (FEE) in Europe, managed in South Africa by Wildlife Environment Society of South Africa (WESSA) with the support of Nampak and many other organizations. The Foundation for Environmental Education (FEE) international is underpinned by the principle of Agenda 21, and seeks to address the need for environmental awareness and

improvement of students' skills for active participation and decision-making (Haingura, 2009). The programme is about continued change and improvement in the school environment (Eco-Schools, 2009). The programme provides mechanisms for schools to understand the importance of establishing and putting into practice appropriate environmental and sustainability policies for the school but also at a personal level (UNISA, 2007). The programme also provides an ideal way to implement Local Agenda 21 in the school and its neighbouring community, constituting a local contribution to a wider goal (Haingura, 2009).

2.2.1. Eco-Schools internationally

In 2004 there were about 12 000 Eco-Schools in 30 countries in Europe, Africa and America participating in the programme and in 2005 the countries increased to over 40 (UNISA, 2007: 6). Eco-Schools is known in different countries by different names (e.g. Green Schools, Eco-Schools, Sustainable Schools), but they still share the same methodology and concepts (ibid).The number of Eco-Schools is growing as more and more schools take up the challenge and work towards improving their environment through education and action. Communications such as e-mails, newsletters and online projects keep schools in touch and aware of developments throughout the network, while periodic international events are organized to provide personal and direct contact (ibid).

2.2.2. Eco-Schools in Africa

In Africa, currently there are three countries (South Africa 2003, Morocco 2004 and Kenya 2002) that are members of FEE and the have different interests in terms of their affiliation (Haingura, 2009). The three countries have registered for Eco-Schools and the Blue Flag projects while Morocco is the only country involved with the Young Reporters for the Environment Project, which is an activity for high schools (ibid). In Kenya, Eco-Schools is run by a Non Governmental Organization (NGO), known as the Kenyan Organization for Environmental Education (KOEE) supervised by the Danish Outdoor Council (DOC) with the support of Danida (ibid).

The "Eco-Schools Partnership in Africa" Workshop held in South Africa in 2002 was instrumental in identifying the potential of the programme for adaptability to regional contexts and needs (UNISA, 2007: 6). Participatory environmental management systems were recognized as a sound and compatible framework at the workshop and a conclusion from the 14 national delegations from Southern and Eastern Africa was reached that the scope of the programme "themes" will vary considerably to those in most European countries (ibid). It further indicated that in many regions of Africa Eco-Schools can be an instrument for education on health and sanitation, community-based natural resource management, as well as an incubator for local-level micro-projects leading to income generation for the school and training for young people in sustainable, natural-resource based trades (Odeke, 2010).

As indicated in Haingura (2009: 22) Eco-Schools projects in the Southern Africa Development Community (SADC), started officially in South Africa (SA) in May 2003 as an educational programme under the auspice of the Wildlife Environment Society of South Africa (WESSA) as an affiliated member of FEE (Lotz-Sisitka, Timmermans & Ward, 2005).

2.2.3. Eco-Schools in South Africa

South Africa took a lead in participating in international programmes such as Eco-Schools in trying to address some of the environmental issues that are affecting the country (Haingura, 2009: 22). In South Africa, the programme was initiated in a small number of pilot schools that recorded their progress and fed their outcomes and ideas into development of the programme for nationwide implementation. As indicated in Lotz-Sisitka et al., (2005) the programme started mainly in the Eastern Cape Province (EC), KwaZulu Natal Province (KZN) and Gauteng Province with 50 schools registered for the first year. Currently, the Eco-Schools programme spreads into all 9 Provinces in South Africa where more than 900 schools have registered with the programme (Rosenberg, 2007-2008). Most recently the co-ordinator of Eco-Schools in South Africa indicated that there are now 1200 EcoSchools registered (Ringdahl, pers comm., December 2010). This shows a rapid increase in the scale of the programme over a short period of time (7-10 years). Lotz-Sisitka et al., (2005) indicated that the EcoSchools programme was

piloted earlier as the School Environmental Policy Project which emerged in tandem with the National Environmental Management Act of 1998 (RSA, 1998). This was a co-operative initiative established by WESSA with major national partners including the Department of Environmental Affairs and Department of Education. Thus, in effect, Eco-Schools has a long history (of more than 10 years), even though the official 'Eco-Schools' award system was adopted only in 2003.

Eco-Schools is being developed in South Africa as a schools' improvement programme that aims at achieving sustainable environmental management which links directly with the work plan of action outlined in the Millennium Declaration, signed at the 2002 World Summit on Sustainable Development (WSSD) (UNISA, 2007). Government departments with a mandate to raise public awareness and build capacity in relation to various aspects of the environment, conservation and environmental management find the Eco-Schools framework a convenient structure through which to influence teaching and learning activities in their schools (Rosenberg, 2007-2008). The Eco-Schools programme in South Africa is designed to encourage whole school learning with a key focus on curriculum-based action for healthy living. The programme incorporates various elements, discussed briefly below.

- **Curriculum**

Eco-Schools is a learning programme that raises awareness of environmental and sustainable development issues through activities linked to the curriculum (UNISA, 2007). This is also indicated in Rosenberg's 2007-2008 Eco-Schools evaluation report, where she says that the progamme requires teachers to not only undertake environmental projects but also to teach environmental lessons to learners that address learning outcomes, content and context specifying official curriculum drawing on environmental projects. She states that environmental learning in the Eco-Schools programme may take place at at least three levels:

- The 'hidden' or implicit message,
- Through learning by doing and involvement in school-based environmental action projects (e.g. sanitation improvement projects); and through

- Gaining environmental knowledge, values and conceptual skills from formal teaching and learning activities as required in the curriculum statements (Rosenberg, 2007-1008 report).

Rosenberg states further that it is important to consider the combination of learning across the above-mentioned levels of learning, to fully establish and understand the impact of the programme (ibid). It is this framework of learning that motivated me to consider the work in the Eco Schools community of practice in my school as a learning process, hence I have considered learning associated with improving sanitation practices as important aspects in this chapter (see sections 2.4, 2.5 and 2.6).

- **Action**

The programme encourages learners to take an active role in how their school can be run for the benefit of the environment. Practical steps where hands on projects are undertaken to reduce environmental impact following a simple process based on environmental management systems. However, these action projects also encourage learners to participate in the planning and reviewing of the actions effectively developing their action competence (see section 2.6). The Eco-Schools programme (Eco-Schools, 2009) actively supports active learning (Lotz-Sisitka et al., 2005; Haingura, 2009; Odeke, 2010) and learners' action competence development. Failure to see the action as active learning can result in learners participating in action projects without being cognizant of why they are engaging in these actions (Chipwhanya, 2010).

- **Community**

The programme extends learning beyond the classroom and develops responsible attitudes and commitment, both at home and in the wider community, promoting sustainable development and building ties with the community. Both Haingura's (2009) and Odeke' (2010) research on Eco-Schools identified the building of school-community relationships as a distinguishing feature of the Eco-Schools programme, and noted that this contributed particularly to its popularity in an African schools context, as school-community relations were important to

furthering the learning outcomes of schools. Involvement of community members also supported school improvements in all of the cases that they studied (in South Africa, Namibia and Kenyan Eco-Schools) (ibid).

- **Participation**

Eco-Schools have successfully implemented the principle of Whole School Development Approach into a working programme which can be easily adopted to suite the unique demands and challenges of the school environment (UNISA, 2007: 8). This requires the participation of learners, teachers, school managers and community members (as noted above). The Eco-Schools South Africa programme requires the establishment of an Eco-Schools Committee made up of key stakeholders. In this study I refer to this committee and other participating stakeholders as a community of practice, which provides a broader concept for participation in Eco-Schools than the committee concept used in the Eco-Schools Pack (Eco-Schools, 2009). Research on different Eco-Schools initiatives in Africa undertaken by Haingura (2009), Odeke (2010) and Chipwanya (2010) all pointed to the problem that Eco-Schools activities often become the responsibility of the committed teacher only, if adequate attention is not given to the full scope of participation that is possible in Eco-Schools.

The South African Eco-Schools focus differs slightly from the Eco-Schools international design, which focuses on concern for environmental projects and activities in schools. The difference is that Eco-Schools South Africa provides a broader participation framework for sustained engagement within schools; rewards to schools and positive environmental improvements linked to curriculum-based learning (Rosenberg, 2008) thus requiring participation in both school improvement, and curriculum and learning aspects of school life. Through this wider concept of participation, Eco-Schools South Africa increases the programme's relevance. This is important as the Department of Education has given the programme permission to work with schools during school hours and most Eco-Schools activities take place during school time (ibid). Failure to include the participation of learners in curriculum learning for Eco-Schools as part of normal school learning processes would have compromised the impact of Eco-Schools in the

South African context, and would have narrowed it to participation of a few stakeholders involved in school improvement initiatives (e.g. clubs).

Rosenberg further indicates that Eco-Schools South Africa at its core has a winning concept of rewards for sustained school environmental action and learning. This concept combines FEE's international award system with the conceptually strong work done on participation of learners in environmental education for schools in the context of schools and political transformation in the 1990s in South Africa. This work has emphasized learning in relation to environmental action and a need for participation in sustained environmental education processes rather than once-off awareness raising initiatives (ibid).

2.2.4. The role of Eco-Schools in environmental education

Environmental education has for a number of years been internationally recognized as a response to the socio-ecological issues and risks. The history of environmental education is intertwined with the struggle for democracy. Since the early 1990's the South African government has become a signatory to a variety of international conventions and agreement on the environment. Broad emphasis is given to the protection of the environment in the Constitution of the Republic of South Africa, which states, in its Bill of Rights (South African Constitution, 1996) that:

- Every one has the right-
  (a) To environment that is not harmful to their health and well-being: and
  (b) To have an environment protected, for the benefit of the present and future generations, through reasonable legislative and other measures that –
  1. prevent pollution and ecological degradation
  2. promote conservation , and
  3. secure sustainable ecological development and use of natural resources while promoting justifiable economic and social development (Chapter 2, Section 24).

The Eco-Schools programme plays an important role in environmental education. It has a participatory approach involving learners in both activities and decision-making processes. Eco-Schools can be an important instrument for promoting the values of participation and citizenship (Eco-Schools, 2009). The programme provides a platform for school-based community development because it encourages partnerships between the school, local communities, organizations and learners' families. It is recognized by the United Nations Environment Programme (UNEP) as among its preferred school-based/children and youth model programmes for environmental education, management; sustainability and certification at the international level (UNISA, 2007).

The Eco-Schools programme combines a curriculum and environmental learning component with school improvement action plans which are meant to result in environmental benefits. UNISA reports that governments at national, regional and local level have also seen that they can achieve and demonstrate pragmatic results relative to international commitments, such as education for sustainable development, global Citizenship and Local Agenda 21 by endorsing and supporting the Eco-Schools programme (UNISA, 2007).

Following curriculum change in South Africa after 1994, environmental education was incorporated in all the Learning Areas and subjects of the South African curriculum through explicit Learning Outcomes and Assessment Standards. The National Environmental Education Programme for General Education and Training (NEEP-GET, 2005a) states that this was done through using a curriculum principle that foregrounds the relationship between a healthy environment, social justice and human rights. Through this, a human rights orientation to environmental learning was introduced into the South Africa National Curriculum Statements (ibid). Even now, as the curriculum statements are being reviewed again, the environmental focus is being retained in the revised Curriculum and Assessment Policy Statements which are due to be released in 2012 (www.doe.gov.za).

Eco-Schools framework plays an important role as an instrument in supporting educators in addressing, understanding and implementing the environmental focus of the school curriculum when students learn about living in and for the environment (Rosenberg, 2008). Eco-Schools helps in promoting knowledge and skills that are developed through active learning, critical thinking, involvement in real issues, and encounters in the learners immediate environment (Lotz-Sisitka & Raven 2001, 94; Eco-Schools, 2009).

2.2.5. How Eco-Schools operate

The Eco-Schools programme addresses international commitments adopted at the United Nation Conference on Environment and Development ("Earth Summit" at Rio de Janeiro) in 1992 (Haingura, 2009). The programme is designed to encourage whole school learning and action for a healthy environment. It is a democratic and participatory programme and provides opportunities for learners in the schools to work with teachers and community members to engage in schools and community action to promote sustainability. This encourages development of active citizenship (Eco-Schools, 2009; Haingura, 2009; Odeke, 2010).

Eco-Schools is a flexible framework that offers a flexible approach for schools to implement an environmental management system. Initially it was based on the model EMAS (Eco–Management and Audit Scheme) (UNISA, 2007: 5). Initially the programme focused on water, energy and waste; but other thematic areas of support have been developed in different countries, and these include themes such as Biological Diversity, Healthy Living and Transportation (ibid). Haingura (2009) and Odeke (2010) both commented that the theme of health was particularly important to Eco-Schools in Africa. It is included in the revised Eco-Schools toolkit, which has a theme on health and sanitation (Eco-Schools, 2009). The Eco-Schools programme encourages partnerships with local authorities, organizations and learners' families. This is done by encouraging schools to involve parents and community members in aspects of school environmental management and action projects (Eco-Schools, 2009). Eco-Schools practices which involve auditing, curriculum planning, school improvement action projects, resource management activities, and evaluation and review activities, serve as

framework that can bring the home, school and community environment together. Eco-Schools researchers in Africa such as Haingura (2009), Odeke (2010) and Chipwanya (2010) have all shown that the Eco-Schools programme does in fact bring school and community closer together and they all comment that is an effective programme for doing this. The same point was made by Rosenberg (2007-2008) in her evaluation of the Eco-Schools Programme in South Africa.

In order for a school to become an Eco-School, the school has to register anytime before the end of April and submit a portfolio on or before the 31st October in order to qualify for an award by the end of the same year (Eco-Schools, 2009). The starting point for becoming an Eco-School is at an individual level where an educator can start in the classroom working with the outcomes of a particular subject and at whole school level where it can work through the seven steps indicated below:

- Form an Eco-Committee
- Write an Eco-Code
- Do an Eco-Audit and Choose a Theme
- Plan for Teaching and Learning
- Plan and Take Action
- Report and Share
- Receive an Award (Eco-Schools, 2009: 6).

Eco-Schools' criteria for awards do not discriminate against schools which have fewer resources than others. Awards are made on the basis of evidence and action to improve the schools' environment. To qualify for a green flag, schools have to work with all five themes outlined in the Eco-Schools handbook. These are: Resource Use; Nature and Biodiversity; Local and Global Issues; Healthy Living; and Community and Heritage (Eco-Schools, 2009). The flag is awarded in acknowledgement that a school is committed to environmental education and management. The flag encourages schools to be proud of their improved school and it is a form of

recognition. If an Eco-School does not submit a portfolio for two years after earning the flag, the flag will be removed. One of the Eco-Schools themes, which is relevant to this research, is **Healthy Living**, as it addresses sanitation issues in schools, which I discuss next.

2.3. SANITATION

2.3.1 Sanitation risks, issues and benefits of good sanitation

Sanitation is regarded as one of the key issues for the achievement of poverty eradication and economic development. Improvement in health and sanitation is included as one of the Millennium Development Goals (MDGs), and improved sanitation is included as an indicator of MDG 7 which focuses on environmental management and sustainability (UNDP, 2010). Sanitation refers to *"the principles and practices relating to the collection and removal of human excreta as they impact upon people and the environment"* (WSM Leshika (Pty) Ltd., 2009: 4).

Good sanitation includes appropriate health and hygiene awareness and behaviour, and acceptable, affordable and sustainable sanitation service (ibid). The Africa MDG report for 2010 reports that the target is to provide improved sanitation for approximately 370 million people more than the estimated population of 242 using such facilities in 2006. The report notes that sanitation services improvements are still low in many African countries, and only four African countries

> *.... record over 90 percent of their population having access to improved sanitation facilities, namely Algeria, Egypt, Libya, and Mauritius. Many countries fall far below that level [including South Africa, as seen in Figure 2.1 below]. Countries with below 20 percent coverage include: Benin, Burkina Faso, Chad, Eritrea, Ethiopia, Ghana, Guinea, Liberia, Madagascar, Mozambique, Niger, Sierra Leone, and Togo. (UNDP, 2010: 54)*

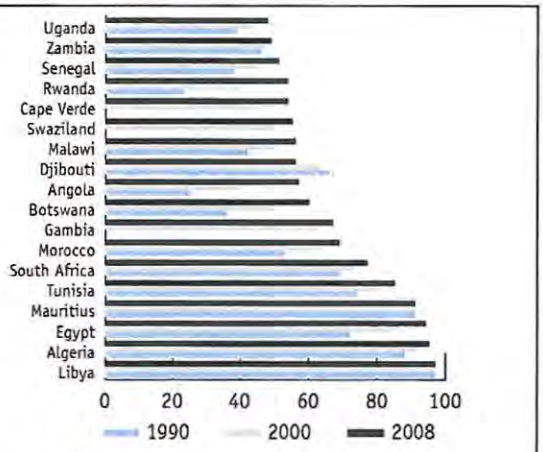

Figure 2.1 Comparative sanitation statistics
(Source: UNDP, 2010, pg. 55)

UNDP statistics show that there have been improvements in sanitation conditions in South Africa since 1990, and also that South Africa is amongst those countries with a higher percentage of people with access to sanitation, when compared to countries in the lowest 20 % as shown in Figure 2.1.

The UNDP goes on to report that:

> *improvements in sanitation largely remain an urban phenomenon. Open defecation is still very common in rural areas and has not been eradicated in many urban areas of the continent. In 2008, excluding North Africa, the percentage of the African population practicing open defecation was 199 million in rural areas and 22 million in urban areas (ibid: 54)*

This shows that sanitation issues are still largely rural issues, although they do affect people in urban areas, particularly in informal settlement areas. The UNDP argues that good policies can make a big difference to sanitation conditions and the MDG process urges governments to improve sanitation policy and practice, particularly in rural areas and in urban slums (ibid). The 2010 MDG report does not comment on sanitation in schools.

WSM Leshika (Pty) Ltd. (2009) report that in South Africa, sanitation policy development can be divided into three distinct periods. *Firstly*, the pre-1994 period before the establishment of a democratically elected government; *secondly*, the period between 1994 to 2001 during which the new Constitution was implemented and a policy for provision of sanitation services was developed and a delivery programme initiated; and *lastly* the period from 2001 forward during which the sanitation policy was refined and the programme of service delivery accelerated towards meeting the MDG targets. As shown in the UNDP statistics above, there has been steady improvement in meeting the MDG targets for sanitation in South Africa since 1990.

Despite this progress, there are still an estimated 11.7% of schools in South Africa that are without sanitation. Many schools use pit latrines that are inadequate, dirty and unsafe. As indicated in Chapter 1, in some of the schools that use Enviro-loo systems, they are inadequately managed. WSM Leshika (Pty) Ltd. (2009) state further that *"When sanitation is inadequate, it impacts on health of the community, on the health of children and negative impact in the end can be extremely serious"* (ibid, 2009, 7). Inadequately maintained or inappropriately designed systems can therefore lead to a range of pollution risks to the environment and health risk to people. This idea is also supported by Beck (1992: 23) in his risk society, when he argues that *the distribution and growth of risk affect some more people [normally the poor] more than others.*

According to Beck (1992) risk is an incidental problem of modernization in undesirable abundance, of which science and technology are often the cause. In the case of sanitation risks, this can be related to technologies that are not easy to manage, which then create risk. When managed correctly the technology can also solve health risks, as is the case of proper sanitation management. The Enviro-loo systems are modern facilities provided to rural schools and have the potential to reduce health risk caused by lack of sanitation facilities, but most communities are unable too operate and maintain the facilities because of a lack of user education as discussed in Chapter 1.

The most common health problems associated with poor sanitation as indicated in WSM Leshika Pty Ltd., (2009, 12) are:

- *Diarrhea and dysentery;*
- *Typhoid;*
- *Bilhazia;*
- *Cholera;*
- *Worms;*
- *Eye infections and skin diseases and*
- *Increased risk from bacteria, infections and diseases for people with reduced immune systems due to HIV/AIDS.*

Other health risks associated with to exposure to sewage are:

- *Weill's disease;*
- *Occupational asthma; and*
- *Alveolitis (AGES (Pty) Ltd., 2010, 20)*

Such health risks can cost societies a lot, often measured by the cost of implementing sanitation practices, and most often not costed by the benefits of reducing health risks associated with sanitation problems. George (2009: 82) points to the cost benefits of reducing or avoiding health risks caused by inadequate sanitation facilities when she states that *"Globally, if universal sanitation were achieved by 2015 it would cost $95 billion, but it would save $ 660 billion"*. She states further that *"When Peru had a cholera outbreak in 1991 it cost $1 billion to contain, but could have been prevented with $100 million of better sanitation measures" (ibid)* .... *and "Sanitation is one of the best investments a country can make"* (ibid).

A similar argument is made for the investment in sanitation facilities by WSM Leshika (Pty) Ltd. (2009, 3) who state that *"Improving hygiene practices and providing sanitation facilities could have a direct influence on a number of important public health problems besetting South Africa"*. Drawing on information provided by the United Nations Children's Fund (UNICEF) and

World Health Organization (WHO), they list a number of benefits of improved sanitation care which include improved education and health. Their list is:

- *Increased life expectancy (along with reduced morbidity and child mortality);*
- *Saving in health care costs;*
- *Reduced time of caring and sick leave (back to work);*
- *Higher worker productivity;*
- *Better learning capacities of school children;*
- *Increased school attendance, especially by girls;*
- *Strengthening tourism and national pride;*
- *Direct economic value of high water quality such as irrigation water for crops; and*
- *Reduced water treatment costs (ibid)*

The Eco-Schools Handbook, in the section on Healthy Living, also points to the importance of improving sanitation conditions in schools. It states that *"when the environment is unhealthy, people can get sick",* and it encourages Eco-Schools to make the connections between environmental conditions and health and safety of learners (Eco-Schools, 2009: 27).

In this study I investigate what Eco-Schools community of practice in Ramashobohle High School does to foster action competence in managing sanitation. The figure on the next page - taken from WSM Leshika (Pty) Ltd. (2009) - illustrates how infections as a result of mismanaged sanitation are transmitted on hands and during food preparation, rather than through drinking contaminated water directly.

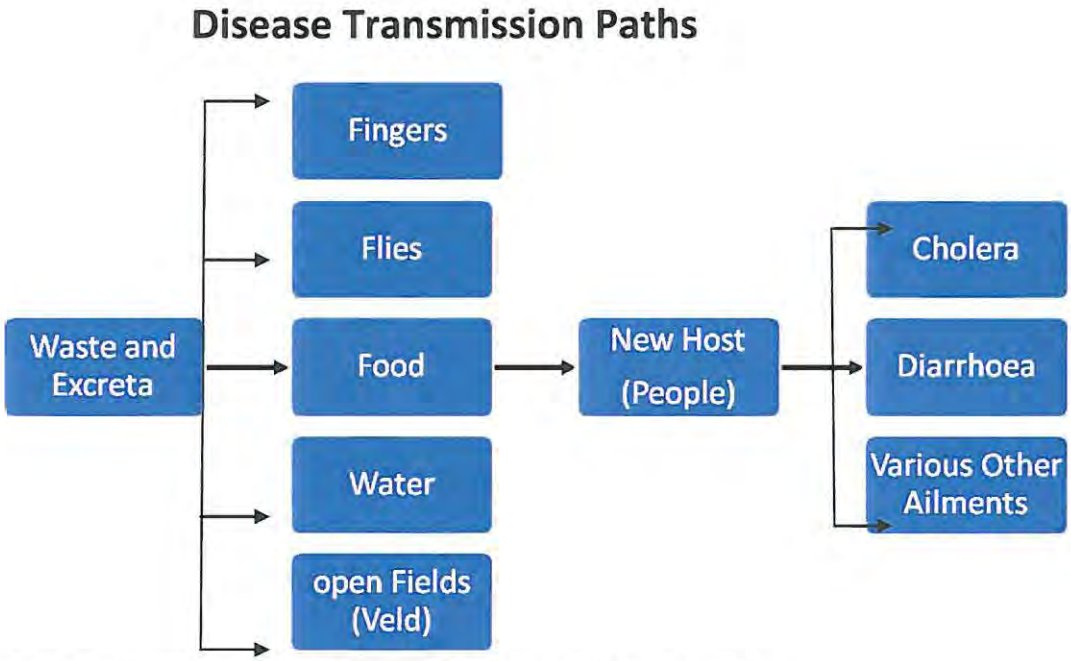

Figure 2.2 Disease Transmission Paths (Source: WSM Leshika (Pty) Ltd., 2009: 8)

In this study, the aim is not to investigate the effects of mismanaged sanitation. The above diagram serves as a caution to the Eco-Schools community of practice in managing sanitation. Beck (1992) further indicates that modernization risks, such as inadequate sanitation facilities appear geographically in a specific area as well as unspecifically and universally. As such inadequate sanitation is a global development problem (as shown by the MDGs – see UNDP 2010), and a local issue that manifests in the Ramashobohle school grounds where it is unique; it differs with sanitation concerns in other places and in other countries as different people are involved, and technologies are used in different ways by people in different places. Giddens (1999) associates risk with poverty. The sanitation issue in Ramashobohle is associated with manufactured risk as indicated in Beck (1992). Risk may not be anticipated. People must be persuaded that risk is real and that risk may carry long, medium or short-term health hazards, which could pose a threat to people's health. For example, it is not possible to tell who will be affected in exactly what way by the sanitation issue in Ramashobohle High School, or when this might happen, but the risk of a health impact exists daily, and can affect anyone, especially the learners. That is why the Eco-Schools programme encourages lifelong participation of schools in

the Eco-Schools programme so that schools and their teachers and learners can develop the action competence needed to address and respond to risks such as health risks in their school communities (Eco-Schools, 2009).

As indicated in Chapter 1, the sanitation management practice that I am investigating is better use of the Enviro-loo systems in our school. As mentioned earlier in Chapter 1, the Enviro-loo system is an evaporating and dehydrating toilet that is simple, efficient and economic. It is a dry system, designed to provide sanitation solutions where water is scarce and where there is high risk of contamination of ground water resources. It therefore not only reduces direct risk associated with inadequate sanitation practices to human health, but also the more indirect risk of underground water contamination. WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010) both state that these kinds of toilets have the lifespan of 50 years and that maintaining the Enviro-loo system requires regular monitoring, inspection and some rules of conduct to be implemented. As also mentioned in Chapter 1, the system transforms human solid waste into a neutral, pathogen free material without the use of water, electricity or chemical products. The drying area, however, needs to be emptied in a timely manner to prevent ineffective functioning of the system. The Enviro-loo system runs on wind and sun alone and is a potentially effective technology for rural areas, and even for urban areas as it reduces use of other forms of energy and it reduces risk of groundwater contamination.

2.3.2. Sanitation strategic interventions

Sanitation problems - as indicated in WSM Leshika (Pty) Ltd. (2009) - should be addressed by means of the following strategic interventions illustrated in Figure 2.3 below:

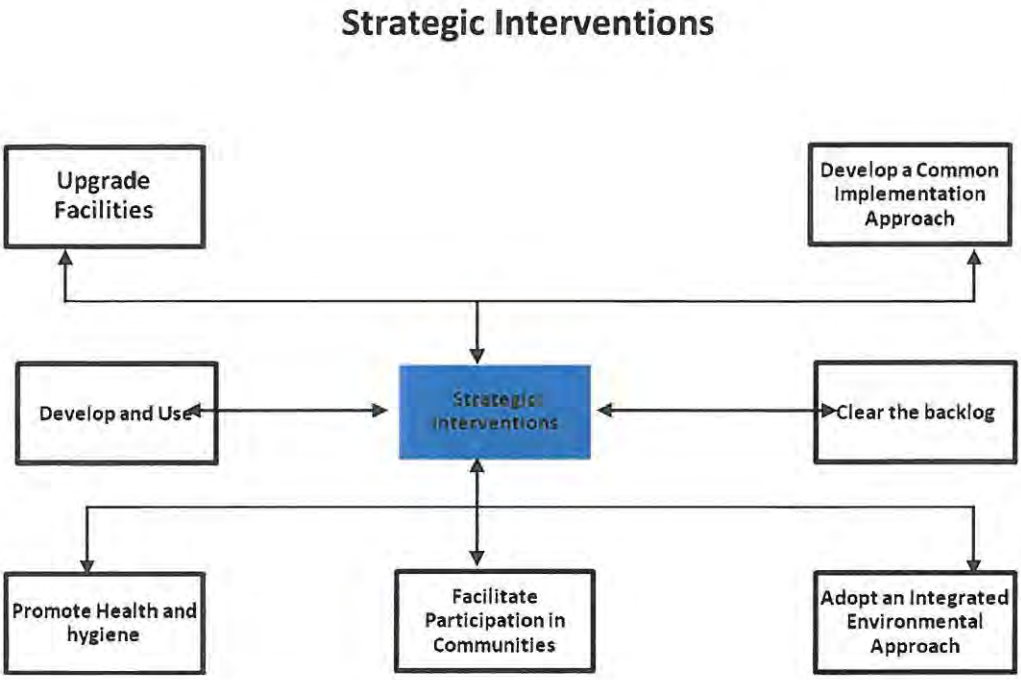

Figure 2.3. Strategic Sanitation Management Interventions (Source: WSM Leshika (Pty) Ltd., 2009: 11)

The diagram shows a range of different strategies that need to be implemented to ensure good sanitation practices, including upgrading of facilities, promotion of health and hygiene, strengthening of participation of communities, adoption of an integrated environmental approach (such as that proposed by the Eco-Schools programme), and development of a common implementation approach. Their strategic interventions are both technical and social and show that good sanitation practice is not just a technical matter of providing new or upgraded toilets, but includes participation, common objectives and health and hygiene education.

2.3.3. Monitoring

Monitoring is essential to ensure that the sanitation facility keeps functioning effectively and that the maintenance is performed timeously (AGES (Pty) Ltd., 2010). Regular inspection and monitoring of the various aspects of the Enviro-loo systems are to be performed by responsible

persons appointed by the school management (ibid). Monitoring and inspection should be performed on a weekly basis and it is the responsibility of the school management to see to it that the monitoring and inspection personnel is trained in the basic procedures for monitoring and maintenance before performing such duties (ibid). Teachers can assist and check the toilets after use to ensure that the facilities are clean and correctly used. Re-training of learners who are not competent with the procedures may be required (ibid).

The following procedures must be followed by maintenance staff when performing monitoring and maintenance of Enviro-loo systems:

- Use personal protective equipment
- Use appropriate tools, equipment and cleaning equipment
- Secure the area
- Open the inspection covers
- Wash and disinfect hands
- Close the inspection covers
- Clean and disinfect the concrete slab
- After completion of monitoring and maintenance on all blocks ensure adequate storage and maintenance of tools and equipment and personal protection equipment (AGES (Pty) Ltd., 2010).

As mentioned above, these functions need to be undertaken by members of the school community, and in the case of our school, this responsibility was taken up by an Eco-School Community of Practice, which I discuss next.

2.4. ECO-SCHOOLS COMMUNITY OF PRACTICE

As recommended by the Eco-Schools handbook, an Eco-Schools work group should involve the whole school, but it is necessary to have a working group to hold the process together (Eco-Schools, 2009). In this study, the working group will be referred to as a community of practice

(COP). This means that there is a community in the school, who will be involved with the sanitation practice, not just the learners alone. The group includes learners, educators, School Governing Body (SGB) members, school management and Eco-Schools network. I consider the sanitation management committee to be community of practice because they are learning together with the maximum external support from the Eco-Schools network on how to manage sanitation (Enviro-loo systems). For example, the sanitation committee members are planning together on how to manage Enviro-loo systems and they also train other stakeholders on how to operate and maintain the toilet systems. They also ensure that the required items are provided at the facility for the use by learners supervising and monitoring the systems (AGES (Pty) Ltd., 2010). According to Lave and Wenger (1991: 98) *"Community of Practice implies participation in an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community"*.

The community of practice approach allows for social learning and participation in decision-making (Wenger, 1998) which is central to the development of action competence (Jensen & Schnack, 1997). The community of practice approach allows for the formation of democratic processes of participation that are centred on common practices, so that those involved in the community of practice can work together to decide for themselves the actions they will take. While this happens, they also learn together, and Wenger (1998) explains that learning takes place in the context of practices, as people mobilize existing knowledge, experience and new knowledge and experience in relation to the practice that they are interested in. The Eco-Schools community of practice, in the case of this study, will involve the teachers, learners, parents and School Governing Body, school management and Eco-Schools network. As mentioned in Chapter 1, my interest is in observing how the COP engages in the key process of action competence development, as defined by Jensen and Schnack (1997). Wenger (1998) explains that in a COP, participants actions are preceded by intentions and may be accompanied by reflection.

As this study investigates how an Eco-Schools community of practice fosters action competence in managing sanitation issues in Ramashobohle High School, from the above-mentioned definition of community of practice (COP) by Lave and Wenger (1991: 98) it means that I am looking at what the sanitation management committee is doing and how they share their understanding in managing sanitation practices in the school as outlined in section 1.5 under the research goals.

The concept community of practice and situated learning as conceived by Lave and Wenger (1991) are useful tools in helping to understand social learning (amongst the Ramashobohle High School sanitation COP). The term social learning as indicated in Wals (2007: 39) conceals great diversity, it means: "*Learning by individuals that takes place in social settings and or is socially conditioned; for others it means learning by social aggregates*". This would mean that it could be individual learning of teachers and learners or other members of the COP in the school, or it could be the social aggregate of learning about sanitation management practices in the COP and in the school.

Community of practice is characterized by social power relations and its condition for legitimacy defines the possibilities for learning (Lave & Wenger 1991). In communities of practice there is complete participation intended to do justice to the diversity of relations involved in varying forms of membership (ibid). When peripherality is enabled or legitimated in the community of practice, it suggests an opening for learning, or a way of gaining access to sources for finding understanding through growing involvement (ibid). In the context of the school sanitation COP, this would mean that it is necessary to allow different stakeholders access to the learning possibilities, and that we should create openings for others to join in and participate in the activities of the COP.

However, not every community is a community of practice. Wenger (2007: 1) defines community of practice as "[a]*group of people who share a concern or a passion for something*

they do and learn how to do it better as they interact regularly". From the above definition, community of practice defines itself along three dimensions:

- What it is about
- How it functions
- What capability it has produced (Wenger 1998, 2).

A community of practice is a self-organizing system that develops around things and practices that matter to people (e.g. healthy living conditions in schools) and also move along various stages of development characterized by different levels of interaction among members and different kind of activities. The three characteristics of community of practice are:

- A shared domain of interest: Membership implies commitment to a domain (e.g. sanitation management practices) and thus shared competence that distinguishes members from other people,
- Participation: The community of practice members are engaged in joined activities and discussions to help each other and share information.
- Shared Repertoire: Members are practitioners who develop a shared repertoire of resources forming a shared practice: i.e. experiences, stories, tools, ways of overcoming challenges and problems (Wenger 2007: 2).

In a community of practice, learning is characterized by legitimate peripheral participation (LPP) (Lave & Wenger, 1991). This implies a process whereby for example stakeholders gain identity in their new community of practice by observing the more experienced stakeholders engaged in the practice and then through co-participation they take on some of the tasks (Wenger, 2007: 23). Legitimate peripheral participation is an analytical viewpoint on learning, a way of understanding learning (ibid). In the context of this study, I could use this concept to examine how learning takes place in the community of practice, and how new sanitation practices are shared and learned amongst members of the COP. Such approaches to learning are based on an understanding that people construct meaning as they learn from each other and the practices they are engaged in. Such learning is also situated learning, as will be discussed next.

2.5. CONSTRUCTIVISM AND SITUATED LEARNING

As indicated earlier, this study seeks to investigate how action competence for sanitation management practices is developed in the COP. The action competence approach, as described by Jensen and Schnack (1997, see also section 2.6 below), is a constructivist learning approach that is also situated. Constructivism is a theory of learning that implies participation in meaning making, and is therefore the theory of learning that underlies the development of action competence in environmental education (Eames et al, 2006). They further indicate that there is a strong fit of environmental education and constructivism, particularly when meaning is constructed in the context of situated environmental management practices i.e. when learning is also situated (O'Donoghue, 2001; Wals, 2007).

Constructivism is a learning theory that postulates that knowledge is obtained and expanded through active construction of theory and practice (University of Pretoria, 2008). It is based on the assumption that learners inherently and actively construct, create, invent and develop their own knowledge, skills and values in interaction with others and the contexts and practices that they are engaged within (ibid; O'Donoghue, 2001). In constructivist learning knowledge is also constructed, not only transmitted. A knowledge construction result from activity, in other words, knowledge is embedded in activity (ibid). In this study, the knowledge of sanitation that the community of practice members constructs and the associated skills they develop includes information about the context in which they experience sanitation issues, and the practices that they implement to ensure improved sanitation in the school. The knowledge that the community of practice members construct consists of not only ideas (content), but also information about the context in which it was acquired, and knowledge of practices as experienced by them (i.e. they develop knowledge of poor sanitation practices through experiencing these). The assumption here is that the more directly and interactively community of practice members experience sanitation issues in a meaningful context, the more meaning about sanitation they are likely to construct.

By considering constructivism I am using a lens for meaning making that will allow me to investigate and understand how meaning was created, negotiated, sustained and modified within a specific context (Ramashobohle Eco-Schools) of human action and to interpret this. Meaning can be shared with others. I also want to understand knowledge, which according to Steffe and Gale (1995) should represent the real world that exists that is important to us as humans. For knowledge to be constructed, learners (in this case the community of practice members) not only need become actively involved, but they also need to reflect on what they did and articulate what knowledge means. Knowledge is seen as inextricably a product of the activity and context in which it is produced (ibid). Thus, in this study knowledge of how to make the enviro- loo system function adequately in the school will be linked to the activity and context of making such knowledge meaningful.

According to Eames et al, (2006), constructivism consists of some of the following components:

- Working on real problem
- Student centered
- Group interaction

These components will, I anticipate, help me to investigate and interpret how the Eco-Schools community of practice constructs knowledge of the sanitation management practices in the school. Constructivism promotes transformative learning and represents a best way of developing pedagogy to enhance students' action competence (ibid). Action competence is a constructivist learning approach that is also situated (Eames et al., 2006). In this study, I therefore, through examination of the action competence process in an Eco- Schools community of practice, develop insights into situated, constructivist approaches to learning.

Situated learning, according to O'Donoghue (2001) involves a consideration of what learners already know as part of the process, and it enables individuals to develop new insights and competences. Competencies are encouraged through the use of active approaches to learning. In this study, it is hoped that I will be able to observe how the community of practice members

develop competencies and insights from what they learned from Eco-Schools networks about sanitation management practices. This view is also supported by Jonassen (1994), indicating that situated learning occurs when students work on authentic and realistic tasks that reflect the real world. He further says that situated learning is also concerned with how learning occurs everyday.

According to Lave and Wenger (2007), and as mentioned above, situated learning involves a process of learning and constructing meaning through legitimate peripheral participation (LPP). This means that knowledge and skills are shared with people who participate fully in the social practices of the community. Legitimate peripheral participation involves relations of power (ibid). It is proposed as a descriptor of engagement in social practice that entails learning as an integral constituent.

In this study I use the situated approach to learning because Lotz-Sisitka and Raven (2001) indicate that it provides an opportunity for educators to create active learning environments in which learners are able to become more involved in addressing and responding to environmental issues and risks. They can learn how to do this through legitimate peripheral participation in communities of practice. In this study the constructivist situated learning approach may provide opportunities for the sanitation management committee of Ramashobohle High School to *master* (Lave & Wenger, 2007: 29), participate fully, share, reflect and decide what to do and how in addressing and responding to sanitation issues and *risks* (Beck, 1992) in the school. This may also enable the Eco-Schools community of practice to examine issues and take critical actions (Lotz-Sisitka & Raven, 2001; Jensen & Schnack 1997; Silo, 2010). According to Lave and Wenger (2001: 34) "The notion situated learning appears to be a transitory concept, a bridge, between a view according to which cognitive processes are primary and a view according to which social practice is primary, generative phenomenon and learning is one of its characteristics". Situated learning is transformed into legitimate peripheral participation and meaning making amongst members of a COP (ibid: 122). I now briefly discuss

action competence development, as this is what I hope the members of the COP may achieve insofar as sanitation practices in the school is concerned.

2.6. ACTION COMPETENCE

Environmental education is faced with a challenge of strengthening the students' action competence (Breiting et al, 1999: 44). Action competence is not just about action, but it concerns the *ability to act with reference to environmental problems through informed students' decisions underpinned by critical thinking about the root cause* (Jensen & Schnack, 1997). Action competence is an approach to learning and participation used widely in environmental education. It provides a pedagogical framework for enhancing student's action competence (ibid) to:

- Identify environmental issues,
- Develop visions and alternative ideas on how things could be,
- Determine solutions, and
- Take actions in ways that develop their competence for future action to solve or avoid environmental problems (ibid).

Action competence implies that one will include normative arguments and views in a discussion of what constitutes the relevant issue, and what alternatives and visions can be suggested (Breiting et al., 1999). Breiting et al., (ibid) further indicate that action competence comprises both knowledge and hands-on experience when one is acting in a democratic way. Collective actions could be of particular interest, and in this study such collective actions are the enviro-loo sanitation management practices as already mentioned.

The notion of action competence was first posed in 1990 by researchers in the Royal Danish School of Educational Studies. In Denmark the concept action competence played a central role in pedagogical discussion of environmental education in recent years. The objective was seen as development of the pupils' action competence and this approach was different from environmental education mainstreaming because its goal was to benefit pupils here and now to

handle environmental education problems and how to live with environmental issues as part of our daily problems (Breiting & Mongenson, 1999). Jensen and Schnack (1997) defined action competence as: "the ability to act – in this case, with reference to the environment". They go on to say that "The aim of environmental education is to make learners capable of acting on a societal as well as personal level" (ibid, 164).

In order to do this, learners need to study the root cause of environmental problems within the context of their society (Wals, 1994). Jensen and Schnack (1997) further argued that education is not about simple behaviour modification without understanding, but about creating a democratic process of participation in which learners decide for themselves the action they will take. The behaviour modification approach aims at prescribing certain of the learners' behavioural patterns which we here and now believe will solve current environmental problems. This study uses the new version of environmental education only which is the action competence approach and not the behaviour modification approach. The difference between the work in this study and the work of Jensen and Schnack is that I aim to investigate the development in a school COP, and not just amongst learners in a school.

The action competence approach is a new paradigm to environmental education (Breiting et al., 1999). The approach seems to be much more efficacious in assisting the current generation to address challenges in their societies (ibid). The action competence approach is characterized by some of the following aspects as indicated in Breiting et al. (1999: 17-19):

- Decisions on how to solve environmental problems need to involve all
- Civic participation
- There are several possible development trajectories
- Humans have values and interests regarding life in and with nature
- Community experience is equally important
- Considerable focus on equality between individuals and peoples
- Focus on conflicting interests and on personal (inner) conflicts

These action competence aspects will be investigated amongst the community of practice members. As indicated by Eames et al. (2006), actions are considered to be consciously taken and targeted, since they are intentions based on experiences. In this study, actions will be seen as different from activities, in which learners undertake environmental tasks that do not involve solutions to the underlying environmental issues. Breiting and Mogensen (1999: 351) also indicate that all actions taken must be seen in a future prospective, where direction is not given beforehand but rather prescribe an obligation to question critically but fairly.

According to Jensen and Schnack (1997) action could be direct or indirect. Direct actions contribute directly to solving environmental problems, whereas indirect actions are those which seek to influence others to solve problems.

Jensen and Simovska (2005) indicate that action competence involves pupils in making their own decisions and enables them to articulate their own perceptions about their healthy life and healthy environment. They further pointed out that action competence elements need:

- **Insight and knowledge**- This aspect wanted learners to have a broad, positive, and coherent and action minded understanding of health problems at hand and how such a problem can be solved.
- **Commitment and change**- This component refers to the promotion of learners' commitment and drive to work with health problems and to contribute to positive solutions. Commitment and drive are of paramount importance because they can transform knowledge into action.
- **Visions**- This action competence component involves what alternatives learners imagine in developing their visions about the world and how they can improve society and the environment in relation to the problem at hand for now and in the future. The component further concern for learners how they wish to live, and what kind of family they would aspire in future. This means that the component deals with the development of learners' ideas and dreams and their perception about their future life and the society within which they are growing.
- **Action experience**-This component look at real experiences by learners individually or as a group and emphasizes the benefit of taking concrete action during the learning process that will bring closer to visions (ibid).

These aspects of action competence are also tackled in Breiting et al. (2009) but they differ slightly from Jensen and Simovska (2005) above. They insist that action competence can not be viewed as merely the sum of its elements. They further indicate that components, dimensions or aspects can be brought out by analysis, but they can not be separated, neither theoretically nor in pedagogical praxis (ibid.) as illustrated in Figure 2.4 below:

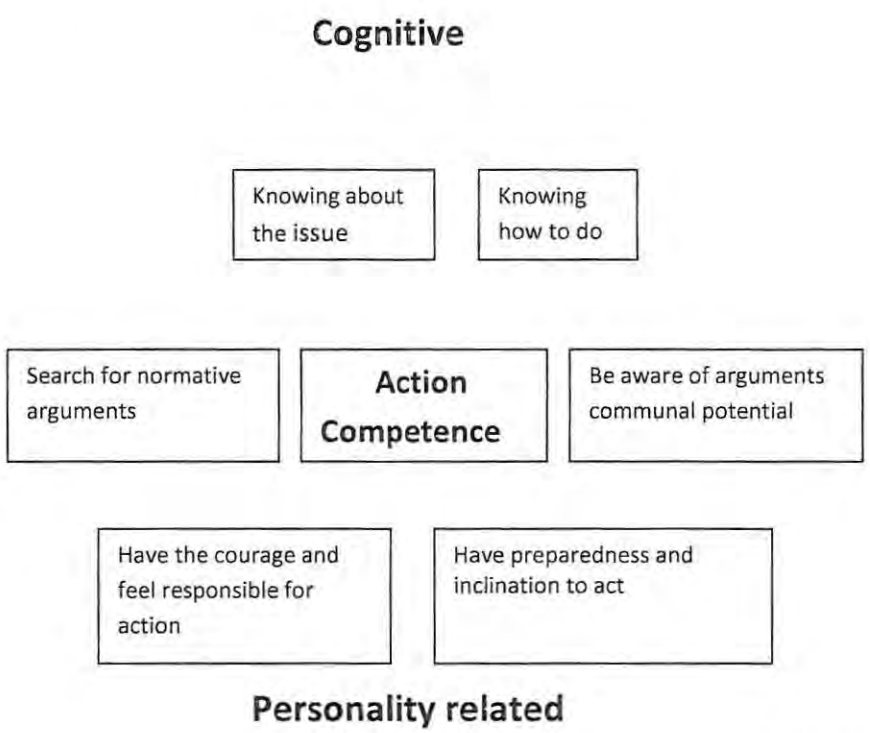

Figure 2.4 Action competence development: ***Source: Breiting et al. 2009 inspired by Mongenson 1995)***

Their assumption is that education will strengthen action competence in students whenever they subject an issue to critical investigation, analyses and reflection. Action competence is seen by them as: "a personal capacity embracing rather more than the intellectual-cognitive domain. It involves the entire personality, including many of the mental performance potentials and dispositions" (Breiting et al. 2009: 50)

According to Jensen and Simovska (2005) it is important to develop all the above-mentioned components of action competence through educational processes as they will also develop action competence oriented knowledge illustrated below in Figure 2.5 as dimensions of knowledge:

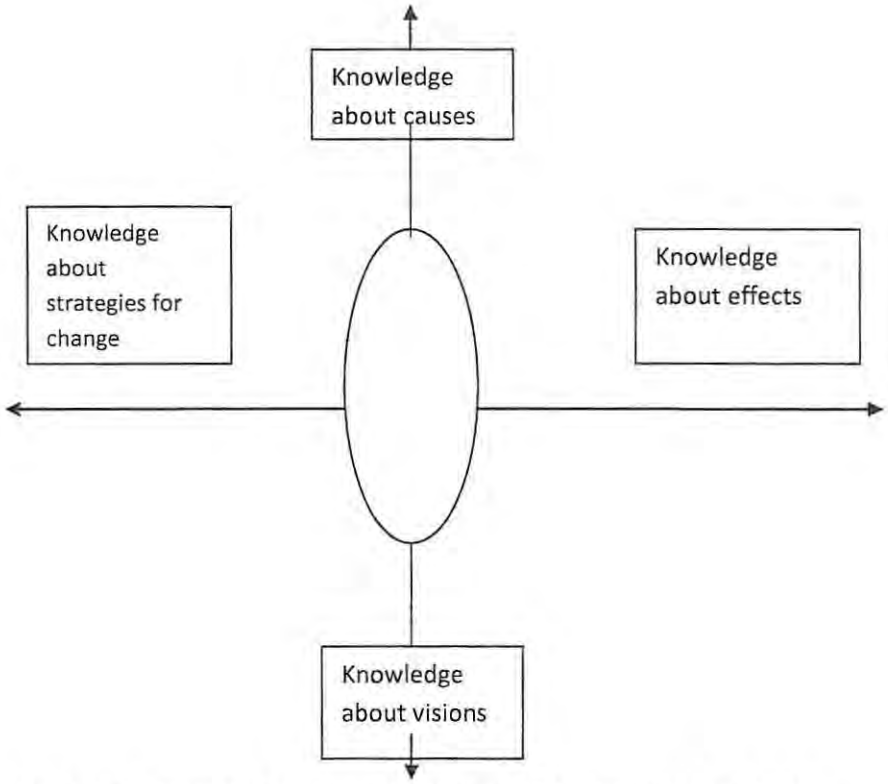

Figure 2.5 Action competence knowledge (Source: Jensen & Simovska, 2005; 313)

According to the above four-dimensional knowledge model as indicated in Jensen and Simovska (2005: 313), "if the aim of health promoting schools [or Eco-School] is to develop learners' action competence, the core of the knowledge about health [and environment] should in its essence be action oriented".

The first dimensional knowledge model is *knowledge about effects*. This dimension deals with knowledge about the existence and growth of problems in today's life including health related

effects of persons in the environment, in our lifestyle, in our social relations. This kind of knowledge awakens concern and attention and creates the starting point for the motivation which can be a prerequisite for the development of action competence. The second dimension of knowledge is *knowledge about root causes*. This dimension belongs mainly in the sociological, cultural and economic areas. It deals with the cause of health problems. For example: Why are stakeholders at risk of using mismanaged toilets? What causes vandalism of toilets? Who vandalizes toilets and why? The third dimension of knowledge is *knowledge about change strategies*. This dimension deals with knowledge about controlling ones' own life and how to contribute to changing the living conditions of the society. It also includes knowledge about how to initiate, facilitate and structure cooperation, how to deal with power relations. This dimension is central and decisive for action-oriented health education. The fourth dimension of knowledge which is the last is *knowledge about alternatives and visions*. This dimension deals with the necessity of developing ones' own visions. In this study, for example; knowledge about managing sanitation in rural schools can be a strong source of inspiration for developing ones' own visions.

In this study I used the **Investigation- Vision- Action-Commitment and Change** (IVAC) model in investigating the Ramashobohle High School community of practice members' action competence in managing sanitation. To analyse this, I used different perspectives indicated in Table 2.1 below that are conducive for the development of action competence. The evidence is explained in detail in Chapter 4 of this study.

Table 2.1 Action competence elements (*Adapted from Jensen & Simovska, 2005, 315)*

A: Investigation of a theme • Why is sanitation important to Ramashobohle High School community of practice? • Its significance to others/others- now/in the future? • What influence do lifestyle and living conditions have? • What influence are we exposed to and why? • How were things before and why have they changed?

B: Development of visions

- What alternatives are imaginable?
- How are the conditions in other cultures and why?
- What alternatives do we prefer and why

C: Action and change

- What changes will bring us closer to the visions?
- Changes within ourselves, in the classroom, in the community?
- What action possibilities exist for realizing the changes?
- What barriers might prevent carrying out these actions?
- What barriers might prevent actions from resulting in changes?
- What action will we initiate?
- How will we choose to evaluate these actions?

In this study, I investigated aspects such as vision, action and change which the sanitation community of practice of Ramashobohle High School have and I also extended the IVAC model by also observing emotional responses; critical thinking and reflection as Faye, Barry, and Eames (no date) and Breiting et al. (1999) note the importance of also considering cognition in action competence development. As indicated in Eames (2006), students require the skills to be able to think critically about causes of issues and possible actions that could be taken and made meaningful by reflecting on their knowledge, actions, participation attitudes and values. Critical thinking is a core component of action competence (Breiting 1999, and Breiting et al., 2009), because competence implies critical thinking. This means that action competence is closely connected with critical thinking which according to Breiting et al. (2009) covers both reflection and commitment. This idea is also supported by Eames et al. (2006) indicating: "it enables young people to explore social issues in the real world by questioning values, perceptions, conditions and opinions".

Critical thinking aims in identifying and challenging what is in existence, and develops the ability to imagine alternatives and propose possible modes of action, because it is a visionary thinking (Breiting et al. 2009) that creates meaningful, contextual knowledge that opens up discussions on all sides of issue (Breiting & , 1999; Eames et al. 2006). Such reasoning and judgment (alternatives imagined and actions taken) are the objectives of critical thinking (ibid).

According to Mogensen (1999) critical thinking, ought to be understood from four perspectives which are epistemological, transformative, dialogical and holistic. The *epistemological perspective* is concerned in identifying factual, explaining and understanding normative aspects of the problem; analyzing and assessing with the aim of developing visions (ibid). The *transformative perspective* can take place in different levels of abstraction such as the individual and the structural level. Community is a key concept because it necessitates the interpersonal in analyzing practice as well as assessing alternative possibilities and strategies rather than individual strategies only (ibid). The third perspective is the dialectical. *Dialectical perspective* underlies two aspects, which are contextualization and dynamic view. Dynamic view can develop qualities such as:

- The courage to actively participate in discussions and debates.
- An ability to empathize and appreciate other peoples' thinking and ideas.
- The will to apply consistent criteria of assessment to oneself and others.
- An awareness of the limits of ones' own knowledge.
- The belief that arguing for a case can have positive effects.
- The will to persist despite great barriers and frustrations (Mogensen, 1999).

The fourth perspective which is the last is holistic. *Holistic perspective* insists that critical thinking involves both feelings and reason. This perspective on critical thinking is vital in relation to the development of action competence (ibid). Emotional responses can be decisive in transforming action motivation and wish into actual empowerment (ibid). Aspects such as willingness, courage and inclination to involve oneself are also important in encouraging emotional response.

The action competence theoretical framework will provide the basis for developing an analytical framework for the study, as discussed in the section on data analysis. The Action Competence Framework has been used for research in environmental education. For example, James (2009) used it in Eastern Cape schools. She found that the action competence model of pedagogy was a useful framework to develop action competence processes within an

environmental club in her school. The action competence framework was also taken up by several countries within the European Network of Health Promoting Schools in the Macedonian network where the importance of developing pupils' action competences to take action and improve health and health related social conditions in their schools and communities was emphasized (Simovska et al., 2005). Furthermore, the concept was integrated into the Conference Resolution of the first conference of the European Network of Health Promoting Schools, which was held in Greece in May 1997 (ibid). This is because choice, making decisions, developing visions and participation are seen as important strategies for furthering health education. In Denmark, **Jensen and Simovska** (2005) used the action competence framework in a project called 'Young Minds' and they found that teachers should be able to provoke, challenge, stimulate and support pupils in the development of their own visions of a healthy society, together with organizing strategies for action towards attaining goals. They also reported positively on pupil's experiences of sharing and exchanging knowledge (they used Information Communication Technologies). And they noted that mutual feedback and reactions from cross-cultural collaboration brought new ideas and suggestions for solutions of health problems. **Jensen and Simovska** (2005) findings in the 'Young Minds' project are relevant to this study because they show that it is important to learn from others in action competence development. Their research also shows how the Eco-Schools sanitation COP in Ramashobohle High School can potentially develop their own knowledge and visions and how they can liaise with other people and experts locally, provincially, nationally and internationally even through using the internet in managing sanitation issues.

2.7. CONCLUSION

This chapter has looked at the general history of Eco-Schools internationally, in Africa and South Africa; its role in environmental education; how it operates and its benefits. It has also highlighted the nature of sanitation issues, and has introduced some of the benefits of implementing improved sanitation practices. It also provided further information on the Enviro-loo toilets, and how they are and ought to be operated and maintained by members of the

school community, i.e. through a community of practice. The chapter discussed communities of practice, and considered how the Ramashobohle Eco-Schools sanitation COP could be constituted, and some of the learning dynamics of COPs, particularly learning through legitimate peripheral participation, situated learning and constructivist meaning making processes in context. The chapter lastly considered action competence development in environmental education, and what this approach entails highlighting too its use in environmental education research. The discussion explained the action competence theoretical framework, its components and aspects, how it developed, its dimensions and history. The chapter outlined that considering constructivism, situated learning and action competence provides a way of potentially interpreting how a community of practice learns.

In the next chapter I discuss the research methodology used to investigate the research question.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. INTRODUCTION

In this chapter I present a discussion of research design decisions and methodology used in the study. The discussion begins with an overview of the research orientation (section 3.2). It goes on to discuss research methods and the data generation process (section 3.3), data management and analysis (section 3.4) and validity and trustworthiness considerations of the research (section 3.5).

3.2. RESEARCH ORIENTATION AND METHODOLOGY

As outlined in section 1.5 the purpose of the research has bearing on the orientation of the research. The purpose of this research is to gain deeper understanding of phenomena I am investigating with the assistance of the research question and the research goals, and research methodology.

As mentioned in Chapter 1, my work background as an educator and an Eco-Schools co-ordinator involved in Eco-Schools projects and practices led me to the initiation of this study which I hope will contribute towards a quality of life and quality of education in health promoting activities in my school and the community at large.

This research is conducted as case study of the Eco-Schools Community of Practice in the school, with emphasis on their participation in Sanitation Management Practices. This research is framed by an interpretive approach, and is therefore constituted as an interpretive case study.

3.2.1 Case study research design

Case studies are popular methods associated with an interpretive approach to research. Case study enables researchers to take a close look at the individual or small group in a naturalistic setting (Janse Van Rensberg, 2001). Case study is a research strategy or a tool that is usually used when one is trying to answer 'how' and 'why' questions when the focus is on contemporary phenomenon within some real life context, in my case this is on the sanitation COP practices and why and how such practices are learned. Case studies involve direct observation of events, for example, what is done to solve environmental issues that the Eco-School community of practice is facing (ibid). Bassey (1994: 40) describes case study as: "an empirical enquiry conducted within a localized boundary of space and time, focusing on data collection".

In this study I used case study research design because according to Irwin (2004) case studies have been used in social science research, psychology, political science, sociology, business studies, education and planning among others. As indicated in Chapter 1, the research that I am undertaking is social science research, seeking to understand complex social phenomena influenced by my working experience and the historical context of the school that led me to the investigation of this study; hence case study was an appropriate approach to use for this study. Bassey (1994) further indicates that educational case studies generate knowledge based on observation. In my case I was a participant observer in the Sanitation Management COP, which allowed me to be a researcher investigating the learning and practices in the COP.

3.2.2 The interpretive approach

As indicated earlier, my research is focused on developing action competence in managing sanitation issues therefore I used an interpretive approach to the case study because it is context specific. As indicated in Connole (1998: 14) interpretive approaches place primary emphasis on the process of understanding, and allow for a process of in-depth investigation to capture particular details. The researcher can identify patterns of meaning which emerge, and then make inferences from them (ibid). Some forms of interpretive research allow for

generalization, but case studies are not generalisable. Bassey (1994), however, argues that one can make 'fuzzy generalizations" from cases, which allows one to make inferences that are qualified with a measure of caution or uncertainty. The interpretive approach helped me to design a study that reflects an interest in contextual meaning making rather than generalized rules (Janse Van Rensburg, 2001). It also regards people as agents who make meaningful reflections on actions.

Terre Blanche and Kelly (1999, 123) explain that

> *the interpretive approach to research is characterized by a particular ontology, epistemology and methodology. Researchers working in this tradition assume that people's subjective experiences are real and should be taken seriously (ontology) that we can understand others' experiences by interacting with them and listening to what they tell us (epistemology), and that qualitative research technique are best suited to this task.*

The interpretive approach helped me, as researcher, to develop in-depth knowledge and understanding of the situation, in this case, the Eco-Schools community of practice and its participation in Sanitation Management Practices (reported in Chapters 4 and 5). This kind of knowledge interest as practical knowledge interest with the assumption that people who understand their own situation better are able to take practical action within it (Janse Van Rensburg, 2001).

3.3. RESEARCH METHODS AND THE DATA GENERATION PROCESS

3.3.1 Gaining access and implementing ethical protocols

Before generating data, I followed official channels to gain access to the research sight and to get permission to do the research. I wrote a letter to the School Governing Body (SGB) and the principal to ask for an approval to conduct my research (see Appendix 1); and I got approval verbally because it is my workplace. After obtaining consent to conduct my research, I made an appointment with the respondents and I met with them and explained the research purpose

and process to them; how it would benefit the school; and how and when I would meet them to generate data using different data collection techniques. I asked them to be part of my project as respondents. That day the respondents signed the consent forms (see Appendix 2). That is where I guaranteed them anonymity, confidentiality and explained to them that they might withdraw at anytime they wish to. They also asked me questions which I answered. I also considered the fact that the first two school terms of 2010 academic year are very busy, and I also fitted into my respondents' plans, which were inconvenient and contrary to my plans. I also told them how long I anticipate to generate data with them. When formulating questions and designing tools to collect data, I always bore in mind the research question and the research goal.

I also made a promise that I would ensure that the research process would be fed back to the school with the participants protected throughout. With the issue of anonymity I guaranteed participants that I would not be using their names and I would make sure that I protected their identities throughout. For this reason I have used index codes when citing from the data rather than people's names.

3.3.2 Designing the research approach

To generate data for this study, firstly I was guided by Anderson and Arsenault (1999, 29) who identified some questions to be considered when generating data such as:

- What type of data is required (statistical, qualitative, census)?
- Who will provide information?
- Who will collect the information?
- When, where and how will the data be collected?
- What data collection instruments are required?
- What limitations, constraints, approval and ethical standards need to be accounted for?
- What resources do you have at your disposal?

I then considered my research questions very carefully, and my role in the research process, and I developed an 11 step research design, to make sure that I would be able to generate the right kind of data to address the research goals. The 11 step research design was very helpful as it guided me in generating the data, and helped me to make sure that I was generating adequate data throughout the study to address the research goals. In generating data for the study, I used the goals of the research to guide the *purpose* of using different methods as outlined in Table 3.1 below.

Table 3.1 The 11 Step research design for data generation, showing the purpose of why different methods were used.

GOALS of the research (purpose for using the methods)	**Data collection methods**	**Reason why this method is used**
1.To investigate how the community of practice in Ramashobohle High School was constituted, and what interest different members of the Eco-School sanitation COP have in the issues; and what practices they are already involved in.	**Step 1.** Historical Document Analysis using Eco-Schools document (Previous portfolio) using document summary form on the 28th February 2010 **Step 2.** Interview or Focus Group Interview with all members of the community of practice by using contact summary form, interview schedule and tape recorder on the 07th February 2010	To understand the history of the Eco-School community of practice To understand what interests the different members of the community of practice have in the school sanitation issues, and what practices they have already been involved in
2. To investigate what knowledge and insight members of the community of practice have of the sanitation management practices in the school and how members of the community of practice have been previously involved in sanitation issues and sanitation management practices in the school.	**Step 3.** In-depth interviews with members of the community of practice after conducting interviews by using interview schedules, contact summary form and tape recorder on the 25th February 2010 **Step 4.** Observation of past and current sanitation management practices on the 28th February. I will use observation schedules and take photos	To establish who knows what about the sanitation management issues and practices To establish who is doing what to address the sanitation management issues and how they are involved in sanitation management practices (i.e. different roles and contributions)
3. To investigate what commitment different	**Step 5.** Focus group interviews with community of practice	To establish the level of commitment (past and future)

members of the community of practice have in solving the sanitation management problems in the school	members on the 07th March 2010 using interview schedules and tape recording **Step 6.** Observation and participation in planning and community of practice meeting to document what is being planned during the third week of March. I used observation schedules and field notes	
4. To investigate the vision that the community of practice has for resolving the sanitation management problems in the school	**Step 7.** Host a visioning workshop with community of practice and Eco-School node co-ordinator last week of April. Field notes and photographs were taken.	To establish what vision the community of practice has
5. To investigate the action experience of the community of practice and what actions are undertaken in the community of practice and why	**Step 8.** Development of action plan with community of practice five days after the workshop in first week of May. Plans agreed were recorded in my field note book **Step 9.** Observation of school management practices over a period of time (e.g. weekly observations the whole of May to see who is doing what) by three learners using a standardized observation sheet **Step 10.** Interviews with key actors in the school management practices (about what they are doing, why they are doing it and what they think about the practices) 30 May 2010. Interview schedules and tape recorder was used	To establish what action experience were undertaken
6. To investigate emotional responses, critical thinking and reflections on the practice of improving sanitation management in the school	**Step 11.** Reflection interviews with the members of the community of practice on the 30th May 2010 using interview schedules and tape recorder	To establish their emotional responses, critical thinking and reflections

While the above mentioned 11 step plan was helpful to guide the research, in practice it did not flow as sequentially as indicated above. For example, while broadly the data generation techniques were sequentially implemented (see Table 3.2 below); they were not mutually exclusive and tended to overlap and flow back and forth. The reason for this was because schools were under pressure as South Africa was going to host 2010 Federation International Football Association (FIFA) World Cup Tournament which created a short term and a long mid-year holiday period. So it was not easy to always meet my respondents according to time scheduled on my research plans; most of the dates scheduled were disturbed by school examinations during the first school term, the second school term and the third school term and I had to adjust accordingly. I started with historical document analysis; but could not analyze all the three documents as initially planned because I struggled to get hold of one document. I had to wait some time to meet one of my key informants to give me the document. I also had an unplanned interview with a key informant, an Eco-Schools node co-ordinator. This interview was not initially planned as part of my 11 step research design. I conducted the interview with the aim of obtaining information about what they expect from schools and how committed they are in supporting schools in improving the schools' environments.

3.3.3 Research techniques

In generating data for this study, I used the following research techniques:

- Historical Document Analysis
- Focus Group Interviews
- Interviews
- Observations
- Workshops
- Action plan development

It is common in case study research to use multiple methods (Terre Blance & Kelly, 1999).

As indicated above, I used the research goals and the 11 step research design to guide the research. These also helped me to index and log the data as outlined below in Table 3.2 which provides an inventory of the data generated in this study with index codes used for respondents to ensure confidentiality. The dates of data generation are also indicated to show the sequencing of the data generation processes.

Table 3.2 Inventory of data generated in this study with index codes

Data sources and steps of analysis	**Pseudonym of respondents or indexing codes**	**Data index**	**Analytic memo**	**Date of data generation**
Step 1: Document Analysis				
Eco-Schools 2009 book	Env	Doc 1	Doc 1	27/02/2010
Eco-Schools portfolio RHS	Env	Doc 2	Doc 2	28/02/2010 28/02/2010
WSM Leshika sanitation book	Env	Doc 3	Doc 3	10/03/2010
Eco-Schools 2007-2008 report	Env	Doc 4	Doc 4	10/05/2010
Step 2: Focus group interview				
Sanitation management committee	SANCOP mems	FGIL, FGIE, FGIP	FGIL1-6, FGIE1-2, FGIP 1-2	24/02/2010
Step 3: Interviews				
Sanitation management committee	SANCOP mems	LI1, EI2	LI1-8, EI2	25/02/2010
Step 4: Observations				
Sanitation management committee	SANCOP mems	EOb 1 LObs 1	EOb1 LOb 1-7	28/02/2010 15-26/03/2010
Step 5: Interviews				
Sanitation management committee	SANCOP mem	LI3	LI3	28/04/2010
Step 6:				

Observations				
Sanitation management committee	SANCOP mems & Inrs	LObs8,10,11,12,13,15	LOb 10-15	April 2010
Step 7: Workshop				
Sanitation management committee workshop	Enviro-loo toilets	Env1	n/a	26/05/2010
Step 8: Action plan				
Sanitation management committee Development plan	Dev. Plan	Act. Pln	Ed 1-4	04/06/2010
Step 9: Observations				
Sanitation management committee	SANCOP mems	LOb9,10,11,12,13,14	LOb1-6	26-28/05/2010 03/06/2010 08/06/2010 15/07/2010 20/07/2010
Step 10: Interviews				
Sanitation management committee	SANCOP mems	LI1,3,4	LI1,3-4	30/05/2010
Step 11: Reflection interviews				
Sanitation management committee	Reflections	RLI 2.1, 2, REI 2.1	RLI 2.1-2, REI 2.1	28/09/2010

3.3.3.1 Historical document analysis

I used document analysis as data analysis technique for this study. I analyzed range of different documents. Documents are primary sources that help to provide essential contextual information (Irwin, 2001). I analyzed a range of different documents for different purposes (see Table 3.3 below for a summary). The first step taken in generating data from historical documents was analyzing the Eco-Schools handbook (2010) (indexed as Doc1), the previous Eco-Schools portfolio of our school (indexed as Doc 2), WSM Leshika consulting (Pty) Ltd (2009)

document on using Enviro-loo toilets (indexed as Doc 3) and a later Eco-Schools 2007- 2008 report (indexed as Doc 4) to understand how sanitation is managed; the history of the Eco-Schools community of practice; how the Eco-Schools programme is operating and the methodologies used that could provide insight into the research question.

Documents typically occur in particular formats such as notes, case reports, contracts and may legitimately be used to draw conclusions about activities, intentions and ideas of their organizations they represent (Flick et al., 2004). When analyzing documents, I treated them as methodologically created communicative features (ibid). In this study, I recorded the information in document summary form (Miles & Huberman, 1994) to help in analysis. All data collected was kept safe.

Table 3.3 Summary of different documents analyzed to provide data for the study

Document	Reason for analyzing	Information gained from the document
Eco-Schools 2009 Handbook (Doc 1)	To understand how Eco-Schools operates and how it fosters action competence in managing sanitation issues	An understanding of how it works and its action competence and COP expectations (discussed in Chapter 2)
Eco-Schools portfolio (Ramashobohle High School) (Doc 2)	To understand how the school is responding to sanitation practices	Insights into schools' environmental policy and actions undertaken previously
WSM Leshika sanitation book (Doc 3)	To understand how WSM Leshika sanitation book provides Health and Hygiene Education to support schools' sanitation	Africa Geo-Environmental Services (Pty) Ltd. (AGES) is appointed by the IA's to develop and implement the schools sanitation social awareness programme and information about safety precautions regarding the operation and maintenance of Enviro-loo systems. This provided information on appropriate sanitation practices and action competences needed to use

		such practices.
Eco-Schools 2007-2008 report (Doc 4)	To understand how Eco-Schools worked the previous years	This document showed how Eco-Schools served as a useful tool in improving schools' environments and supporting school curriculum and COPS in schools.

As shown above the different documents analyzed had contributed differently for this study. All of them were useful, for example, the Eco-Schools handbook (Doc 1) provided information on how schools could improve the schools' environment by tackling different themes such as Healthy Living (sanitation). It shows what is expected from educators, while WSM Leshika sanitation book was more useful for providing user education and insights in managing sanitation issues in schools. The Eco-Schools portfolio helped to establish what the school had done before the research project, and what practices they were previously engaged with (see Chapter 4).

3.3.3.2 Focus group interviews (FGI)

In this study I used one focus group interviews to generate data during step 2 of the data generation process. I interviewed all members (learners, educators and parents) of the community of practice in Ramashobohle High School. In formulating questions for the focus group interviews, I was guided by the research goals (see Appendix 3). The aim of conducting focus groups interviews is reflected under step 2 in Table 3.3 above. I did not conduct two focus groups as initially proposed because learners were busy writing examinations and educators were also invigilating. Instead I resorted to individual interviews.

Before conducting the focus group interviews I introduced myself to the interviewees and they also introduced themselves. During the interview I, together with the respondents used the Sepedi language because some of the interviewees, especially the parents, did not understand English well. Unfortunately as an inexperienced researcher, I did not record the introductions. The focus group interviews were composed of 14 respondents (index coded as FGL 1-8

(learners), FGE1-2 (educators) and FGP1-2 (parents). It was well organized in advance; but the challenge was that it was held during sports time and learners who were not engaged in sporting activities were playing and making a noise. When transcribing the interviews it was difficult for me to decipher who said what in the interviews, and even member checking was not easy because some interviewees' responses were not audible. I produced the best possible transcribed account of the interview for my data records (see Appendix 4).

Focus group is a moderated informal discussion among people-usually about 6-12 persons who share a common interest in the topic being researched (Loubser, 2005). Focus groups are used for the purpose of gathering information and to understand how people feel or think about an issue (Krueger & Casey, 2000). They are a good method to use when a researcher is looking for a range of ideas and trying to understand the differences in perspectives between groups and categories of people (ibid). They are used to promote self disclosure among participants (ibid).

3.3.3.3 Interviews

I conducted 3 interviews with members of the sanitation management committee for this study, and one reflection interview involving two people. All of the interviews took place in field (school) on the 25th February 2010 (for step 3), 28th April 2010 (for step 5), 30th May 2010 (for step10) and 28 September 2010 (for step 11). I also interviewed the Eco-Schools node co-ordinator as mentioned above. During interviews I kept eye contact with my interviewees and it helped me to write what was accurate. I used contact summary sheets to record the responses (see Appendix 5 for an example), and an interview schedule (see Appendix 6 for an example) to read the questions. When formulating questions I was guided by the research goals. Interviews are a flexible way of collecting data (Macmillan & Schumacher, 2006). As Terre Blanche and Kelly (2001: 128) state:

> *Conducting an interview is a more natural form of interacting with people than making them fill out a questionnaire, do a test or perform some experimental task, and therefore fits well with the interpretive approach to research. It gives us an opportunity to get to know people intimately so that we can really understand how they think and* feel.

Before conducting interviews, I made appointments with my respondents, and I planned for all contingencies. I was given permission to tape record all the interviewee's responses for the coming interviews. Before the interviews I ran a short trial pilot and I modified the process where I interviewed members of the community of practice and the Eco-Schools node co-ordinator. All data was kept safe and index coded, for example LI1, 3, 4 (learners), EI1 (educator), NCI (node co-ordinator), RLI 2.1, 2 and REI 2.1 (as shown in Table 3.2 above) for validity purposes.

3.3.3.4 Observations

Observations are important data generation processes that are most applicable to case study research. According to O'Leary (2004), observations are systematic methods of data collection that rely on researchers' ability to gather data through his or her senses. They are associated with field work and bring information that could not be gathered in any other way (Loubser, 2005). In this research, as a researcher, firstly I was a participant observer in the Eco-Schools COP, and I took field notes on the site while observing past and current sanitation management practices of the school (see Appendix 7 for an example). Secondly, learners undertook regular observations, observing sanitation management practices to check who is doing what in school. All data collected such as observation sheets were index coded and were kept safe.

The questions for the learner's observation sheets (see Appendix 8 for an example) were designed by me. I supported the learners to undertake the observations by thoroughly explaining what they should do. They reported back to the Sanitation COP on the observations that they were making. Their observations are reported in Chapter 4.

3.3.3.5 Workshop

In this section I briefly discuss workshop as a research method. Before conducting the visioning workshop, I was guided by Ashwell's (1999) suggestion that workshops should pay particular attention to:

- Clarity on the purpose of the workshop,
- Commitment to preparing participants so that they come to the workshop able to make an informed contribution, and
- Consideration of effective but unobtrusive methods of recording anticipated and unexpected outcomes.

The purpose for holding a workshop as part of the research process is indicated in Table 3.1 above.

Three days before the workshop, our principal received a call that the workshop was postponed to the 26th May 2010 at 11h00. Without wasting time participants were informed of the changes regarding the workshop. An invitation letter with agenda (see Appendix 9 was written to the Eco-Schools sanitation COP informing them of the postponement of the workshop (17th May 2010) and at the same time inviting them to attend a sanitation workshop which was to be facilitated by AGES consultants on the 26th of May 2010 at 11h00. Participants verbally confirmed their attendance. The cancellation of the workshop was an inconvenience to most of the participants and myself because on the said date of the workshop learners were going to write examinations and I was also going to invigilate. I tried to make arrangements for an invigilation substitute but was unsuccessful.

The workshop started at 11h00 in Grade 9B class and later demonstrations were done at the Enviro-loo systems. A total of 55 participants attended the workshop (the chairperson of the School Governing Body, one parent, one community member, and a ward councilor, two RCL members, Eco-Schools sanitation COP, and Grade 9 B learners). I arrived 10 minutes late after the workshop started because I was invigilating. The workshop was facilitated by a Non Governmental Organization (NGO), AGES (Pty) Ltd., from Polokwane. On my arrival I found participants completing the roll call. I used a tape recorder to record the workshop and took some photos during the workshop. When it was my time to present, I explained to the audience how the Eco-Schools programme worked; what action competence is and the schools' sanitation history. Thereafter, I shared the data I had already collected from the focus groups

interviews, interviews and observations. Thereafter I questioned the audience about what they thought should be done. It was then that the AGES facilitator started to present.

On presentation she tackled with following topics:

- Operation and components of Enviro-loo toilets.
- Basic maintenance and monitoring of the Enviro-loo facility.
- 12 Golden rules (see Appendix 10).

During presentation participants asked some questions which were satisfactorily answered. For example one boy asked: *"Does that mean every time I go to the toilet I get germs?"*. The facilitators' response was: *"Oh Yes, that's why we encourage you to wash your hands every time after using the toilet"*. Such a question showed insight and vision; and that they would like to gain some knowledge related to sanitation management especially that there was no provision of water to wash hands in the school premises.

A lengthy demonstration was done at the toilets on how to monitor and clean the Enviro-loo systems. The level of contents inside the drying area; timely emptying of the contents inside the drying area; and monitoring and maintenance of the contents level of the drying area before and after exceptional high user volumes was thoroughly presented and participants could follow what was said. I used my cell phone to take a video; for the first part (that is emptying and monitoring the level of contents and applying lime to reduce the smell), I could not operate the cell phone well due to some technicalities, but as time went on the experience of difficulty led me to be an expert, and I was later able to get some good footage for recording purposes. This turned out to be an unexpectedly useful data generation method.

Participants were divided into two groups; a few participants (SGB, community member and few learners) observed and engaged in monitoring the level of contents in the drying area. Most learners suspended assumptions and opinions as indicated by (Wals, 2007), while most participants, especially the learners were observed and actively engaged in cleaning the toilets.

After the toilet cleaning presentation, learners were divided into two groups according to gender. Four learners from each group cleaned the toilets and they also volunteered to train the entire school on how to operate and maintain the toilets. The other five learners who served as observers of past and current sanitation management practices of the school also observed learners while cleaning the toilets using observation schedules and cleaning schedule (see Appendix 11). I also observed both demonstrations and could not take field notes and photographs as proposed. Instead I resorted to taking the video on my cell phone. I found that it served the purpose better than photographs and field notes.

After the workshop, participants went back to class to reflect on what was presented and demonstrated to them. Later participants were given questionnaires to fill in, which I also used as a source of data (see Appendix 12 for an example).

3.3.3.6 Action plan and implementation observations

After hosting a visioning workshop, an action plan was developed with key members of the community of practice (3 educators, SGB member and deputy principal) with the absence of the Eco-Schools node co-ordinator. We met in Grade 11 B class on the 04th of June 2010 at 14H00.

The action plan compiled was given to the principal and was announced to the educators the following day during preliminary meeting (morning briefing) and later to the learners during assembly. The action plan is presented and discussed in more detail in Chapter 4 (see Table 4.2).

3.4. DATA MANAGEMENT AND ANALYSIS

3.4.1. Data management

My data was generated from six different data generation techniques in a sequential process as discussed above in section 3.3, which are the often used in environmental education research. I put all my different raw data generated in a box, each data generation technique was labeled in an envelope as it came according to different steps taken.

As indicated above, I faced a challenge when trying to transcribe focus group interview data to paper, because the recordings were of poor quality (see section 3.3.2.). Before transcribing data I was advised by Cohen (2000) to guard against the hazards of distorting, misinterpreting, reducing and or losing data. I translated the original Sepedi language transcription to English transcripts. I tried several times to playback slow motion but could not capture what was said. When member-checking, one participant could not remember what she said (see validity and data tracking in section 3.4.3). However, I tried to get the best possible record of all data sources despite these problems. As indicated in Table 3.2 above, careful index coding of different data sources according to the steps of data generation helped me to keep track of the research data and the research process. Data indexing was therefore also very important for data management.

3.4.2. Data analysis

3.4.2.1. Steps in data analysis

Once data collection was completed, it was sorted according to different steps taken in this study as discussed above in Table 3.1 and in section 3.3 above. In analyzing data I was guided by Pesanayi (2007, 65) who explained how useful it was to begin analysis of data as soon as a set of data was collected from the data generation procedure. I transcribed interviews straight from the tape recorder with the aim of keeping the original words of the interviewees (see Appendix 13 for an example).

In analyzing the data, I will use both inductive and abductive modes of inference, as explained by Danermark et al. (2002). Through the inductive analysis, I identified themes that were

emerging from the data, and through abductive analysis I was able to interpret and recontextualise the data through using analytical tools that were provided by the action competence framework and community of practice framework (as discussed in Chapter 2). This analytical strategy allowed me to develop an in-depth understanding of the situation, and to reflect on it critically through using theoretical lenses, which helped me to reflect on and learn from the in-depth understanding of the case, rather than generalizing.

I developed categories and sub-categories out of the different data sources, which helped me to address the research goals and my interest in action competence development, as outlined in Table 3.4 below. The categories helped me to develop analytical memos, which were used for data reduction and to focus the analysis.

Table 3.4 Categories and sub categories of data analysis

Categories	Sub categories
What Eco-Schools community of practice does (before and after the workshop)	• School environmental improvement • Environmental policy • Maintenance, inspection and training • Monitoring
Action competence development (amongst SGB members, learners and educators)	• Knowledge and insights • Interests • Commitment • Vision • Action experience • Emotional responses and critical thinking
Sanitation practices improvement	• Training • Cleaning of toilets • Monitoring

Analytic memos were compiled from categories and sub-categories of data analyzed (see Appendix 14 for an example of an analytic memo). These formed the basis of Chapter 4 where a thick description of data is presented. Analytic memos provided me with a useful way of processing data.

I found that I needed to apply the first category of analysis and its sub-categories categories listed in Table 3.4 above three times:

- Before the workshop
- After the workshop, and
- To guide analysis of what the COP still needed to do (see Chapter 4, sections 4.2, 4.3 and 4.4).

In the case of the action competence categories I had to use them more than once for different groups in the School COP, namely the SGB Chairman, learners and educators (see Chapter 4, section 4.5). This allowed me to get a fuller picture of the action competence developed in the COP over the period of time in which the research took place and also to present the data clearly (see section 4.5).

To synthesise the study and interpret the data more carefully in relation to the main research question, I after presenting the thick description of data in Chapter 4, developed a set of analytic statements which helped me to summarise the main findings of the study. Analytic statements are draft statements with concise answers to the research questions (Bassey, 1999). Analytic statements reflect data (ibid), but also use theory to discuss the data (see Chapter 5). The analytic statements were used to structure Chapter 5 of the study and they are:

- Communicated and shared knowledge, insight and vision in the Eco-Schools community of practice develops action competence to manage sanitation issues,
- Different, alternative and relevant interests and commitment in the Eco-Schools community of practice fosters action competence in improving and maintaining Enviro-loo systems,
- Provision, allocation and availability of proper sanitation cleaning resources by the Eco-Schools community of practice help in maintaining Enviro-loo systems,

- User education, intensive training, support, follow up, monitoring and inspection within the Eco-Schools community of practice fosters action competence in maintaining and managing Enviro-loo ystems,
- A democratic approach that recognizes and accommodates a varieity of stakeholders in a COP structure, fosters action competence that empower stakeholders in decision-making and makes them responsible partners in fulfilling the objectives they agree to,
- Organizing workshops, experts and an action plan by the Eco-Schools community of practice helps in fostering action competence in managing and maintaining Enviro-loo systems,
- Adequate use; following what is indicated in sanitation documents and guidelines by the Eco-Schools community of practice foster action competence in managing Enviro-loo systems,
- The Eco-Schools programme is likely to contribute to the development of action competence in managing sanitation issues.

3.5. ENSURING VALIDITY AND TRUSTWORTHINESS

I kept a carefully indexed data trail to ensure process validity. As this study is an interpretive case study, I considered the internal validity of the study as this is more appropriate for case studies (Bassey, 1999). Before analyzing data I employed member checking and all data was verified by participants before I used the data. When member-checking, one participant was unable to remember what she said during the focus group interviews and I struggled to hear what she said due to poor audio recording. Despite this there were no other problems with member checking. Disagreements were never encountered, everything went smoothly.

I also used the strategy of triangulation to ensure greater validity. This was done by comparing information from the different data sources, and reporting it carefully (see Chapter 4) using thick descriptions. Through the data indexing it was easy to show the different data sources and the triangulation process (see Chapter 4). Patton (2000: 51) explains that qualitative inquiry, because the "human being is the instrument of data collection, requires the investigator to

carefully reflect on, deal with, and report potential sources of error". He goes on to say that "systematic data collection procedures ... multiple data sources, triangulation ... "are some of the strategies that qualitative researchers can use to ensure trustworthiness in their studies.

3.6. CONCLUSION

In this chapter, I have presented and explained in detail the research methodology, data generation processes, data management and analysis and how research ethics and values that informed the research process were conducted. I have also outlined how categories and sub categories to organize and analyze data were developed and how this led to compiling analytical memos for presentation in Chapter 4 which also led to formulation of analytical statements in Chapter 5. In the next chapter I provide a thick description of the data.

CHAPTER 4

SANITATION MANAGEMENT PRACTICES AND ACTION COMPETENCE DEVELOPMENT IN THE RAMASHOBOHLE HIGH SCHOOL SANITATION COMMUNITY OF PRACTICE

4.1. INTRODUCTION

In this chapter I present the data, based on the analysis of the data using analytic memos and categories of analysis as explained in Chapter 3. I begin the chapter with a section that explains what the toilet cleaning practices were in the Ramashobohle High School Sanitation COP before the sanitation management workshop was held (section 4.2). As explained in Chapter 3, the workshop which was a significant part of the research process and was meant to strengthen action competence development, along with the other observation and planning processes that were examined as part of this research (see Table 3.1). I then discuss the toilet cleaning practices of the COP *after* the workshop was held (section 4.3). This helped me to show changes in practice over time. I also report on what the COP thinks still needs to be done (section 4.4) as reported in their reflections on the process. This also shows the development of collective vision in the COP, which is an important dimension of action competence, as discussed in Chapter 2 (see section 2.2).

Following this I present an analysis of action competence development amongst key stakeholders in the COP (section 4.5); firstly I analyze action competence development amongst SGB members (section 4.5.1); amongst learners (section 4.5.2) and amongst educators (section 4.5.3). I conclude the chapter with a discussion on the sanitation improvement practices and responsibilities that the COP has adopted after the workshop and research process (section 4.6) showing the outcomes of the COPs engagement with improved sanitation practices as observed through this research period.

As mentioned in Chapter 3, I was a participant observer in the COP, and also supported the COP's activities through my role as Eco-Schools teacher co-ordinator in the school. In Chapter 5 I reflect on my role in the research. All names used in this chapter are pseudonyms, in keeping with the ethical protocols of the research as discussed in Chapter 3.

4.2. TOILET CLEANING PRACTICES OF THE RAMASHOBOHLE HIGH SCHOOL SANITATION COP *BEFORE* THE WORKSHOP

In this section I discuss the toilet cleaning practices of the Ramashobohle High School Sanitation COP (also called the Eco-Schools Sanitation COP[1]) before the workshop. I do this by using four sub-categories of analysis:

- School environmental improvement (section 4.2.1)
- School environmental policy (section 4.2.2)
- Maintenance, inspection and training (section 4.2.3)
- Monitoring (section 4.2.4)

As mentioned in Chapter 1, no training or workshop was conducted in the school after the first Enviro-loo systems were built in the school. No one in the school had knowledge of how to maintain the toilets, subsequently they were vandalized. Following this, another five blocks of toilets were built by Mvula Trust and were handed over as a donation to the school. At this time, the school joined the Eco-Schools programme (see section 1.2). In the next sections I present a slightly more detailed history of the sanitation management practices in the COP, based on the different data sources. These describe what took place before the sanitation practices training workshop at Ramashobohle High School which was set up as part of this research process as mentioned above and in Chapter 3.

[1] At the time the Eco-Schools COP was not very focussed on sanitation as can be seen from this data. For the sake of continuity, however, I call them an Eco-Schools Sanitation COP, as it is the same COP that was involved with Eco-Schools that also became the Eco-Schools Sanitation COP as the research unfolded.

4.2.1. School environment improvement

After the Eco-Schools pack was delivered to the school, I took the Eco-Schools pack, read it and found that it encouraged schools to involve as many colleagues as possible as well as learners, parents and members of the community who have an interest in taking care of the general school environment (Doc 1, Doc 2). The Eco-Schools Sanitation COP took care of the school environment, but nothing was done to maintain the school toilets (Doc 2). This is evident in an interview with LI 2 who when asked what they do as COP to manage sanitation the response was: *"Presently we haven't done anything so far, because of peoples' attitude about sanitation"*. Again when LI 2 was asked how many times they clean the toilets, his response was: *"So far the toilets are not cleaned, maybe once in four months"*. Tshepo's responses helped me to understand what was taking place in as far as sanitation is concerned.

Data from learners' observations 1 and 2 (LObs1 & 2. 8, 11, 12, 13) reflected that the toilet floors were dirty. This was also confirmed by GFI 2 when during the focus group she said that there were papers all over on the toilet floors. Data from observations 1 and 2 reflected the following: *'...toilet seats being urinated'; '...solids on the toilet seats', and '...toilets smelled badly with flies all over'.*

This provides a clear indication that the Eco-Schools Sanitation COP was not doing much to manage sanitation because even the photos that were taken during observations before the workshop verify that the toilets were dirty (see Appendix 15).

The Eco-Schools Sanitation COP was, however, using late comers to clean toilets. This is confirmed by focus group interviews (FGI) where one participant's responses were:

> *'...such way of cleaning is inconsistent because if there are no late comers that mean that the toilets will not be cleaned'... and*

'This is haphazard, there is no progress ... the only people we use are those who come late. So if you use people who come late, it means there is no progress and as such we need to develop the program of cleaning those toilets...'

These reflections show an unsustainable approach to sanitation management in the Eco-Schools Sanitation COP. It is also not reflecting action competence development but more of a punishment or behaviourist approach to sanitation management.

4.2.2. Provision of cleaning and maintenance kit

According to the data generated through the first two learner's observations (LObs1 & 2.8, 11, 12, 13) who were investigating who is doing what to address sanitation management when toilets were cleaned by late comers, they all indicated the following: *'...no soap'; '...no chemicals'; '...no jeyes fluid'.*

The quotations above indicate that when toilets were cleaned no detergents were used, only pure water, because these cleaning materials were not available. Under the recommendations, learners indicated that 'soap' and 'chemicals' should be supplied so that they could help to kill bacteria. Learner's observations further indicated that there was *'...no rubbish bin'*, and that *'...cleaning equipment was not enough".* (LObs 1 & 2).

This data is also supported by Tshepo (LI2) who when asked how many times a week toilets are cleaned in the interview, the response was *"...no cleaning is done".*

From this data, it is clear that the Eco-Schools Sanitation COP or the school as a whole do not provide cleaning materials because even when the toilets were cleaned before the workshop, the cleaning was not thoroughly done as learners (who were latecomers and therefore had the responsibility for cleaning the toilets), lacked relevant cleaning equipment according to data from learner observations (LObs 2.11) which indicated *"...the toilets smelled bad."*

4.2.3. School environmental policy

From the data generated from analyzing the Eco-Schools handbook (Doc 1), the eco-committee of every school is supposed to do two audits, one before the end of February each year and the second audit before the end of August every year to identify an environmental issue the school is facing. Further, according to the Eco-Schools handbook (Doc 1) the eco-committee of the school has to draft an environmental school policy together. It was evident from the data generated from the Ramashobohle High Schools' Eco-Schools' portfolio (Doc 2) that it was the eco-committee of the school that had previously conducted the schools' environmental audits and that they had drafted a school environmental policy (see Appendix 18). This school environmental policy committed the school to improve school environment towards sustainable development and encourage learners to take charge in identifying environmental issues. The school environmental policy did not say anything about sanitation management.

4.2.4. Maintenance, inspection and training

According to the WSM Leshika sanitation book (Doc 3), Enviro-loo systems have to be monitored and inspected by the maintenance staff in the school who have to monitor the level and status of the drying area and report when the area is nearly full or when there is an excessive amount of foreign objects present inside the drying area, as also mentioned in Chapters 1 and 2. The Enviro-loo systems of Ramashobohle High School were not inspected and nor monitored. The level of solids was not measured and leveled, because there was no maintenance staff in the school. The 12 Golden Rules (see Appendix 10) for maintaining the Enviro-loo systems were not displayed anywhere in neither the school nor the toilets. Late comers and detained learners who used to clean the toilets were not doing a thorough job because they were never trained nor had they seen a demonstration on how to maintain the Enviro-loo systems; only their pre-knowledge from home was applied and used.

4.2.5. Monitoring

As indicated in WSM Leshika sanitation book (Doc 3), regular monitoring of the level of contents inside the drying area has to be done especially after exceptionally high user volumes

of Enviro-loo systems, which are typical in a school context. Contents inside the drying area have to be emptied timeously. According to learners' observations 1 and 2, no monitoring was ever done in the school for the Enviro-loo systems.

4.3. TOILET CLEANING PRACTICES OF THE RAMASHOBOHLE HIGH SCHOOL SANITATION COP *AFTER* THE WORKSHOP

In this section I use the same four sub-categories of analysis to report on the EcoSchool Sanitation COP's toilet cleaning practices *after* the workshop. I do this by using four sub-categories of analysis:

- School environmental improvement (section 4.3.1)
- School environmental policy (section 4.3.2)
- Maintenance, inspection and training (section 4.3.3)
- Monitoring (section 4.3.4)

As indicated in Table 3.2, and in Section 3.3.3.4 the workshop took place in May 2010, and involved both presentations on the Envio Loo system, the Eco-Schools COP and its responsibilities, and presentations of previous data generated through learner observations and interviews (prior to the workshop). It also involved demonstrations by the consultancy company (AGES). Learners conducted regular observations prior to the workshop and after the workshop for a period of three months, as shown in Table 3.2. They conducted observations in February, April, May, June and July.

4.3.1. School environment and improvement

After the workshop conducted by Africa Geo-Environmental Services (Pty) Ltd. (**AGES**), the school environment was improved. During the workshop Enviro-loo systems demonstrations, when AGES facilitator asked the Grade 9 learners who were attending the workshop who would like to clean the toilets after demonstrations, four learners volunteered that they would clean the toilets. All pre-preparations were done and they successfully cleaned the toilets.

After demonstrations the learners who cleaned the toilets were asked by the educator if they would like to volunteer to report to the school at assembly the following day. The group of learners promised that they would report and further train other learners and the school community at large. The following day during assembly, a report was presented about what transpired during the workshop. Thereafter, all learners in the school were trained following an action plan (AP1, see Table 4.1 below) proposed by four teachers who were part of the Eco-Schools Sanitation COP. The action plan (AP 1) reflected that the Grade 8 and 9 learners would clean the toilets until the end of the academic year 2010 (see Table 4.1 below). It was also decided that future action plans would be drawn up on a regular basis showing how toilets will be cleaned by the sanitation COP after consultation with the management, Representative Council for Learners (RCL) and SGB.

Table 4.1 Ramashobohle Eco-Schools Sanitation COP Action Plan

Action proposed	Responsible person
Grade 8 & 9 training on the 07th June 2010 at 13h00	John, Joel, Makwela & Caroline
Grade 10 training on the 08th June 2010 at 13h00	Same as above
Grade 11 & 12 training on the 15th July 2010 at 13H00	Same as above
It was agreed that operational rules would be put in every class (on A3 paper) and every toilet	Kate
Cleaning and supervision will be as follows:	
(a) Twice a week	Grade 8 & 9 (itinerary to be drawn)
(b) Three masks and two pairs of gloves will be bought	JC
(c) Supervision and monitoring will be done by five observers (two boys(LOb 10,LOb13) and 4 girls (LOb 8,11, 12,15)	Maria, Tshepo, Solly, Johanna, Vision, Lesterina
(d) Training will be done by Grade 9 learners	Same as above
(e) Inspection	
(f) Fixing pavement and cutting grass and trees next to the toilets	SGB SGB
(g) Supervision	Educators

4.3.2. Provision of cleaning and maintenance kit

After the workshop, whenever learners were cleaning the toilets, one member of the Eco-Schools COP directed and provided learners with a cleaning and maintenance kit. As indicated above, purchasing and supply of the cleaning kit was included in the Action Plan.

4.3.3. School environmental policy

As indicated in Eco-Schools book and Ramashobohle Eco-Schools portfolio (Doc 1 & 2) that it is still the duty of the eco-committee to conduct school environmental audits, identify environmental issues the school faced and draw up a school environmental policy; nothing has changed, it was still done as before the workshop was conducted.

4.3.4. Maintenance, inspection and training

Basic maintenance that is reflected in WSM Leshika sanitation book (Doc 3) was properly followed and done accordingly; data generated from the workshop (video taken) reflects that the SGB chairperson was responsible for inspection of the level of contents in the drying area. This is also confirmed by the data suggested in the action plan (AP 1) meeting; and further by the video taken during demonstrations of the workshop when he collaborated with the AGES facilitator.

The data collected from the action plan (AP1) and workshop (W1) indicate that during inspection, an 8 mm spanner should be used to open the inspection lid and a rake is also to be used to measure and level the contents in the drying area. Educators displayed the 12 Golden rules in the classes and toilets after the workshop as directed by the action plan (AP 1). The Grade 9 learners (Joel, John, Makwela and Caroline) were responsible for training and demonstrating to other learners how to maintain and clean the Enviro-loo systems.

4.3.5. Monitoring

During training and demonstrations by the four Grade 9 learners, 6 learners who were part of the Ramashobohle EcoSchool Sanitation COP (Maria, Tshepo, Johanna, Vision, Solly and

Lesterina) observed how toilets were cleaned by using the EL 007 cleaning schedule and EL 008 to monitor. See a brief reflection of learner observations conducted after the workshop when toilets were cleaned, summarized in Table 4.2 below.

Table 4.2 Learner observations and monitoring of Enviro-loo Toilet Cleaning

EL 007 CLEANING SCHEDULE	**LOb 8**	**LOb 10**	**LOb 11**	**LOb 12**	**LOb 13**	**LOb 15**
Cleaned pans	√	√	√	√	√	√
Cleaned toilet seats	√	√	√	√	√	√
Cleaned floors	√	√	√	√	√	√
Cleaned walls	√	√	√	√	√	√
Cleaned windows	√	√	√	√	√	√
EL 008 INSPECTION SCHEDULE	**LOb 8**	**LOb 10**	**LOb 11**	**LOb 12**	**LOb 13**	**LOb 15**
Window master is moving	√	√	√	√	√	√
Ventilated pipe is in good condition	√	√	√	√	√	√
Bucket is in good condition	√	√	√	√	√	√
Inspection cover is in good condition	√	√	√	√	√	√
Toilet seat is in good condition	√	√	√	√	√	√
Toilet pans is in good condition	√	√	√	√	√	√
Windows is in good condition	√	√	√	√	√	√
Doors and frames in good condition	√	√	√	√	√	√
Floors and roof in good condition	√	√	√	√	√	√

The data reflected above was produced when toilets were cleaned on the 26th May 2010, 03 June 2010, 08 June 2010, 15 July 2010 and 20 July 2010. All data reflected under EL 007 cleaning schedule indicates that adequate cleaning of Enviro-loo systems was done, because all areas to be cleaned during monitoring were ticked with a right sign (√) and under EL 008 inspection schedule all areas to be monitored were also ticked with right sign. There is no area which is ticked with a wrong sign (×). This shows a significant improvement in toilet cleaning

practices after the workshop, for a consistent period of two months which is when the learner monitoring for this research ended. The monitoring is, however, ongoing, and discussions on how the process is to be taken forward are included in section 4.4 below, and in section 4.6, as continuity is obviously important to maintain a more sustainable approach to toilet cleaning practices in the school.

4.4. WHAT SHOULD STILL BE DONE ACCORDING TO THE RAMASHOBOHLE ECO-SCHOOLS SANITATION COMMUNITY OF PRACTICE

In this section I use the same four sub-categories of analysis (used in 4.2 and 4.3 above) to report on what the Eco-Schools Sanitation COP indicates still needs to be done.

4.4.1. School environment and improvement

According to the Eco-Schools handbook (Doc 1), the Eco-Schools improvement programme is an ongoing process. Schools have to keep school environmental improvement standards until the school is recognized through the Eco-Schools flag for the good work it is doing. Environmental improvement should be a continuous process. The Eco-Schools Handbook (Doc 1) states:

> *Once Eco-Reports have been assessed, successful schools will be awarded a bronze or a silver certificate in recognition of the efforts made in tackling either one or two themes. Once a school has successfully tackled three focus areas, it will be awarded the green Eco-Schools flag as a symbol of the transformation that has taken place. ... Once you have your green flag, to retain it, your school needs to re-register, tackle a fourth theme, and again submit an Eco-Report. The following year you will tackle five themes, and then qualify for an international flag! ... Eco-Schools is about ongoing commitment to change! (Doc 1, pg. 11, 12)*

A focus group respondent (FGI 5), when asked what they as the EcoSchools Sanitation COP do in managing sanitation indicated *"it is the responsibility of the school to hire people to clean the toilets"*. This idea was debated and another participant, when asked how often they, as the Eco-School Sanitation COP clean toilets responded *"it is the responsibility of the school to hire people to clean the toilets"*. This idea was debated and yet another participant also indicated in

relation to hiring people to clean toilets that *"of now, there is no progress"*. This indicates that ideally the school should hire people to clean the toilets, but also that there was no progress in this area at the time of the interview.

What was surprising was that none of the adults in the sanitation COP ever complained that the cleaning kit was inadequate. This may be because they lacked adequate knowledge about sanitation management, or it may also be because they were not as closely involved in the day to day observations and monitoring as were the learners. If I had only listened to the adults I would have been left with the impression that the cleaning kit was adequate, but this was contrary to the data generated from learner observations 1 (LObs 1) where learners made recommendations that while the cleaning kit was relevant, it was not satisfactory or adequate. They said, for example: *'there must be chemicals to kill germs'*, and *'Jeyes fluid was not there, no brush to scrub seats and floors'*, and *'Yes, no rubbish bin because is for putting rubbish'*. This indicates that while toilet management had improved (see Table 4.2 above), there was still inadequate equipment for the task.

4.4.2. Provision of cleaning and maintenance kit

The workshop data (W1) provides useful guidance to the Eco-Schools Sanitation COP. Much of the data was informative. For example, the workshop data indicates that it is the responsibility of the school management to provide cleaning resources and a maintenance kit. After the workshop a cleaning and maintenance kit was given to the school as an example of a cleaning kit which the school then has to continue providing. The school has to see to it that it is available all the time so that proper and hygienic cleaning takes place.

During the action plan meeting (AP1) held between the deputy principal and three educators which are members of the Eco-Schools Sanitation COP and the eco-committee a schedule for toilet cleaning was compiled. The Action Plan also indicated that extra cleaning and maintenance equipment will be bought. This is also evident in the focus group interviews (FGI) where they indicated that an itinerary should be drawn up, and that it is the responsibility of

the school to hire people to clean the toilets. From this data, it is clear that the school has certain responsibilities for sanitation management that need to be implemented on a regular basis, one of which is to keep an updated and fully supplied maintenance kit.

4.4.3. School environmental policy

Eco-Schools pack recommends that the eco-committee has to conduct school audits and draft the school environmental policy (Doc 2). On the school environmental policy it was written: *"We the teachers, learners, staff and parents of the Ramashobohle School community..."* (See Appendix 17), which indicates all stakeholders have a responsibility for the school environmental policy and its management and its updating on a regular basis.

4.4.4. Maintenance, inspection and training

The data generated from Doc 3 (WSM Leshika sanitation book) indicated that basic maintenance and monitoring should be done in order to maintain the Enviro-loo systems. As indicated above, during the workshop (W1) the facilitator demonstrated to the participants how inspection (solids level and measuring) is to be done and she also told the SGB chairperson that inspection should be done on a regular basis by either SGB members or teachers, not learners alone.

The chairperson of the SGB took up this responsibility, and promised that he would come to the school regularly to check on the maintenance of the toilets on an ongoing basis and also support the ongoing cleaning of the toilets and the yard. Inspection and training was done and was evident when four learners were training other learners how to clean the toilets and the other six learners observed and inspected at the same time.

As indicated in the Action Plan, this training will continue to be done in future to remind and train learners on how to use the Enviro-loos, and how to manage the Enviro-loo maintenance. According to WSM Leshika (Pty) Ltd. (2010) training should be done by the school management. The 12 Golden rules were displayed in the toilets and classes by the educators as agreed in the

action plan (AP 1) teachers were to regularly teach and remind learners on the use of Enviro-loo systems. After the workshop (W1) the AGES facilitator indicated that they would come to school on regular basis to inspect and to give the school support in Enviro-loo maintenance. This shows various forms of commitment to future maintenance of the Enviro-loo system by different members of the Eco-School Sanitation COP, and by members of the broader school community too.

4.4.5. Monitoring

It was agreed that monitoring would be done while toilets were cleaned and inspected. For the academic year 2010, as agreed in the action plan (AP 1) monitoring was to be done by learners with the help of teachers using EL 007 cleaning schedule and EL 008 inspection schedules, as used in this research (see Table 4.2 above). That means when for example, the SGB and teachers open the inspection lid to check the level of solids, learner observers will be monitoring. From the research it was evident that the learners were able to do the monitoring and those they were doing it successfully. This was part of developing action competence, which I discuss below in more detail.

4.5. EVIDENCE OF ACTION COMPETENCE DEVELOPMENT

In this section I discuss action competence development of key stakeholders in the Eco-Schools Sanitation COP, notably the SGB members, the learners and the educators. I do this each time by using sub-categories of analysis that are drawn from Jensen's IVAC approach as discussed in Chapter 2 (see section 2.6). The sub-categories that I use in each of the sub-sections discussing action competence development (section 4.5.1, 4.5.2 and 4.5.3) are:

- Interests
- Vision
- Commitment (to change)
- Action experience

In the case of the learners I also include the sub-categories of knowledge and critical thinking, as these were identified in Chapter 2 as being particularly important in action competence development (see section 4.5.2 below).

4.5.1. Action competence development in the SGB members

4.5.1.1 Interest

As indicated above, the Chairperson of the SGB was involved in the Eco-Schools Sanitation COP, and was an active member of the COP. He had an interest in the environmental health of the school, and was prepared to contribute to improve Sanitation Practices in the school. He also showed an interest in the process, and attended the workshops and the COP meetings.

4.5.1.2 Commitment

Workshop data (W 1) showed that after the AGES facilitator demonstrated how the inspection lid is opened and how the level of solids are checked, the SGB chairperson promised that he would come to the school on regular basis for inspection and at the same time help to fix pavements and monitor the cleaning of the toilets and the toilet yard. This is an indication of commitment because after the workshop, for two days the SGB chairperson started cutting trees and grass in the toilet yard during the winter holidays.

4.5.1.3 Vision

The Eco-Schools handbook (Doc 1) suggests that the eco-committee of the school should involve at least the school management, teachers, learners, staff and parents as part of the eco-committee. The SGB chairperson is a member of the eco-committee of Ramashobohle High School. This was evident when I analyzed the schools' portfolio (Doc 2) and found that the SGB forms part of the committee. His vision was further seen by his participation in drawing up the action plan (AP 1) when he was part of the planning committee and it showed that he was willing, courageous and inclined to involve himself in decision-making to improve sanitation

conditions of the school. This shows that he had a vision of a healthy and better managed school, with improved sanitation conditions.

4.5.1.4 Action experience

The workshop data (W1) showed that SGB chairperson, a parent and ward councillor participated actively during the workshop when demonstrations were done. Video data shows that the SGB chairperson showed particular interest and he mastered action skills for checking the dry levels of the toilets during the workshop. He further volunteered to contribute actively by taking proper care of the toilets during the term of his office and regularly checked and reported the level of solids in the pan to the school management. As indicated above, he contributed actively to clearing the toilet yard during the school holidays. This showed his inclination to participate in actions to improve sanitation management in the school.

4.5.2 Action competence development among learners

4.5.2.1 Interests

It was interesting to note from the focus group interviews (FGI) that the different members of the COP had different interests, and even amongst the learners there were different interests. Amongst the learners in the focus group, the following interest in having a clean and healthy toilet environment was noted by several learners:

> *'We need running water in the toilets'*
> *'Clean toilet because they are healthy'*
> *'I will make sure that I erase every mistake I do in the toilet, for example, pick papers on the floor'*
> *'Like another has stated she needs flushing toilets, I think as an eco-committee I will make sure that I flush or clean the messes.*
> *'...encourage learners to keep toilets clean'.*

Another learner (FGI 1.6) supported the idea of having water in the toilets, and she responded by saying that *"the school should buy water tank and gutters"*. This was also supported by a

teacher (FGEI 1) who responded *"JoJo [water tank]"*. From this data, it is clear that these members of the COP wanted to overcome the water challenge the school is facing and that they saw this as a way of improving the sanitation conditions in the school.

Some learners were interested in appointing staff to do the toilet cleaning. FGI 1.5 suggested that the school should *"Hire cleaners"*. This idea was further clarified by another focus group interviewee learner who said: *"If the school can't afford to pay, the eco-committee should divide them* [the toilet cleaning duties into shorter work shifts to afford at least some help]". A teacher responded that the school might not be able to afford to pay Enviro-loo cleaners working for the whole day, and the learner then further indicated: *"I think the practical part of it [cleaning toilets] is after school, if we speak of the cost part of it"*. The learners' responses implied that she was health conscious; she really wanted toilets to be well cared for and be cleaned and monitored for the whole day.

Other learners showed interest in *regular* cleaning of the toilets (as it was shown that previously the toilets were not cleaned regularly – see section 4.2 above). One learner (LI 3.2) when asked what was being done as a committee to manage sanitation responded that *"...every class is involved and interested in cleaning toilets"*. This was reflected by others (FGI 1.6) who also showed interest in regular cleaning of the toilets as they said: *"...toilets to be cleaned everyday"*; and *"If possible every day, after school, morning"*.

4.5.2.2 Knowledge and insights

When investigating knowledge and insights which the community of practice has on sanitation management, data clearly indicated that learners needed some help here and there to develop knowledge of sanitation matters. During the third interview LI 3.1 and LI 3.3 when they were asked about what causes sanitation problems, both responded by saying *"it was due to lack of knowledge"*.

Others also commented on the importance of gaining knowledge about sanitation issues. For example, LI 1.3 further indicated *"Stakeholders are also not aware; they never realized that they will catch diseases because they did not know"*. There were also further indications that learners lack knowledge about sanitation management because the same respondent further indicated *"Boys toilet seats were vandalized"*. Learner observations (LObs 2.8, 11, and 12) indicated that learners throw dirty water in the toilet after cleaning. This data indicated that the COP needed user education for managing sanitation practices in the school.

However, learners were not completely ignorant about sanitation issues. Before the sanitation workshop, when I was investigating the knowledge and insights the COP has on sanitation management, LI 1.1's responses showed that she had enough sanitation knowledge because she responded: *"The risks people may face are diseases such as cholera"*, and *"Stones, plastics and other equipments should not be thrown in the toilet"*, *"Enzymes (Enviro-loo cleaner) dissolve solids"*, and *"Sanitation experts can be invited to the school"*. These points presented by LI 1.1 left me with the question of whether the COP share knowledge among themselves or whether the sanitation issues are also a question of attitude to sanitation or not.

When I later interviewed the same learner during interviews three, LI 3.1 when asked to describe a perfect toilet responded by saying: *"It has all equipments that are hygienically clean"*, showing that her knowledge extended to hygiene knowledge and the procedures of cleaning toilets with appropriate equipment. Another learner, LI 3.2 responded by saying *"It is well looked after with all materials needed"*, and LI 3.3 said *"A perfect toilet is having all the proper materials for sanitation"*. This showed knowledge of the practical equipment necessary for ensuring clean toilets.

After the sanitation workshop, LObs 5, 6 and 7 done by six learners (8, 10, 11, 12, 13 & 15) showed that learners gained knowledge and insight because when training other learners, they were cleaning the toilets thoroughly using the relevant equipment. They also followed the

correct procedure and the other learners whom they were training in turn were able to thoroughly follow what was said during training and they cleaned perfectly.

Two learners out of six, however, (LObs 5. 12 and 15) in their observations, indicated that when training other learners that the trainers did not always follow correct procedures fully. They indicated that *"Some trainers did not put on working suits"*. During the interviews, when LI 3.2 was asked about this she indicated that *"It is due to lack of information"*. This means that some of the learners who were cleaning toilets, even after the workshop, were not aware of the effect cleaning toilets could have on their school uniform; or how dangerous it could be to them and other learners.

4.5.2.3 Commitment

Before the sanitation workshop, the data collected during interviews (LI 2) and learners observations (LObs 2. 8, 11, 12 and 13) showed that learners were not committed to managing sanitation because of a lack of knowledge as indicated by LObs 3.1 and LI 3.3 and as reported above in section 4.2. LI2.1 *indicated "So far toilets are not cleaned, may be once in four months."* When asked what they as the COP were doing to overcome sanitation, he further indicated

"We never overcome sanitation problems and learners are not given projects or tasks about sanitation". This response indicated to me that as the COP they were not doing anything proactive to manage sanitation and that educators also were not taking up their roles to make sure that Eco-Schools projects are implemented. Educators were also not specific in identifying and clarifying environmental learning in the curriculum by integrating Eco-Schools progamme activities on sanitation issues fully into the life of the school.

Even though learners did not know much about sanitation, when late comers were cleaning, though there was not enough cleaning equipment learners were participating (LObs 2.11) and encouraging one another according to data from LObs 2.8, 11, 12 and 13) and this is an indication that some commitment was in evidence for having clean toilets.

As reported above, during the workshop Eco-Schools Sanitation COP learners (John, Joel, Makwela & Caroline – training team; and Maria, Tshepo, Solly, Johanna, Vision, Lesterina – monitoring team – see AP1) volunteered to be trained, to report to the school during assembly and to train other learners to manage and keep the Enviro-loo system clean. This commitment was captured in the Action Plan (AP1). These learners, who showed this commitment, were taught how to clean and maintain the toilets, and they were able to train other learners (as indicted above, and in AP1). The fact that learners volunteered and gave their time to teach other learners how to clean Enviro-loo systems is an indication of commitment.

4.5.2.4 Vision

After the workshop, learners were able to imagine alternatives and see the condition of their toilets and how they could be maintained in future. Before the workshops, they also had a vision of clean toilets as they had ideas on how they could or should be managed as described in the section on interests above. It was the demonstrations during the workshop, and subsequent learner training of learners, that seemed to be most significant in helping learners to develop a vision, as they could see what the alternative sanitation management practices could be like, and what the results of these practices were. When learners were asked to volunteer to clean toilets and train others they were willing to do this, which shows that they were willing to make the vision of clean toilets work through participation in this way. They also had other visions, such as hiring staff to clean the toilets, ensuring regular toilet cleaning and having adequate equipment for toilet cleaning, as shown in the learner discourse cited in the sections above.

4.5.2.5 Action experience

Data generated from LObs 2-7 indicated that toilets were cleaned by learners who were latecomers as a non-voluntary punishment exercise (initially), and later by learners who volunteered to do this, and train others to do it. To train others they had to learn the practice and they had to understand *why* they were doing certain things in particular ways.

Before the workshop, some learners threw foreign objects into the toilet according to LI 3.2 because they were not aware and dirty water was poured into the toilets; which led to bad smells according to LI 3.1, 3.2 and 3.3. LI 3.3 further indicated that *"There was no plan for managing sanitation"*, and action experiences were therefore generally negatively experienced by learners.

After the workshop the action experiences of learners involved in the sanitation management practices of the school changed. Learners' observations (LObs 4-7. 8, 10, 11, 12, 13 and 15) indicated that before cleaning learners made careful preparations to prevent themselves from picking up germs. To do this they filled three 20 litre buckets with water, the first bucket was with water only, the second one was with a cup of soap mixed, the third bucket with water and mixed with a cup of bleach. The three 20 litre buckets were placed on plastic bags. A fourth plastic bag was placed on the floor so that they could place the cleaning equipment on this after the equipment had been used, and after the equipment had been thoroughly cleaned and rinsed in the disinfectant water (see Appendix 16 for photos taken during training demonstrating this practice). Different cloths were used in different buckets during cleaning. After cleaning the toilets, all equipment used was thoroughly cleaned. After cleaning all the toilet cleaning equipment water was disposed of outside. It was not thrown into the toilets as before.

During toilet cleaning, cleaning notices boards were displayed outside. This warned other learners not to use the toilets while the cleaning was in process. All the learners put on hairnets and some put on working suits (although this was not done by all as reported above). Further demonstrations and training of other learners, as agreed in the action plan 1 (AP 1) were undertaken as planned and toilets were thoroughly cleaned. The monitoring team (observers) used EL007 cleaning schedule and EL 008 inspection schedules to inspect how cleaning was done and they inspected the condition of toilets as a whole (see Table 4.2 above).

LObs 4-7 showed that after the workshop *"Toilet cleaning was thoroughly done".* What was agreed in the action plan (AP 1) took place, and monitoring and observations were also done. According to LI 1.3 and LI3.1 indicated that four learners from each class were trained while the rest of the learners observed. They indicated that there was a lot of interest amongst the learners now that the toilet cleaning practices were more hygienic and were properly executed and now that there was better equipment available for the task (LI3.2). It was no longer seen as a punishment activity, but rather as an Eco-Schools learning activity that would benefit the whole school. Learners were prepared to take part in the actions, as indicated above, and they did this well for an extended period of time (as indicated by the ongoing observations which were tracked for two months after the workshops), but which continued after the data collection period of this study was completed.

4.5.2.6. Emotional responses and critical thinking

Data generated from reflection interviews investigating emotional responses, critical thinking and reflection on sanitation in the Ramashobohle Eco-School Sanitation COP indicated that the COP could respond positively in managing sanitation; and also that their critical thinking would effectively help towards sanitation management. Their reflections also indicated that the COP is able to see the Enviro-loo users' strengths and weaknesses; and also theirs.

In response to the questions asked during reflection interviews (RLI 2.1 &2.2) about what they thought about the school community's understanding after the training of the entire school, RLI 2.1 responded by saying *"Yes, they mastered what was taught, and that is why we see them committing to everything they were taught how on using Enviro-loo cleaners. They use it perfectly like the way they have been taught."* In response to the same question above RLI 2.2 responded *"No, because we are still having some children mismanaging the toilets."* The responses above differ. One learner agrees that the school community has understood what was taught during training after the AGES sanitation workshop, while the other learner disagrees, which provides evidence of some critical thinking, and an opportunity for critical debate about the issue. Similar perspectives were reflected when the same learners (RLI 2.1 &

2.2) were asked whether they were satisfied with the way the school community responds to cleaning and operation of the Enviro-loo facilities, RLI 2.1's response was "I am satisfied about the cleaning; the response of cleaning is amazing and it reduces the risk of getting all the germs and everything.", while RLI 2.2, clearly more critical, stated "No because the toilets are cleaned only after a long time, and again we still having mismanagement of toilets." This indicated that while the toilets were being cleaned more regularly than in the past, it was still not regular enough.

After they were told of the expected life of Enviro-loo systems, a reflection question about whether the practices they were implementing to manage sanitation would sustain the toilets, Linda (RLI 2.1) was not quite sure as she responded *"Ja, but... not quite sure ... after cleaning there is still that smell and the stains cannot be removed."* RLI 2.2 responded more definitively by saying *"I don't think so, like I said there is still mismanagement of toilets..."*

In reflecting on the strategies they were implementing in managing sanitation, and whether these strategies would sustain the toilets, the responses were: *"The Enviro-loo cleaner, like it make sure that and those smells there, those bacteria, those things they get are reduced..."* (RLI 2.1) and *"I think it will sustain the toilets, but we are still having some problems."* (RLI 2.2). This showed that the learners could reflectively assess the practices that they were engaged in.

In reflections on the challenges they were facing in managing sanitation, Linda (RLI 2.1) said: *"Wow! People throw their pads in there; girls!...if the government produces toilet paper so that every learner who goes to the toilet is given a piece of toilet paper, I think we can overcome the challenge and when coming to girls with their pads; I think the dust bin can help."* and RLI 2.2 indicated *"The only challenge we are facing is mismanagement of the toilets and we don't have basins in the toilets."* This showed that the learners' critical thinking extended to identifying further solutions for improving the sanitation management situation – for example by providing sanitary bins and places for hand washing in the toilets.

In responding to a question about what they would do if the toilets become full, RLI 2.1 responded: *"I think we can use pit toilets..."*; while RL12.2 response showed a much more detailed knowledge of the Enviro-loo system because he said *"We will get someone to open the inspection lid to take out the faeces, and faeces will be used as fertilizers in the school garden... someone who has experience of using Enviro-loo toilets."* Both of these responses showed that learners still needed to develop a more in-depth understanding of the Enviro-loo toilet system and how it works.

They were also asked emotional questions about relational issues associated with toilet management. I asked them a question about how they would respond to someone who does not operate the toilet well and RLI 2.1 said *"I will exactly and seriously sit with that person down, tell him/her about the risk she is getting herself to and not only herself but other people"*, while RLI 2.2 had a different, more authoritarian response to the same question: *"A person should be reported to the teacher concerned."*

RLI 2.1 was asked how she will respond to officials from the government accusing them of mismanaging Enviro-loo systems in her school, and her response showed that she was surprised because and that she could critically and confidently defend the practices they were engaged in at the school as she said:

> *Accusing us of mismanaging the toilets? I will really be amazed because I think everything we are doing now, everything we do to clean those toilets, we are making everything to making sure that those toilets are clean and if they come to us and accuse us of mismanaging them, I will think they have changed their way of cleaning because I think we are doing the right procedure in managing those toilets.*

Besides these instances of critical thinking, taken mostly from the reflective interviews with two of the Eco-School Sanitation COP learners towards the end of the research period (September 2010), there were other examples of learners' critical thinking, as shown in the sections above where earlier sanitation practices were described, and also where their interests are described.

The interviews with RLI 2.1 and RLI 2.2 however, show that through engaging with the sanitation practices over a period of time, critical thinking and reflective skills are developed as learners' have practices, experiences and knowledge to reflect on. It also shows that critical thinking involves being able to assess a situation, propose solutions, understand the content of the actions, relate to others and show confidence in their ideas. What was interesting is that both respondents were critical thinkers, but they sometimes had different views.

4.5.3 Action competence development amongst educators

4.5.3.1 Interests

Focus group interview data (FGI 1) indicates some of the interests held by teachers. A teacher (FGI 1.3) when asked about her interest in sanitation indicated "Supply toilet papers for school learners", while the teacher (FGI 1.4) responded that "Learners sharing toilets with educators, for proper supervision...".

When further asked how would they [the members of the COP] like sanitation to be managed the male teacher (FG1 1.4) showed an interest in good management structures, when he suggested that a committee composing of two SGB members, teachers and learners be formulated so that they could oversee or supervise the toilets and report if they were not clean. He also supported the issue of buying a water tank after one learner suggested this as a solution to overcoming water challenges the school is facing.

The same teacher (FG1 1.4) counteracted the proposal raised by FGI 1.5, when the respondent indicated that the school should hire people to clean the toilets or else continue to use the late comers to clean. His response shows an interest in finding more viable solutions than continued use of late comers for toilet cleaning. He stated in response:

> *...the only people we use are [those learners] who come late ... if you [continue to] use people who come late, it means there is no progress ... as such we need to develop our*

programme of cleaning those toilets because even if you use latecomers ... there is no progress.

He also indicated that the school might not be able to pay employees who clean the toilets because they would have to spend the whole day at school and that would mean more money than the school could spend.

During the focus group interviews, when they were asked what practices could improve sanitation, the same mail teacher (FGI 1.4) further proposed a solution that showed an interest in co-management, co-ownership, respect for self and others, and taking responsibility:

> ...conscientise the learners that the toilets belongs to them, if you mess you are messing it for your own, you mess it now, the third period you have an emergency and you are going to come back complaining that toilet are not clean forgetting that you messed it yourself. So I think the best thing is to conscientise ourselves that the toilets belongs to us, therefore we need to take care.

Data generated from an individual interview with an educator (EI 1.1) similar to the male teacher above, indicated an interest in better management approaches, and also educational activities that teach respect for self and others when using toilets and for taking responsibility for communal facilities. She said *"it is the responsibility of the school management to ensure that the toilets are kept clean and that the community should educate their children from home on how to keep toilets clean"* and she said further that learners should be encouraged to keep toilets clean *"like their toilets at home"*.

4.5.3.2 Knowledge and insights

The data generated through the focus group interviews before the workshop, showed that the COPs' interest in sanitation practice also indicated that educators have knowledge on how to maintain the toilets (as indicated above); though it was also apparent that knowledge and guidance was still needed especially for enviro-loo toilets management (as indicated below). As mentioned in Chapter 1, Enviro-loo toilets were new facilities provided for the school.

During the first educator interview (EI 1.1) the educator revealed her knowledge of sanitation risks associated with using mismanaged toilets when she said *"Mismanaged sanitation may negatively affect the health of people. They may contract infections of the urinary tract"*. This was an indication that she was aware of sanitation risks. When the educator (EI 1.1) was given alternatives to choose from as to where the sanitation problem or challenge emanated; she responded: *"It emanates from the school management and community. The school management must ensure that the toilets are kept clean and the community must educate their children from home on how to keep the toilets clean"*, indicating that she had knowledge of the responsibilities for sanitation in schools, and also the educational aspects of sanitation management. When she was asked what would they, the Eco-Schools Sanitation COP, do to manage sanitation (before the workshop), her response was: *"I will ensure that toilets are always kept clean, put rubbish bins in each toilet and educate the learners how to use a pit toilet and to teach learners to wash their hands every time they come from the toilet"*. From this it is clear that she has knowledge of the basic sanitation management practices needed in a school. When she was asked what she would do if the toilets become full she responded by *saying "I will ask the municipality to come and drain it or I will possibly close it and construct another toilet"*. This shows that she has knowledge of managing pit toilets.

However, when the teacher was asked to say something about the bottles of enzymes (Enviro-loo cleaner) that were kept in the principals' office she indicated *"I do not have an idea"*. There was lot of Enviro-loo cleaners in the principals' office provided by Mvula Trust after handing over the facilities to the school. However, as indicated by this teacher, the school did not know their use or what to use them for, because of a lack of user education and enthusiasm about sanitation matters.

From the data collected from this teacher interview, the responses were an indication that the teacher had knowledge about sanitation especially pit toilets and that she had insufficient user education about Enviro-loo systems. This implied that her knowledge was such that it was not

sufficient to manage Enviro-loo systems. This lack of appropriate knowledge for management of Enviro-loo systems was confirmed later in the interview, when she was asked what she would do if the toilets become full she answered that she would close the toilets or build other toilets.

The Eco-Schools handbook (Doc 1) suggests that educators should take full responsibility for, and promote environmental activities in the school. This was evident in the interview that I had with the Eco-Schools node co-ordinator (NCI 1) who confirmed that if the school became stuck due to lack of knowledge, they would organize a workshop or introduce experts to the school to come and give support. A similar strategy for supplementing environmental knowledge was proposed by the educator interviewed (EI 1) when she said that she would invite experts to the school to come and educate the community on how to handle sanitation.

The Eco-Schools node co-ordinator further encouraged schools to try hands on participation which is suggested by the Eco-Schools handbook (Doc 1), and she indicated that through this approach, schools could learn and gain knowledge from their mistakes. She again indicated that where necessary the Eco-Schools network would help the school if it became stuck as indicated above. She also stated that it was important for educators to involve learners in decision-making so that they could gain knowledge of issues and practices for improved environmental management.

After the workshop, educators, like the learners, had improved knowledge of how to manage the Enviro-loo system. After the workshop, educators supervised and encouraged learners to take part in the sanitation activities as outlined in the action plan (AP1, see Table 4.2 above), and teachers seemed confident on how to supervise the students to do the cleaning as shown by the demonstrations. The workshop was therefore an important source of new knowledge for new practices, for educators, learners and all members of the Eco-School Sanitation COP. Teachers also drew on the 12 Golden Rules to teach children what to do, and this was also an important source of new knowledge.

4.5.3.3 Commitment

Educators were committed enough to attend the workshop and to watch the demonstrations. This showed that they were willing to learn about the new Enviro-loo sanitation system. After the workshop, educators supervised and encouraged learners when cleaning the toilets. As outlined in the Eco-Schools Handbook in its expectations of teachers, (Doc 1) educators were becoming more enthusiastic in taking the lead in sanitation matters of the school. This was also shown by the fact that some educators helped to draw up the Action Plan and because they were willing to put the 12 Golden Rules up in their classrooms, and to teach and remind the learners about the 12 Golden Rules.

4.5.3.4 Vision

After the workshop and what transpired in the action plan (AP 1), educators displayed 12 Golden rules in the toilets and in the classes. They become involved in planning sanitation matters and alternatives. All sanitation activities that took place in the school were monitored, for example when learners cleaned, one educator monitored. Stock taking was also done regularly to ensure that there was always enough equipment for toilet maintenance and that chemicals were bought. This showed that educators shared a vision of improved sanitation management for the school, as also shown in the interview and focus group interview data reported on above.

Teachers also showed evidence of being able to visualize 'the perfect toilet', as shown by this extract from the reflective interviews:

> *It is non existant here but I think a perfect toilet can be one which has got running water nearby and after relieving yourself you get a soap and wash your hands there... it must be a toilet that is clean or cleaned regularly if it is not clean at that moment; and ... it must also have all the provisions that we need like using like toilet papers – these must also be provided there. The toilet must be well taken care of. I think in that regard we could have tissue paper there [referring to the schools Enviro-loos]. If we have running water there and the basins are almost clean and the floor is also clean, in a way we can have mere perfect toilet.*

4.5.3.5 Action experience

As soon as the workshop was conducted, educators started to look at different alternatives that would bring change in the school, class and community. They also looked at barriers that might prevent change from taking place in managing sanitation and later came up with an action plan (AP1, see Table 4.2 above) which was initiated and implemented immediately. Educators encouraged and supported learners in their training actions and in their cleaning actions. It was also agreed that as educators they would help with regular monitoring and that they would evaluate change and use observers to monitor the toilet cleaning process. All of this was done regularly during the duration of this research.

4.5.3.6 Emotional responses, critical thinking and reflection

The data generated from the reflection interviews when emotional response, critical thinking and reflection were investigated after the workshop (REI 2.1) indicated that the educator involved in the interview (from the Eco-Schools Sanitation COP) was enthusiastic in managing sanitation. The only thing that he was worried about was some continued reluctance amongst his colleagues to fully participate in the Eco-Schools Sanitation COP and action plan.

When he was asked to reflect on the understanding of the school community after they were taught by AGES and learners how to use and manage Enviro-loo systems his response *was "Ja, I think they did understand because ever since after the training there has been marked improvement on the cleanliness of the toilets ... we cleaned them two weeks back and they were not that dirty."* Upon further reflection, he indicated, however, that he was *"not quite happy with the way we did as a school because there is reluctance on part of the educator population..."*. He commented on this issue later in the interview too, indicating that it might be a significant impediment to continued progress with the work of the Eco-Schools Sanitation COPs efforts to develop action competence for improved sanitation practices in the school:

> The question of reluctance on the part of educators becoming involved is our biggest challenge in supervising learners. I think the biggest challenge is on reluctance on the part of educators to help, because one cannot do it alone, it needs number of educators to help.

This shows that while the process had fully engaged the learners (as reported above) other educators were not as committed.

He was asked to reflect on the practices that are being implemented in managing sanitation and particularly whether he thought the facilities and practices would be sustained. He responded:

> *Yes, I think it will really sustain the toilets because ever since the training of AGES some people came here who were operating the services of emptying those toilets and as such I think we can just score on that particular way of calling them whenever they are full ... As of now the toilets are still in a better condition compared to some others who were vandalized.*

When the teacher reflected further on what they are doing to ensure proper management of toilets he said: *"For starters I think we can reinforce the involvement of our learners because they are used more by them, they should take care or whether through the committee or through the RCL we can reinforce."* Lastly when asked to reflect on what he would include in the drafting of sanitation policy he said:

> *This is one more thing we did not give much attention to, we were just work shopped and work shopped the learners but we did not come and draft the policy in that regard. I think this is a critical factor we should do so that the learners could be able to know what is expected of them.*
>
> *Generally [items to include are] the conduct of learners when they are there using those facilities. The program of cleaning the loo is critical. The apparatus that need to go with learners when they use those toilets. I think they are very critical and also how to leave the toilet after using them is also of the things to be included in the policy.*

In response to a critical thinking question about what he would do if the toilets become full he said: *"As I have already indicated in my previous response, we have got people who came here and we have their contacts ... I will check their business card."* The above response indicates that the COP is networked to the outside world and that the teacher has the knowledge and ability to utilize this.

He was also able to point to some aspects that needed further improvement, showing his capacity for critical analysis of existing practices and progress being made. He said *"One, for starters we can have the basins for washing hands especially at the toilets. Two, provision of running water nearby and the provision of soap. I think those are the three critical factors."*

He was also able to assess whether the current practices were reducing risk or protecting learners from health risks when he said *"Ja, to a certain extend it may protect them, but, remember we can not protect the toilets 24 hours."*

When asked about how he would respond if a government official came to the school and accused the school of mismanaging the Enviro-loo facilities, his response was:

> *I wouldn't necessarily agree or disagree because on the part of ourselves I think we are taking care of the toilets, cleaning and making sure they are locked and may be we can be accused of not cleaning according to expected results; at least we are taking our part; closing them in the afternoon and opening them in the morning.*

He was also able to assess and reflect critically on the equipment available and equipment required to improve sanitation management in the school, and to ensure that current practices were sustainable. He stated: *"I think in addition to what has been provided the face mask is the first thing we need so that we have two; we also need an additional three brushes to clean the toilet".*

4.6. SANITATION PRACTICES, IMPROVEMENTS AND RESPONSIBILITIES AFTER THE WORKSHOP

I now complete this chapter with a discussion on the sanitation practice improvements and responsibilities after the workshop. Many of these have already become obvious through the reporting of the data above, so the section below is a form of summary of the outcomes of the Eco-School Sanitation COP's efforts to improve sanitation practices in the school. The section, however, points more towards ongoing responsibilities for continued improved sanitation practices, as they emerged from the process, and as they were established through the process.

4.6.1. Training in sanitation practices and improvements

As reported above, the AGES workshop was a significant training event in the school as it educated teachers, learners and parents including the SGB Chairperson on what had to be done to manage the Enviro-loo system. However, ongoing training was needed and planned for, as indicated in AP1 and the discussions above. After the workshop, Grade 9 learners (Tshepo, Lesterina and Makwela) reported to the whole school in the assembly about operations and components of Enviro-loo systems and continued to train the entire school (Grade 8-12) practically on different dates according to the action plan drafted. Operational rules and 12 Golden rules were displayed in the toilets and classrooms by educators.

Grade 9 learners taught and trained other learners how cleaning should be done. This was evident when during the interviews LI 3.1 said: *"I teach other learners and observe when they are cleaning"* and LI 3.3 responded by saying that weekly they teach more learners how to clean toilets. LI3.2, when she was asked what they did as the community of practice to overcome the sanitation challenge, she responded by saying she *"informed other learners what AGES taught them about sanitation"* and she further indicated that *"every class is involved and interested in cleaning toilets to avoid health risk"*. The strategy of using some learners to train other learners seems to have been successful and it allowed for a system of ongoing training of learners to clean the toilets. Through this learners were also learning hygiene practices, and were also learning the importance of using the toilets correctly. The learning was therefore not

just about technical toilet cleaning, but more on a system of developing action competence for improved sanitation management in the school which could benefit everyone.

It is a concern that the majority of the educators are not showing long term sustained commitment to this process as indicated by the Eco-Schools COP teacher's reflections reported on above.

4.6.1.1. Toilet cleaning

As indicated above, before the workshops only late comers cleaned the toilets as punishment. After the workshop, and after training provided by the learners in the Eco-Schools Sanitation COP (the Grade 9 learners) every class was involved and interested in cleaning the toilets. Joel, John, Makwela and Caroline demonstrated how toilets are cleaned and in turn learners observed how to clean the toilets. Before cleaning all preparations as explained above (see section 4.5.2.4) were done by the four trainers (Lobs 3-7, AP1 and Appendix 16 where photographs of the practices are displayed). When cleaning, two separate cloths with different colours were used. According to the AP 1 toilets were cleaned twice a week by Grade 8 and 9 only for this academic year 2010. From next year a new itinerary for the whole school will be compiled.

4.6.1.2. Monitoring and maintenance

As indicated above, before the workshop no regular monitoring system was in place for ensuring clean toilets and improved sanitation practices in the school. As part of this research I involved learners from the Eco-Schools Sanitation COP in observing the toilet cleaning practices. They reported negatively on what was happening (see section 4.2 above). This was the start of an ongoing monitoring process. After the Workshop, as indicated in the Action Plan (AP1), monitoring was done by six Grade 9 observers (Maria, Tshepo, Johanna, Vision, Solly and Lesterina) as proposed in the Action Plan (AP 1). The monitoring forms are standard ones used for Envio-loo systems and the same monitoring schedules (EL 007 and EL008 – see Appendix 11) are used regularly. Educators evaluated the observation process, and the learner observers

monitored regularly using EL 007 and EL 008 schedules. The SGB Chairperson is also regularly doing inspection using the 8mm spanner to open the inspection lid and a rake to level and measure the solids as guided by the workshop demonstrations and the contents of Document 3 (which contains the technical information on how to manage the Enviro-loo system).

4.7 CONCLUSION

In this chapter, I presented the data generated from documents, a focus group interview, interviews, observations, a workshop and the action plan developed with the Ramashobohle Eco-Schools Sanitation COP. As carefully explained at the start of each section, the data was presented through the use of analytic categories and sub-categories that emerged from inductive and abductive approaches to analyzing the raw data.

A number of Eco-Schools Sanitation COP practices before and after the workshop were presented, and insight into the developing action competence of SGB members, educators and learners was presented. This provides readers with a rich and thick description of what the COP was doing in developing action competence for managing sanitation issues in the school. The careful way the data was indexed and referenced in this chapter allows for verification with the original data. In the next chapter, I further analyze the data I presented in Chapter 4 using wider lenses provided by theory in Chapter 2 of this study.

CHAPTER 5

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS FOR FURTHER RESEARCH

5.1. INTRODUCTION

In Chapter 4 I presented a detailed thick description of data generated from the Ramashobohle Eco-Schools Sanitation Community of Practice. The presentation of the data was informed by what an Eco-Schools does, the action competence framework and sanitation improvement practices at the site. This chapter draws on Patton's (2002) and Bassey's (1999) advice in which they recommend that researchers should try to make sense of what people have said (reported on in Chapter 4) by producing analytical statements that help to summarise the main findings. They also indicate that using theory to discuss these analytical statements can provide further depth of analysis. Danermark et al. (2002), describe this as a process making *abductive inferences*, which means re-interpreting or recontextualising the data using theory. I have done some of this already in Chapter 4 when I used the extended IVAC model to interpret some of the data in the study (see section 4.5).

To structure the discussion in this chapter, I was guided by the research question: 'How does Eco-Schools community of practice foster action competence in managing sanitation issues in rural schools?' To address this question, I reflected on the way the action competence is developed and practiced by the community of practice in Ramashobohle High School in managing sanitation in a rural context.

As reported in Chapter 3, I develop a set of analytical statements which also present the key findings of this study building on and interpreting the findings in Chapter 4. The analytical statements will now be discussed in detail in the next sections. Together these analytical statements address the research question. I also make recommendations based on the analysis in the analytical statements, before summarizing the study and making recommendations for further research. As this is a case study recommendations are made within the case.

5.2. COMMUNICATED AND SHARED KNOWLEDGE, INSIGHT AND VISION AMONG THE COP

Reflecting on the findings in Chapter 4, it is evident that to foster action competence, an Eco-Schools Sanitation COP should pay careful attention to communication and share knowledge in order to support members of the COP in the school, think of and practice alternatives for managing sanitation issues. This finding is summarized in the following analytical statement:

Analytical statement 1: Communicated and shared knowledge, insight and vision in the Eco-Schools community of practice develops action competence to manage sanitation issues

The findings in Chapter 4 reflect how the Eco-Schools Sanitation COP in Ramashobohle High School fostered action competence in managing sanitation in their school. The eco-committee established under Eco-Schools (Doc 2), and its extended Sanitation COP structure active in this research, has established power relations as indicated by Lave and Wenger (1991, 98) whereby the executive members of the committee, who have more experience of managing school environmental management practices, are steering and overseeing the project. As indicated in Chapter 4, and as evident in the previous Eco-Schools Portfolio (Doc 2), they have delegated work amongst themselves; they plan, organize, and liaise with the Eco-Schools network, they act, help and share knowledge and information with other members of the community of practice and they also train the entire school community on how to manage sanitation and at the same time they reflect on what has been happening in the COP and on their wider engagements with the school.

As shown in Chapter 4, the Ramashobohle Eco-Schools COP collectively committed their members to engaging in open, transparent and mutual collaboration in applying problem solving approaches, and in bringing into conscious awareness those practice that were previously hidden or ignored, such as the way that the sanitation practices in the school were neglected, and left to late comers (Wals, 2007, 38). This was done through involving the COP in

obtaining information (the learner observations), and by reporting findings back to the entire school. It was also done by inviting expertise into the school to share knowledge in the AGES-led workshop, and by discussing solutions and ongoing issues in the COP meetings, such as the problem of inadequate equipment for cleaning.

In section 4.5, I discussed the knowledge and insight the community of practice of Ramashobohle High School had on sanitation. As reported there, members of the COP had a lot of knowledge of sanitation issues and they had ideas and visions of how to improve sanitation practice in the school. The COP had to create a way of sharing this in the school, and also we had to find a way of bringing new knowledge into the school, as it was clear that not everyone had adequate knowledge of how to manage the Enviro-loo system.

The evidence that such knowledge and insight was communicated is seen when knowledge, insights and vision of the COP was investigated to establish who knows what about sanitation management and to establish who was doing what to address the sanitation management issues and how they were involved in sanitation management practices. As shown in sections 4.3, 4.4, 4.5 and 4.6, the data generated after the workshop indicated that the community of practice benefitted from the information sharing and communication function of the COP, and particularly the workshop because when they cleaned the toilets, their actions were preceded by intentions and reflections on better practices than those that were previously in evidence (reported in section 4.2). Observations conducted reflected that toilets were thoroughly cleaned following correct procedures and that most of the learners put on working suits while cleaning the toilets. That was an indication that they had gained knowledge and insight that influenced their visions and their abilities to act in certain ways. There is evidence that the COPs actions developed and supported the communication of the following kinds of knowledge, which Jensen and Simovska (2005) noted as being very important for action competence to develop (see Figure 2.5 in section 2.6):

- *Knowledge about causes* (these were well known to members of the school community, including learners and teachers, and were of particular concern to learners)

- *Knowledge about effects* (these were also known to learners and to teachers, but their understanding of the effects was expanded through the workshop programme)
- *Knowledge about strategies for change* (learners and educators had ideas of how the sanitation situation could change (e.g. they could envisage the 'perfect toilet', and they had ideas such as improving water provisioning in the school, providing toilet paper etc.), but the workshop, the 12 Golden Rules and the WSM Leshika (Pty) Ltd. (2009) document (Doc 3) provided new, practical ways of strategies for change as learners, educators and parents including the SGB were taught through demonstrations and lectures how to manage the Enviro-loo system properly and hygienically.
- *Knowledge about visions.* It was here that the Eco-Schools COP provided the school with visions through holding the workshop and through presenting a collaborative structure (in the form of the COP and the Eco-Schools incentive programme) that gave the school knowledge of visions of alternative practices which were later implemented.

As is also apparent in the data in Chapter 4, knowledge constructed resulted from activity, and from participating in the COP observation activities, the workshop and demonstrations, and the learners training, and teacher and learner monitoring and evaluation. From this I could say that through involving the school community in Eco-School practices and associated opportunities for learning, knowledge is developed that supports action competence. As shown in Chapter 4, such knowledge also encourages the community of practice to contribute their alternative findings in improving sanitation. As shown in Chapter 4, encouraging critical reflection is also important, as it helps to develop new solutions for further communication and sharing in the school.

Interviews conducted showed that some members of the COP knew exactly how to operate and maintain the Enviro-loo systems, and that they were committed to doing so because they were aware of what Beck (1992) calls a risk. Resulting from what Breiting et al. (1999) refer to as the cognitive skills and abilities to 'know what to do' helped the COP to acquire knowledge

themselves, but also to share it more widely in the school. The COP was able to acquire knowledge and share knowledge in the school on how to:

- maintain their Enviro-loo systems and keep them clean
- overcome environmental and health problems, and health risks associated with mismanaged toilets, and improve the living environment of the school, particularly for the learners who had to use mismanaged toilets before.
- use appropriate information (the 12 Golden Rules), and equipment when inspecting, monitoring and cleaning the Enviro-loo systems
- work together as a team; in this case as the COP sharing information and planning how they were going to operate, and sharing information more widely in the school through the workshop, the assembly and the 12 Golden Rules being put up in all classes and toilets.

What was significant too, was the learners' action competence development, particularly those involved in making the observations, doing the training and monitoring the cleaning. As shown in Chapter 4 they developed knowledge of hygienic cleaning practices, and how to support others to implement these. They were also informed about the correct equipment to use, and how to use it safely and they were able to share this knowledge as shown by the successful training that they implemented. Faye et al. (no date), Jensen and Schnack (1997), Breiting et al. (2009) and Jensen and Simovska (2005) all indicate the importance of cognition and knowledge development and sharing in action competence development.

What was also apparent is that the community of practice was active during training because of the knowledge and insight they acquired from the workshop and the action plan they proposed. This enabled the COP to learn together further, and to share knowledge together in an atmosphere of respect which according to Wenger (2007) is important to the success of a community of practice. As shown in Chapter 4, the members of the COP also had confidence in what they were sharing with others, as some of the learners were willing to share their

knowledge with the whole of the assembly and the one learner indicated that she would stand up to a government official coming to criticize them and challenge his or her critique. Breiting et al. (2009) state that knowing about the issue, and knowing what to do is closely linked to having the courage and feeling the responsibility for action (see Figure 2.4 in section 2.6). Such confidence is important for action taking, as shown by the confidence that the learners had to train others which led to clean toilets and improved visions for sanitation in the school community.

> ***Recommendation 1:*** *From this analysis I recommend that the Eco-Schools Sanitation COP continues to share and develop different kinds of knowledge and experience of sanitation management in the school to strengthen action competence development for sanitation management in the school.*

5.3. INTERESTS AND COMMITMENT IN THE ECO-SCHOOLS COP

The following analytical statement can be made regarding interests and commitment

Analytical statement 2: Different, alternative and relevant interests and commitment in the Eco-Schools community of practice fosters action competence in improving and maintaining Enviro-loo systems

As mentioned in section 2.2 Eco-Schools engages learners, educators, parents and community, and the programme encourages hands on approach to environmental improvement; it was the same in the Ramashobohle Eco-School School (Doc 2, Chapter 4).

As indicated in section 4.5 in investigating action competence development amongst key stakeholders in the COP (the SGB Chairperson, learners and educators), I found that there was a lot of evidence to show that despite initially implementing very poor sanitation management practices, there was increased commitment and interest in improving sanitation practices in the school, particularly after the workshop. But even before the workshop there was commitment

as a large number of people attended the workshop. The SGB Chairman was part of the Eco-committee of the school, and learners and teachers were interested in moving away from an approach that used late comers as toilet cleaners in the school.

What was interesting to note was the range of different interests concerning sanitation among the members of the COP. Learners were interested in regularly cleaned toilets with adequate equipment, teachers were interested in better management structures and approaches, and the SGB Chairperson was interested in the general well-being of children in the school. They were all interested in achieving the same objective in the end, which was to make the Enviro-loo system work successfully in the school. The Eco-School COP teacher, however, was worried about the lack of interest amongst other educators although most teachers were prepared to work with the 12 Golden Rules. As shown by the training, more learners got interested in the sanitation practices as they were trained.

The Eco-Schools community of practice members in Ramashobohle High School developed their responsibilities in a democratic way; that means the work was equally shared and they respected one another and the different contributions from different members. Learners and educators conducted observations, learners trained other learners, teachers saw to it that there was adequate equipment, and the SGB Chairperson assisted with monitoring and raking the drybin. This shows that the different interests came together, and showed a common commitment.

Lave and Wenger (1991) would say that there is a condition of legitimacy amongst the sanitation COP members that defines their possibilities for learning. Participants in this Eco-School Sanitation COP were able to establish their different, but related interests in a way that lead to common commitment, changed practice and action competence development for themselves but also for others in the school community.

There were many signs of commitment from participants in the COP and also from other members in the school, as reported on in Chapter 4. For example the SGB Chairperson's commitment to his monitoring and inspection role, the learners commitments to provide training, the teachers commitments to ensure adequate materials and equipment and to support learners to understand the 10 Golden Rules. In another case, a learner indicated that she would design a board with rules and regulations of using Enviro-loo systems as this would caution learners on how to use Enviro-loo systems. This was her vision and commitment.

As indicated by the outcomes of the workshop, almost everyone had confidence and wished to act towards managing sanitation and this was an indication of action competence. That was because they understood and gained knowledge and insight that led them to commitment (as explained above). Wenger (1998) explains too that a COP develops sharing a domain of interest, and through participation in a practice. As shown in this study, the Sanitation COP grew in the school, as more learners started to participate in the sanitation management practices. During training and toilet cleaning, learners were working on authentic and realistic practices that reflected real world challenges and approaches (Jonassen, 1994); action and change was seen. One could see that there was change within them and they were aware of barriers that could prevent them from carrying out their actions, as indicated in the reflective interviews with both teachers and learners.

As reported in Chapter 4, the observations done showed that training was thoroughly done by four learners; and while learners were cleaning the toilets they were engaged in joint activities where they were developing a shared repertoire (Wenger, 2007) with other learners. This was done by encouraging one another; which is a sign of conscious awareness, social learning and commitment taking place in what Wals (2007) refers to as a social setting. This was a form of situated learning in which learners were able to construct new knowledge of sanitation practices in the school.

Learning that took place during the training process was characterized by legitimate peripheral participation (Wenger,2007) as learners gained new skills after observing the trainers while cleaning the toilets and in turn were able to take the task and clean the toilets thoroughly by themselves. As such their action enabled them to realize change possibilities which were appreciated by learners and educators in the school.

However, learners and educators were also able to discover some barriers that might prevent the practices from being sustained (e.g. inadequate equipment; lack of sustained interest from educators). As one educator indicated, development of a sanitation policy for the Enviro-loo system may be one way of addressing these issues to ensure ongoing commitment to the changed practices.

> ***Recommendation 2:*** *From this analysis I recommend that the Eco-School Sanitation COP continue to value and bring together the variety of interests in sanitation in the school, and to make these visible and open for discussion through engagement with the COP.*

5.4. AVAILABILITY OF SANITATION RESOURCES

The following analytical statement can be made regarding availability of sanitation resources:

Analytical statement 3: Provision, allocation and availability of proper sanitation cleaning resources by the Eco-Schools community of practice help in maintaining enviro-loo systems

As indicated by an educator during one of the interviews, and by the AGES workshop and the WSM Leshika document (Doc 3), it is the responsibility of the management to see to it that sanitation is properly managed and that appropriate equipment exists. The importance of having access to appropriate equipment and cleaning kits emerged as a very important aspect of enabling action competence for improved sanitation management. Before the workshop, late coming learners were trying to clean toilets with water only. During the workshop the school was given equipment as a 'start up' and in the Action Plan the COP identified the need to

supplement the equipment. Without the appropriate equipment, learners would not have been as willing to volunteer for the cleaning, or for training others to do the cleaning.

As indicated above, the Eco-Schools sanitation COP is characterized by power relations (Lave & Wenger, 1991), and has a responsibility for continued school improvement and environmental health (Eco-Schools, 2009, Doc 1). The COP audits, steers, oversees and plans actions for managing the schools' sanitation. As indicated in Chapter 4, part of the responsibility that they took up was to ensure that they planned for the provision of sanitation resources. They were able to seek information from experts. This was seen when they organized a sanitation workshop provided by the AGES consultants that was held on the 26th May 2010 at the school to capacitate the school with information regarding the correct and safe use of enviro-loo systems and to educate regarding the correct operation and maintenance procedures.

During the workshop, it was indicated that proper equipment should be used and that correct procedures should be followed when cleaning the toilets. Training and demonstrations were done. After training, AGES workshop facilitators donated to the school all relevant and proper equipment that should be used during toilet cleaning. In the action plan initiated by educators and the SGB a proposal was made to purchase more equipment. Learners in the COP also reflected on the need for additional equipment, and because of the collaborative structure of the COP their voices were heard, as it was also noted that teachers did not identify this need, probably because they were not directly involved in using the equipment. Jensen and Simovska (2005) in their discussions on action experiences, do not talk about the equipment that might be needed for enabling action competence, neither do Breiting et. al. (2009) nor Jensen and Schnack (1997). This might be because they come from resource rich contexts where equipment is more available. Studies on school sanitation in Southern Africa (Silo, 2010) show that availability of equipment is a critical issue influencing successful sanitation management practices particularly in rural schools. This study also shows this to be an important aspect of action competence development in rural schools.

Recommendation 3: *From this analysis I recommend that the Eco-School Sanitation COP continue its role in ensuring that adequate sanitation equipment is provided and supplied on an ongoing basis. It should engage the school management and the Department of Education on this matter in the longer term so that equipment becomes a standing purchase item in the annual school purchasing systems.*

5.5. USER EDUCATION, TRAINING, MONITORING AND INSPECTION

The following analytical statement can be made regarding user education, training, monitoring and inspection of Enviro-loo systems:

Analytical statement 4: User education, intensive training, support, follow up, monitoring and inspection within the Eco-Schools community of practice fosters action competence in maintaining and managing Enviro-loo system

As indicated in Chapter 1, Enviro-loo systems are supplied in water scarce areas. As shown in Chapter 4, after receiving training themselves from the AGES workshop, Grade 9 learners were training the entire school on the correct use, operation and maintenance of the Enviro-loo systems. The training was interesting, informative and environmental learning took place at the level of implicit messages; stakeholders learned by doing and they also gained environmental knowledge, values and skills (Rosenberg, 2007). As indicated in section 2.3.3 Eco-Schools in South Africa seeks to incorporate the following elements, all of which were evident in the EcoSchools COP, strengthening the educational function of Eco-Schools:

- Action – while learners were playing an active role in hands on cleaning of toilets learning was taking place that was both situated and constructive,
- Community – when presentations were done at the toilets, learning was taking place outside the classroom and as shown by the commitment of the SGB, members of the community were willing to support and participate in the COP's activities.

- Participation – the principle of whole school development approach in managing sanitation was implemented by the COP.
- Curriculum – this study did not investigate curriculum aspects, but it did indicate that teachers carried the 10 Golden Rules into classroom teaching practice, and of course the 'hidden curriculum' of the school was improved showing greater respect for learners through improved sanitation facilities.

The evidence presented in section 4.3 indicates that the training done was intensive. Participants were able to master what was taught. Evidence from observations showed that user education about the Enviro-loo systems; its components; how it works and what will prevent the system from functioning effectively as indicated in AGES (Pty) Ltd. (2010) manual was thoroughly presented by AGES facilitators because participants in turn were able to follow maintenance procedures when working inside the closed Enviro-loo systems and thoroughly cleaned the toilets. Demonstration was a critical aspect of the training, and the training would not have been as successful without demonstrations of what needed to be done.

Data generated from the workshop indicated that the AGES facilitators came into the COP to assist efforts already there. This was critical to the success of the AGES training as the COP were able to provide the internal support structure in the school to further the impact and extension of the AGES training intervention. As discussed in section 4.6 the process will be continued, largely through the initiative of the COP to develop an action plan immediately after the training, and to begin implementation of a training plan as soon as possible after the workshop (the next day in assembly).

It was also noted that the AGES (Pty) Ltd. (2010) staff were willing to continue to assist. The AGES manual indicates that re-training of learners who are not competent with the procedures may be required. The possibility of ongoing support was also noted as being valuable to the educator in the interview, who felt comfortable to call on them in future should the need arise.

An encouraging and supportive attitude in the training was also important, as noticed in when the Grade 9 training team were training other learners to clean the toilets. Observations showed that they were encouraging one another; which are a sign of support within the sanitation COP. It also turned what was previously a negative experience for late comers into a more positive activity in the school.

Various forms of monitoring and inspection also emerged as being very important to strengthen the action competence process. There was monitoring and inspection by the SGB chairperson and six learner observers, as well as supervision observation and monitoring by educators. This system of monitoring ensured that monitoring was done well and that all could contribute. It also helped to strengthen reflection on what was happening as shown in Chapter 4, thus developing further action competence and ideas for ongoing changes in practice. According to the AGES (Pty) Ltd. (2010) manual monitoring should be done by the school management, but in this case, the COP enabled a more distributed, democratic and participatory approach to the monitoring.

It was also evident that those involved in the monitoring developed aspects of action competence personality aspects which according to Breiting et al. (2009) involves more than the intellectual domain. They were aware of the sanitation issue; how to do it; they could search for normative arguments and become aware; they felt courageous and responsible and were prepared and inclined to act (see Figure 2.4, section 2.6).

> ***Recommendation 5:*** *From this analysis I recommend that the Eco-School Sanitation COP continues to find ways of providing user education when needed as it did in the study period, and that the different monitoring practices are continued so that action competence is further developed in the school through the user education, training and monitoring process. Further emphasis can be given to curriculum aspects as it was shown that learners did not all have a full or deep understanding of the differences between sanitation systems and options.*

5.6. DEMORACTIC APPROACH

The following analytical statement can be made regarding democratic approach to sanitation:

Analytical statement 5:

A democratic approach that recognizes and accommodates a variety of stakeholders in a COP structure, fosters action competence that empowers stakeholders in decision-making and makes them responsible partners in fulfilling the objectives they agree to

As indicated in Chapter 4, the Ramashobohle High Eco-Schools Sanitation COP involved learners, educators, SGB members and the Eco-Schools network. Before the workshop, the COP was concerned about the sanitation practices, as reported by the learners' observations. They decided to invite AGES to conduct the workshop to provide further information to the school on how to use the Enviro-loo toilets, particularly because the previous vandalism was a concern to the Eco-Committee. The Eco-Committee agreed to work on the theme of Healthy Living, and to make sanitation a focus of theme.

After the workshop had assisted the COP and its stakeholders with knowledge and first hand experience of how to operate and maintain Enviro-loo systems, there was a lot of enthusiasm within the sanitation COP. Every member was eager to be an agent of change. This was seen when sanitation COP members were involved in training, planning, monitoring and inspection.

The Eco-Schools handbook (Doc 1) encourages hands on participation of the whole school community. Evidence presented in section 4.4 indicated that learners, educators and SGB were all involved in deliberating, observing, and contributing to the COPs activities, reflecting a democratic approach that recognizes contribution of learners and SGB to governance and sanitation management. Such an approach is characterized by aspects of action competence indicated in Breiting et al. (1997) particularly the aspects of visioning, making decisions, and developing the knowledge and commitments for action. Data generated showed that aspects of action competence were seen when the sanitation COP was able to decide on how they are

going to solve sanitation problems in their school through the action plan (AP 1, see Table 4.1) which was proposed and implemented.

The evidence from the data generated indicates that the sanitation COP, while crucially supported by teachers and myself as teacher-researcher, was not teacher centred; the teachers (myself included) were enabling meaningful learning opportunities. All stakeholders were represented and played particular roles, all of which were needed, as pointed out earlier and in Chapter 4. The COP structure was important to enable this, as it created a space where stakeholders could come together and work together on a common domain or practice, and develop their repertoire together (Wenger, 1998) which could be more widely shared. Wenger (1998) states that not all communities are a community of practice, and it is the common interest in the common practice that unites members of a COP. He (ibid) also notes that COPS seldom work if they lose a commitment to democratic process and mutual contributions. Without this structure, and its way of involving all stakeholders, it may not have been possible to ensure participation and a positive approach to sanitation management in the school (as was shown by earlier practices when the COP was not so active in sanitation management).

> ***Recommendation 6:*** *From this analysis I would recommend that the Eco-Schools Sanitation COP continue to function in a manner that involves all stakeholders, and in a manner that allows them to participate in problem solving and solution seeking strategies and action planning, as well as solutions implementation. I would also recommend that more people be encouraged to join the COP as was the case in this study, but also that more attention be given to involving more teachers so that teachers do not lose interest and commitment to the process as this was shown to be a potential problem by one of the teachers. The school should also continue to seek financial support for sanitation management, to hire staff, so that learners are not the only ones responsible for the cleaning work. While it is useful for them to learn about sanitation management practices through hands on learning, school cleaners should ideally be*

employed to assist. Teachers and the school principal would need to address this issue in the longer term.

5.7. WORKSHOPS, SANITATION EXPERTS AND ACTION PLAN

The following analytical statements can be made regarding workshops, sanitation experts and action plan:

Analytical statement 6: Organizing workshops, experts and an action plan by the Eco-Schools community of practice helps in fostering action competence in managing and maintaining Enviro-loo systems

The findings in Chapter 4 reflect the need for sanitation workshops and involving experts who fully understand the ways of using Envio-loo systems in training the school how to manage the sanitation systems. The data from an eco-schools node co-ordinator also revealed that if schools get stuck in environmental projects, a workshop and experts will be invited to the school to come and help. Analysis of data extracted during the workshop confirms that the workshop, experts and action plan helped in bringing **action and change** which according to Jensen and Simovska's (2005, 315) IVAC model develops action competence. The workshop helped the sanitation COP to form visions of a different reality (through the demonstrations) and also to realize the changes that brought them closer to the vision of maintaining and managing Enviro-loo systems in the school over a longer period of time.

The Eco-Schools COP also had some strategies which helped them to bring about changes within themselves, the toilets and the school community. The evidence of this is seen in the process of involving learners in observations before the workshop, and gathering information to share with the school, and also in the process of initiating and implementing an action plan with immediate implementation actions, with mechanisms for monitoring and evaluation.

As shown in Chapter 4, the Eco-Schools COP was able to come up with a feasible action plan of how to address and respond to sanitation issues and *risk* (Beck,1992), decide what needed to be done and also how such actions could best be done in the school. Through this they articulated action possibilities for realizing the changes (ibid) to manage the Enviro-loo systems that were demonstrated and mastered by a few of the COP members during the workshop. The action plan was strategic as it involved the training of other children, thus broadening the involvement in the COPS activities. This was also done through involving everyone in the workshop, and through making sure demonstrations was done to *show* members of the school community how to practice the Envio-loo sanitation management system.

Another strategy used by the Eco-School COP was to involve people in real life problems and practices that were affecting the quality of life and education of learners in the school. The sanitation workshop conducted at Ramashobohle High School, according to Eames et al. (2006) was composed of working on real problems, in this case is the Enviro-loo systems. It was also learner-centred and both the workshop and the action plan initiated were situated and involved elements of legitimate peripheral participation (Lave & Wenger, 2007) because it involved what the sanitation COP and learners already knew and it developed new insights and action competencies (O'Donoghue, 2001).

Drawing on insights provided in the University of Pretoria (2008) text on learning, knowledge was obtained and expanded through active construction of theory and practice. The Eco-Schools COP and learners were able to inherently construct, create, invent and develop their own knowledge, skills and values – a process which was evident during the workshop and the action plan implementation.

Evidence from observations indicated that social learning had taken place; as the entire school had taken note of the changes in sanitation practices, and were learning how to participate in these on an ongoing basis, as shown by the ongoing commitments, practices and planning

processes reported on in section 4.6. This was the direct result of the workshop, and the action plan follow up implementation process planned by the COP.

The literature from Jensen and Simovska's (2005) IVAC model also indicates that development of action competence can be seen when people are able to identify barriers that might prevent them from carrying out their actions; and this was evident during the action plan development. The COP was able to arrange the training in such a way that it involved grade by grade not the whole school because it would not have been easy to train the whole school. The Action Plan was also able to structure participation and show who would be responsible for the actions planned. The strategy was to involve COP members in the first instance in the main activities, and to expand participation through ongoing training. During the workshop and training, facilitators and trainers were also able to communicate to the participants some barriers which according to Simovska prevent actions from resulting in changes (ibid). This was evident during the demonstrations when for example, the inspection lid was opened; pre-preparations before cleaning the toilets were demonstrated and correct procedures were outlined and how the toilets should be cleaned.

After the workshop, the sanitation COP was able to see how important sanitation is to themselves and to other people now and in the future. Data presented in Chapter 4 about learners observations indicated that the sanitation COP were influenced by the workshop because they would be able to compare what was happening before and what should still be done to improve sanitation in the school. This is an indication of vision development which, as argued by Jensen and Simovska (2005) is critical for ongoing action competence development. Data in Chapter 4 shows that action competence development within the COP itself is important for developing broader action competence in the school community. The vision of the COP therefore was important in setting up a vision for the wider school community.

> ***Recommendation 7:*** *From the analysis above, I recommend that the Eco-School Sanitation COP continue to use strategies such as inviting experts, running workshops*

and demonstrations to further strengthen action competence development for sanitation management in the school.

5.8. SANITATION DOCUMENTS

The following analytical statement can be made regarding sanitation documents:

Analytical statement 7: Adequate use; following what is indicated in sanitation documents and guidelines by the Eco-Schools community of practice, foster action competence in managing Enviro-loo systems

Section 2.3 discussed sanitation in detail. The data generated from learners' observations (LObs 4-7.8, 10, 11, 12, 13, 14 & 15) indicated that during Enviro-loo systems cleaning, cleaners used personal protective equipment, tools and cleaning equipment. They followed the directions contained in the AGES (Pty) Ltd. (2010) manual which shows the procedures that must be followed by all maintenance people when performing monitoring and maintenance work on the Enviro-loo system. The manual also showed daily cleaning procedures such as cleaning of toilet pans; cleaning of toilet seat; cleaning of floors, walls, door handles, doors and basins; how to use the various types of cleaning equipment and how to use detergents (ibid). Occupational Health and Safety requirements were noted in order to protect people from the risk to health as indicated in detail under section 2.3 where the diseases and risks people may face from mismanaged sanitation systems are discussed.

The manual showed how bacteria, parasites and viruses can enter the body if the correct procedures are not followed. The WSM Leshika Pty Ltd. (2009) document (Doc 3) indicates the diseases that constitute risks in situations of mismanaged sanitation. Although the procedures were demonstrated as to how to avoid these risks during the workshop, the manual was very useful as a constant reminder, and learners could also use it to read and remind themselves what should be done. Evidence of using the manual was noted during observations and when learners were training the other learners. It was also evident in their cleaning practices. As

mentioned in Chapter 4, they followed the correct procedures (as indicated in the manual) for using three buckets, and for placing the plastics bags for the buckets and equipments at a safe distance from the concrete slab of the toilet. Most of the procedures they followed were stipulated in the AGES Pty Ltd. (2010, 26-29) manual.

The Eco-School guidelines for choosing a theme of Healthy Living, and for forming an Eco-Committee, and developing a school environmental policy were also followed. This helped to develop the structure of the COP as the Eco-Schools Handbook (Doc 1) states that the Eco-Committee should involve all stakeholders in the school. Jensen and Schnack (1997); Jensen and Simovska (2005) and Breiting et al. (2009) do not say much about using learning support materials for development of action competence. As mentioned in Chapter 2, however, they emphasise the importance of knowledge in action competence development. The manuals and the Eco-Schools handbook provided knowledge about causes (sanitation mismanagement), knowledge about effects (health risks and diseases), knowledge about visions (what could be done and how), and knowledge about strategies for change (practical support for what to do). The National Environmental Education Programme (Lotz-Sistika & Raven, 2001) emphasized the importance of resource-based learning in South African environmental education.

> ***Recommendation 7:*** *Based on this analysis I recommend that the Eco-School Sanitation COP continue to make use of Eco-School and other sanitation management resources to support the development of knowledge and action competence for sanitation management in the school.*

5.9. ECO-SCHOOLS PROGRAMME

The following analytical statement can be made regarding the Eco-Schools programme:

Analytical statement 8: The Eco-Schools programme is likely to contribute to the development of action competence for managing sanitation issues.

In section 2.2 I discussed Eco-Schools programme in general, internationally; in Africa and in South Africa and in section 2.3 I discussed sanitation. In South Africa, the Eco-Schools programmes was initiated in a small number of schools, but of now over 1200 schools are participating in the programme, and may affiliate to the programme voluntarily. As discussed in Chapters 2 and 4, the Eco-Schools handbook (2009) encourages the schools' eco-committee to conduct environmental audits and identify which theme the school needs to improve; and also to have an environmental policy to govern and guide the school community. The Ramashobohle High Schools' Eco-schools portfolio document (Doc 2) provided evidence of the school being engaged in such procedures. The portfolio contents included an environmental audit, record of the eco-committee, action projects and the school environmental policy. Although the portfolio had no sanitation policy, the environmental policy also serves the purpose, as shown in Appendix 18.

Chapter 4 illustrated the vital role that the Eco-Schools programme can play in improving a schools' environment. As indicated by Haingura (2009), the programme requires enthusiastic teachers to take the lead for improving the schools' environment, and as demonstrated in Chapter 4, this required more than teachers, but also learners and the SGB members to assist with the programme. Chapter 4 also demonstrated that the Eco-Committee needs to be able to develop Action Plans for the school, and it should be able to implement them in practical ways. Planning is a vital element of successful Eco-Schools COP activities. Chapter 4 also showed that the Eco-Schools COP enabled democratic participation and co-operation amongst stakeholders in creating a healthy school environment, in this case through improved sanitation practices.

As described in detail at the beginning of Chapter 5, the Ramashobohle High School Eco-Schools COP was characterized by social power relations and its condition for legitimacy defines the possibilities for learning (Wals, 2007). Not all the eco-committee members were involved in the action plan; the data indicates that it was only educators who were overseers of the project as the Eco-Schools pack suggest. Educators came up with for example, actions to be taken and who was responsible to implement these contributed positively towards developing action

competence as discussed in Chapter 4. Members participated voluntarily with reference to the environment; this led to a situation where learners also shared a passion for sanitation management, and offered to help with the training, toilet cleaning and monitoring after the workshop. Eco-Schools COP members, especially the learners were able to train the entire school in managing enviro-loo toilets. The data also indicates that the SGB chairperson showed his commitment to the process, and educators who participated in the process also developed enthusiasm and support for the school improvement.

As indicated above, the Eco-Schools Sanitation COP also played an important role in ensuring that the equipment required for cleaning toilets was adequately provided. The evidence presented in Chapter 4, shows that the Eco-Schools programme, through its structure and the way it encourages schools to operate, provides a mechanism for situated and social learning (Wals, 2007) in a school. Learning in the Eco-Schools projects is contextualized in different ways and promotes local environment activities and practices which according to Steffe and Gale (1995) should represent the real world that exists and is important to human beings. Haingura (2009), Odeke (2010) and Chipwhanya (2010), all researchers focusing on Eco-Schools in African schools noted that one of the key problems with Eco-Schools is that it often relies too heavily on one committed teacher. Taking a stronger community of practice focus, as was the case in this study, might help to address this, although it is also clear that my commitment, as teacher researcher, was also an important force in establishing the Eco-Schools programme and its COP in our school. I never felt though that it was my responsibility alone, and as reported in Chapter 4, the Eco-Schools COP structure helped to share the responsibility for action competence development.

> ***Recommendation 8:*** *From this analysis I recommend that the school continue to participate in the Eco-Schools programme, and that in future when the sanitation practices are running smoothly, that the Eco-Committee consider taking on other foci, in line with the recommendations for ongoing improvement and adoption of more focus*

areas towards obtaining an international flag, as recommended in the Eco-Schools programme.

5.10 SUMMARY OF THE STUDY, REFLECTIONS ON MY ROLE IN THE RESEARCH AND RECOMMENDATIONS FOR FURTHER RESEARCH

As indicated in the research question, this research was aimed at understanding how an Eco-Schools Community of Practice could foster action competence for improved sanitation management in a rural school. The detailed descriptions of the data in Chapter 4, and the action competence of members of the COP, as well as the changes in practice, all showed that it is possible to develop action competence through an Eco-Schools COP. As indicated above in the analytical statements, there are various processes that are important, such as involving all stakeholders, using materials provided, ensuring that adequate equipment is available, developing and sharing knowledge and insights, providing opportunities for learning, and working within a structure that allows for a community of practice approach to engage participants in learning and change.

As reported in Chapter 3, I was a participant observer in the process. I was also a member of the Eco-Committee of the school, and had previously encouraged the school to join the Eco-Schools programme. In conducting this research, I consulted key informants first; they led me to the relevant documents to analyze. Thereafter I developed an 11 step research process to assist me to generate data. Each step comprised its own data generation process that was guided by the research goal with the reason why a particular data generating process was used. This 11 Step research design was very important in order for me to separate out the research part of my participation in the Eco-Schools Sanitation COP. It also helped the COP to generate data that could be reported back to the school as part of the process. It also helped me, and the Eco-Schools COP to better inform ourselves of what could be done and therefore to develop our visions and our own action competence.

An important part of becoming more informed was the stage of the research where I analyzed and consulted various Eco-Schools literature (Eco-Schools pack, Ramashobohle High School Eco-Schools portfolio and the Eco-Schools 2007-2008 evaluation report, as well as previous research on Eco-Schools) and NGO sanitation literature from consultants (WSM Leshika (Pty) Ltd. (2009) and AGES (Pty) Ltd. (2010) (after the sanitation workshop at Ramashobohle High School) as the first step. This allowed me to fully understand Eco-Schools and how it could work as a COP, and also the sanitation management practices. These I shared with the Eco-Committee and with the members of the COP, and we agreed to hold a workshop to inform the rest of the school.

A very important part of the research was the focus group interview with all the Ramashobohle Eco-Schools community of practice members. Following this, I carried out interviews with the community of practice key members (teacher and a learner) and supported 6 learners to undertake regular observations. This phase informed us all about the current situation in the school with regards to sanitation management practices. As reported in Chapter 4, this was shared with the whole school during the workshop.

As reported in Chapter 4, the workshop was a significant intervention, particularly because it also included demonstrations, but the Action Plan to follow up the workshop was also very important for implementation and action competence development. After the workshop conducted by AGES consultants; an action plan was drawn up by 4 teachers. I was one of them and I encouraged the development of an action plan that could be immediately implemented.

I continued to support the learners with ongoing observations, although in this phase (after the workshop), other teachers also assisted and supported the learners a lot. The reflection interviews with the teacher from the school management team, and two learners from the community of practice were important as they provided insight into the critical thinking and the sustainability issues of the programme. Throughout the process I was also learning and through the research data I could see into the practices of the COP and I also developed a better understanding of action competence development as the research process unfolded.

Ethics were taken into consideration throughout the process as I obtained consent from all my participants and the School Governing Body. I used triangulation in order to eliminate bias and aid the detection of errors in my research findings and I tried to report any difficulties honestly and openly.

If I were to carry out similar research in future, I would try to include more interviews with teachers, to fully understand everyone's views about sanitation. At Ramashobohle High School, the community of practice was quite actively engaged as is seen in Chapter 4, but some members, especially teachers were reluctant to participate fully in sanitation issues. This was raised by an educator during the reflection interviews. Thus, I would recommend developing a deeper understanding of all the views of the members of a community of practice, as their views influence participation in the COP. I would also have liked to interview more members of the COP in greater depth, but time did not allow for this in this study.

I would also give much more careful attention to generating data from learners' observations. I found this to be a very important dimension of the data generating process, which I did not initially think would be so important. More learners could be involved in ongoing observations, which could provide deeper insights into many of the issues associated with school based sanitation management. It would also be interesting to continue the learner observation research over a longer period of time to see if the sanitation management practices are sustained.

Another way to enrich a study like this would be to consider additional case studies within the municipality using the same facilities so as to understand what different communities are doing and how sanitation is managed in schools. It would be interesting to see if they also use Eco-Schools COP approaches or if they use mainstream school management approaches. From this I would like to see if learners become as involved as they were in this case study.

I would also like to share the recommendations from this study with other schools that are using the Enviro-loo system, as the study has shown that the Eco-Schools programme can support both – action competence development and learning, and improved sanitation management practices in a school. It would also be interesting to research action competence development in the wider school community and in other school communities in more depth as in this study my research on action competence was focused mainly on the Eco-Schools COP members, but the study did point to wider expansion of action competence development to other teachers and learners especially.

5.11 CONCLUSION

In this chapter I summarized and discussed the main findings of the study using a set of analytical statements, which also led to recommendations that were made within the case study boundary. Drawing from this it can be concluded that there are many practices at the Eco-Schools community of practice at Ramashobohle High School that were important for action competence development for improved sanitation management practices using the Enviro-loo system provided at the school. The study has shown that the practices performed were influenced by different interests and knowledge; commitment and the vision that different members of the Eco-Schools community of practice have on sanitation. The work of the Eco-Schools COP was extended into the school, and helped to develop broader action competence amongst more learners and some teachers. After the workshop conducted by AGES consultants, some of the Eco-Schools Sanitation COP members were highly influenced and motivated to participate in the management of the Enviro-loo system because they continued training the entire school even when it was not their responsibility to do so but the responsibility of the school management. That was an indication of the action competence they developed in maintaining and managing sanitation issues in their school. The process managed to change sanitation management in the school from a punishment exercise for late comers, to a pro-active whole school learning process. The Eco-Schools Sanitation COP has also identified areas for future improvements, showing their agency, vision and action competence for ongoing change.

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APPENDIX 1 : LETTER TO THE PRICIPAL AND SGB REQUESTING PERMISSION

Enquiries : Manaka NM
Cell : 0722105050
Student number: g09m4268 (Rhodes University)

1181 Zone 8
Seshego
0742
08 February 2010

The Principal & SGB
Ramashobohle High School
PO Box 4093
Sovenga
0727

REQUEST FOR PERMISSION TO COLLECT DATA IN YOUR SCHOOL FOR RESEARCH PURPOSES IN CONNECTION WITH SANITATION MANAGEMENTMENT FOR THE PERIOD BETWEEN 15 FEBRUARY 2010 TO END OF MAY 2010.

I hereby request for a permission in your school to collect data for my research in the form of different data generation processes.
I am a female teacher teaching in your school and I am a part-time student at Rhodes University studying MEd (Environmental Education) 2009-2010.

I therefore request all the Eco-Committee members from your school to take part in my sanitation project research. Proposed dates will be communicated in due course.
Hope my request will be accepted.
Thanking you in advance.
Yours faithfully

Manaka NM

APPENDIX 2: CONSENT FORM AS SIGNED BY RESEARCH PARTICIPANTS

CONSENT FORM

I Mogadima Ledile Grace an eco-committee member of Ramashobohle High School agree to participate in the sanitation research project that is going to take place in our school. I was work shopped and assured of the legal, confidentiality and ethical considerations of the research and I was made aware that I can withdraw at anytime I want. I therefore bind myself that I will keep everything that is going to take place confidential.

Signature---------- Date-24/02/2010

Witness---M.K Monyeig---------- Date-23/02/2010

APPENDIX 3: FOCUS GROUP INTERVIEWS QUESTIONS (INTERVIEW SCHEDULE)

GOAL 1: INVESTIGATING INTERESTS AND PRACTICES THE COP ALREADY INVOLVED IN

Place: Grade 11B

Date: 24 February 2010 Time: 14H35

1. Tell me about your interests about sanitation and why do you say so?
2. How would you like sanitation to be managed?
3. What do you do and how do you do in managing sanitation?
4. How often do you clean your toilets?
5. What practices do you think can improve sanitation?

APPENDIX 4: FOCUS GROUP INTERVIEW TRANSCRIPTION

1. **Tell me about your interests about sanitation and why do you say so?**
   Running water in the toilets

   Clean toilets – are healthy

   Kate: supply toilet papers for school learners

   Sir: Learners sharing toilets with educators; for proper supervision, if educators come in ...aware

2. **How would you like sanitation to be managed?**
   Like our homes, be clean....show that there are people

   Hire cleaners

   Sir: Suggesting a committee composed of two SGB members, teacher and two members from learners in the eco-committee so that they can be overseers or supervisors of these toilets reporting if ever they are not clean.

3. **What do you do and how do you do in managing sanitation?**
   Linda: I will make sure that I erase every mistake I do in the toilet, for example, pick papers on the floor

   Mercy:

   Linda: Like another as stated that o tla (you will) flushing, I think if our eco-committee I will make sure that I flush or clean the mess

   Request workers ...encourage learners keep toilets clean

   Sir: in part of the solution, it will be regular meetings with the learners and educators so as to update each other gore how to go about using those toilets, using those facilities and also to raise some of the challenges ehh...problems that we encounter because to....through regular education our learners and also our educators can be able to know what are the challenges we are facing on daily basis so we have got...

4. **How often do you clean your toilets?**
   Sir: this is haphazard, there is no progress in all the... the only people we use are who come late. So if you use people who come late it means there is no progress... and as such we need to develop our programme of cleaning those toilets because even if you use late comers, let me say at least twice or thrice a week, so latecomers will be ...but of now there is no progress

   Maria: Are we not supposed to clean toilets every day?

   Maria: What if learners don't come late?

   If the school can't afford to pay, the eco-committee should divide them

If possible every day, after school, morning

Sir: I think a tle afterschool, if a tlile after school, the following day there is no needing gore a tle (to come).

Linda: Nna I think ye e leng (the) practical ke after school so ge re bolela ka (whe we speak of) the cost part of it ...

Maria: Water shortage, what to be done?

5. **What practices do you think can improve sanitation?**
Linda: I think yo ba didebate gohle mo...

Sir: Conscientice the learners gore ditoilet tsela ke tsa bona (toilets are theirs), if you mess that is your own mess it up you are messing it up for your own; you may mess it gonabjalo (now), ka third period o a ya wa kereya e le gore ona le (you have an) emergency may be teng is running o a tshologa, then you are going to come back complaining gore gore hee ga di clean ditoilets whereas ke wena o mesapileng. So I think the best thing is to conscientice ourselves gore ditoilet tsela ke tsa rena , ge re sa di hlokomele ge re (toilets belongs to us we have to take care...re a itetela ka borena (we are wasting our time)

The second thing ke taba ya go conscientice the learners gore when they come back from the toilet it is very much important gore matsogo ahlapiwe (wash their hands).

Buy tanks (jojo)

Buy gutters

Sir: One suggested ka mo diklaseng gore re rwale meets ka mabotlelwana a dilitre tsona tsela, because if you go back to India every learner o ya sekolong a swere two litre ya meets or nkare quarter, I think every learner even if ...so if we can adopt that style that... ge o enwa is part of your hygiene ge o hlapa matsogo o etswa toilet, you won't be complaining o re ga go na meets because you know gore you have got your own. Maybe they come up with bottles

APPENDIX 5: EXAMPLE OF INTERVIEW CONTACT SHEET WITH RECORDED INTERVIEW ANSWERS

Contact Summary Form

Type of contact: Mtg Antoinette 22.04.2010 SITE----------

Who, what group | place | date | coder----------

Cell ---------- | ---------- | ---------- | date coded----------

With whom, by whom | place | date

Inf. Intr---------- | ---------- | ----------

With whom, by whom | place | date

SALIENT ISSUES DISCUSSED | OUTCOMES

1. About Eco-Schools programme - Environmental programme
2. Eco-Schools Expectations - Teachers and learners to take part in decision making
   Creative ideas e.g compost toilets to sustain veg. garde
3. Sanitation - Schools try
   - Blocked toilets not fixed
4.
5.

APPENDIX 6: EXAMPLE OF INTERVIEW QUESTIONS (INTERVIEW SCHEDULE)

TRANSCRIPTS FOR INDEPTH-INTERVIEWS SCHEDULE

GOAL 2: INVESTIGATING WHAT KNOWLEDGE AND INSIGHT COP HAVE ON SANITATION MANAGEMENT

1. What risks do you think people my face in using mismanaged sanitation? If any what
2. Do you think the problems/challenges you faced emanated from learners, teachers, school management or the community and why?
3. Tell me of the objects you think are not allowed to be placed in the toilet pit and why?
4. As an eco-committee, what will you do to manage sanitation practices in your school?
5. Any idea of anything you use as a guideline in managing sanitation.
6. What will you do if the toilets become full?
7. Tell me about any idea of what to do with the bottles of enzymes in the principal' office.

APPENDIX 7: EXAMPLE OF MY FIELD NOTES

Grade 9B class.

26/05/2010. Sanitation Workshop

- Operation and Components of Enviro-Loo
- Basic maintenance & monitoring of the enviro-loo facility.
- 12 Golden rules *.
- ~~[illegible]~~
- Demonstrations of the toilets.

04.06-2010 - Env. meeting.

1. Training programme — Gr 8. & 9.
   — 10/11 - Tuesday.
2. ~~Abe~~ Third quater. — first week - Thursday 11
   Tuesday - 12
* Operational rules to be displayed in each cubicle
   — ~~to be photo~~ A3 photocopy
3. Cleaning & supervision *
   * Twice a week
   * gloves, mask etc to be bought.
   * checking
   * supervision will be done by learners.

APPENDIX 8: LEANER OBSERVATION SHEET USED FOR Lob 1-2

OBSERVATION SCHEDULE: FIRST TERM

School: Rumuruti Boys High School

Name of observer Modiba Tebogo

Grade 10A **Date: 15- 26 March 2010** Lob 1

Time: Morning/ During lessons/ Break/ After school

Toilets: Learners (Male/Female)

Educators (Male/Female)

Learner/s observed (girls/ boys)

Educators observed (male/ female)

Preparations done: Toilet papers☐ clean floors ☒water & soap (for hands) ☐

Dust bin☐ Wet mop (for mistakes made on the floor) ☐

Posters

Which posters were displayed on the toilet walls? information on how to use them

Are they in good condition? No, they are unhygienic

Are they useful? Yes, because we relieve ourselves in them

Do they provide information on how to use the toilet?
they did in the beginning but now the learners demolished the posters

Movement

Did majority of the learners go to toilet? Yes,
because it is a place where we relieve ourselves

Are toilets seats closed after using the toilets? No, they cant because some them are broken.

Movement (going and coming back): lots of going movement

Why such movement? Because some boys smoke in the toilets

Minutes taken: 15 to 30 minutes

Washing of hands

Are hands washed after using the toilet?
Sometimes **If not why?** the ~~tap~~ water will not be available ~~will not be getting~~

How often is the water checked to improve hygiene?
The water is purified and chlorinated from the p...

How often do learners go to the toilet? mostly during break.

Evaluation:

Describe the state of the toilet after it was used.

The toilet is full of waste on the seats and that is totally unhygienic and it could cause a lot of diseases such diarrhoea and other harmful ones

What help was given to learners without toilet papers?

No help was provided but the school asked them ~~tait~~ fairly to bring toilet papers to school with them

Expectations

Water with soap must be provided in the classes to improve hygiene and germ free enviroments and this would improve low of ~~di~~ diseases

Outcomes

This would provide good hygiene practices towards our learners not only in the school but in home too for them to live ~~dis~~ healthy lifes

Any other relevant comments

This must be done immediately as we started on the feed programme in our school, so this would be useful to know how to protect themselves from diseases.

OBSERVATION SCHEDULE SECOND QUATER.

School:-Bamahobini hil High School------------------

Name of observer-Bamchuale Phyllis-----------------

Grade-12^A------------ LOb 2

Time: Morning/ During lessons/ Break/ After school

Toilets: Learners (Male/Female)

Educators (Male/Female)

Learner/s observed (girls/ boys)

Educators observed (male/ female)

Preparations done: Toilet papers☐ clean floors ☐water & soap (for hands) ☐

Dust bin☐ Wet mop (for mistakes made on the floor) ☐ none

Posters

Which posters were displayed on the toilet walls? --Instruction posters----

Are they in good condition? --yes------------------------

Are they useful? --yes to others---------------

Do they provide information on how to use the toilet? yes

Movement

Did majority of the learners go to toilet? --Yes---------

some go just because they don't want to attend a certain period

Are toilets seats closed after using the toilets? --No----------------------

Movement (going and coming back):--Yes----------------------------------

Why such movement?--to urinate / to dotch a certain period

Minutes taken: 10 to 15 minutes

Washing of hands

Are hands washed after using the toilet?

--------No---------- If not why?--There is lack of water----------------

How often is the water checked to improve hygiene?

-Ther water is not checked at all---------------------------------

How often do learners go to the toilet? During / After break---------

Evaluation:

Describe the state of the toilet after it was used.

Saliva on the pieces, urine on the seats and sometimes on the floor also, and you can also find feaces on the sides of the seats sometimes even blood is also found.

What help was given to learners without toilet papers?

Learners without toilet papers are given no help at all

Expectations

The school should have people who will clean these toilets because it its not healthy for us as learners to go in these dirty toilets we also need privacy but we can't have one because there are no doors.

Outcomes

I have realised that nothing is being done about these stinky dirty toilets, and we should also be supplied with toilet rolls.

Any other relevant comments

some of the learners get sick because they inhale dirt every minutes they go to the toilets. The reason being that they are so duty that they think where by they lead to illnesses of some sort.

APPENDIX 9: WORKSHOP INVITATION LETTER WITH AGENDA

Enquiries: Manaka NM

Cell : 0722105050

1181 Zone 8

Seshego

0742

23 May 2010

To: Ramashobohle High School Sanitation COP

Subject: CANCELLATION OF WORKSHOP AND INVITATION TO ATTENT ANOTHER SANITATION WORKSHOP AT RAMASHOBOHLE HIGH SCHOOL

You are hereby informed that the sanitation workshop which was scheduled for the 17th of May 2010 is postponed to the 26th May 2010.

Time: 11h00

The Workshop will be facilitated by **AGES Consultants** from Polokwane.

Attached herewith find **Agenda** for the workshop.

Sorry for the inconvenience this postponement might have caused.

I am hoping for your positive response.

Thank you.

Manaka NM

APPENDIX 9 CONTINUED

SANITATION WORKSHOP PROGRAMME

DATE 26TH MAY 2010

VENUE: RAMASHOBOHLE HIGH SCHOOL GRADE 9B CLASS

TIME: 11H00.

Agenda

1. Opening & Welcome
2. Introduction & roll call
3. Presentation by Maria:
    - How Eco-Schools works
    - What is action competence
    - Presentation of data collected
    - Ramashobohle High Schools' sanitation history
    - Way forward
4. Presentation by AGES facilitators
    - 4.1. *Operation and Components of Enviro-loo systems*
    - *4.2. Basic maintenance and Monitoring of the Enviro-loo systems*
    - *4.3. 12 Golden rules*
    - *4.4. Practical demonstration at the toilet*
5. Closure

Appendix 10 : Copy of 10 Golden Rules

3. USER EDUCATION

3.1 OPERATIONAL RULES

- The operational rules must be followed by all users
- This will reduce excessive maintenance costs and the sustainability of the Enviro Loo system
- The **12 Golden Rules** poster may be prominently displayed (EL 002)

Rule 1: **Do not take food and beverages into the facility**

- It is a health risk to eat and drink inside a toilet facility
- There may be germs present inside the facility which may contaminate food and beverages
- Eating and drinking inside the facility often leads to littering

Rule 2: **Do not dispose of foreign objects inside the toilet pan**

- Disposal of foreign objects such as bottles, plastic items, stones and sanitary towels into the toilet fills up the drying area, as these objects do not break down or dehydrate
- This leads to higher maintenance costs as the drying areas need to be emptied more often
- All objects inside the drying area are contaminated by sewage and must be disposed of at an authorized sewage disposal facility. These facilities are reluctant to accept sewage which contains foreign objects
- Foreign objects inside the drying area pose a major risk to the health and safety of maintenance staff responsible for removing the solid waste from the drying area:
- Some of these foreign objects are sharp and heavy and appropriate equipment and tools are not always available to remove these objects safely
    - Authorised sewage works do not accept sewage which contains foreign objects
    - Maintenance staff must then separate the sewage manually

Rule 3: **Do not stand or sit on toilet seat lid.**

- The toilet seat is made from plastic and is fragile
- The toilet seat may break when used incorrectly

Rule 4: **Do not stand on the toilet seat ring**

- The toilet seat ring is designed to sit on. It will break when used incorrectly
- Standing on it will cause it to break and may also cause injury

Rule 5: **Use only commercial toilet paper and dispose of used toilet paper in the toilet**

- Toilet paper eventually breaks down
- Newspaper and other materials only dehydrate and do not break down. It accumulates inside the toilet pit and causes the pit to fill up faster than it should
- The system needs to be emptied more often when these materials are used
- This leads to higher maintenance costs

Rule 6: **Clean the toilet seat ring after use**

- Wipe the toilet seat with a piece of clean toilet paper before and after use
- The toilet seat needs to be kept clean for hygienic purposes
- Boys should remember to lift the toilet seat ring when necessary

Rule 7: **Close the toilet seat lid after use**

- Air circulation works more effectively when the toilet seat lid is closed
- This improves the drying process of solid waste as it dries much faster

Rule 8: **Do not pour liquids or any chemicals into the toilet pan**

- Pouring water and other liquids into the system causes the liquid level in the liquid holding area to rise faster than it should
- This leads to higher maintenance costs, as it needs to be emptied more often
- Liquids prevent the solid matter from drying out effectively
- Chemicals interfere with the enzyme action within the system

Rule 9: **Wash your hands after using the toilet and clean the basin**

- Excrement contains harmful micro organisms
- Hands must always be washed with soap and water after using the toilet
- Rinse the basin after use

Rule 10: **No smoking inside the facility**

- Smoking inside sanitation facility may cause fire
- Throwing cigarette butts into toilet pit may ignite the toilet paper inside the pit and cause a fire
- This may endanger the lives of people and cause damage to property

Rule 11: **Do not vandalise the facility**

- Vandalism of public property is a criminal offence
- Vandalised facilities may pose health and safety hazards to users and may cause the facility to stop operating effectively
- Vandalism of facilities leads to unnecessary repair and maintenance costs
- It is the responsibility of all users to ensure that the facility stays in a well maintained condition

Rule 12: **Do not open or sit on the inspection cover**

- Air circulation is more efficient when the covers are down and the top unit is closed
- There is sewerage inside the container. Opening or breaking the inspection lids may cause exposure to this sewerage, which may cause disease
- Open or damaged inspection covers provide access for mosquitoes and rodents to the system

School Sanitation Program User Education	EL 007
Cleaning Schedule and Record for the Sanitation Facility	
School Name: RAMASHOBOHLE HIGH SCHOOL	

This form must be completed by the person responsible for cleaning of the facility after daily cleaning to ensure all blocks and cubicles are clean. Please indicate the status with the symbols below:

✓ *-DONE and IN ORDER* **X** *– NOT DONE and NOT IN ORDER*

Block Nr

Date	Time	Toilet Pans cleaned (Inside and outside)	Toilet Seats cleaned	Floors cleaned	Doors and handles cleaned	Walls cleaned	Basins cleaned	Waste bins: cleaned	Windows cleaned			Cleaner Signature	Supervisor (Educator)
03 June 2010		✓	✓	✓	✓	✓			✓			Caroline [illegible]	
09 June 2010		✓	✓	✓	✓	✓			✓			M A Hkoana	
15 July 2010		✓	✓	✓	✓	✓			✓			[illegible]	
20 July 2010		✓	✓	✓	✓	✓			✓			[illegible]	

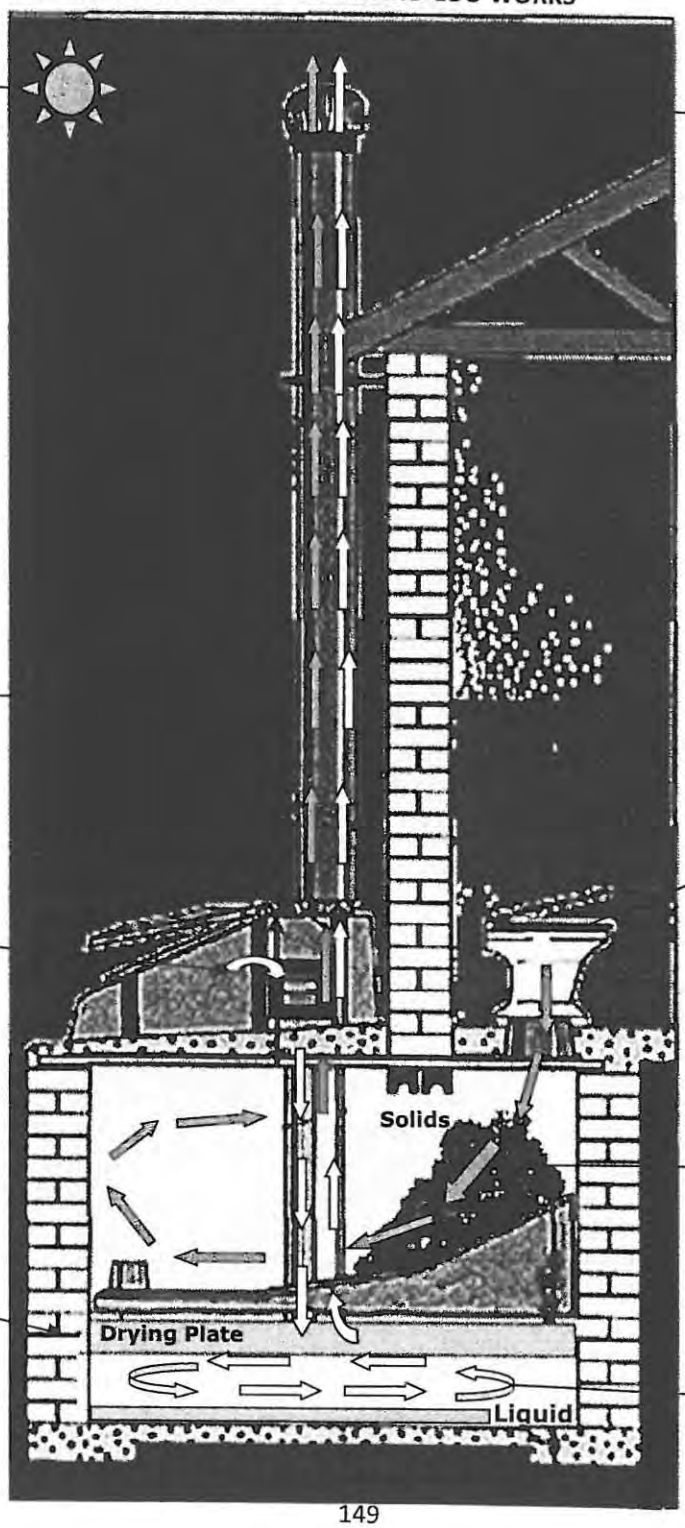
School Sanitation Program User Education	EL 008
Inspection Record of the Enviro Loo Facility	
School Name: RAMASHOBOHLE	

The Enviro Loo Facility needs to be inspected weekly. Please indicate your findings with the following:

YES – IN ORDER **NO** – NOT IN ORDER BLOCK 5

Date	Wind master moving freely	Vent Pipe in good condition and securely fastened to wall	Bracket in good condition and secured to wall	Top Unit in good condition	Inspection cover in good condition and securely fastened	Toilet seats in good condition	Toilet Pans in good condition	Windows in good condition	Doors and Doorhandles in good condition	Basins and water pipes n good condition	Floors and roof ion good condition	Inspection performed by
26/05/10	YES	YES	YES	Y ~~NO~~	NO	NO	YES	NO	NO	NO	NO	[illegible]
03/06/10	Yes	Yes	Yes	Y	NO	NO	Yes	NO	NO	NO	NO	V.T. Selapa
08/06/10	Yes	Yes	Yes	Y	NO	NO	Yes	NO	NO	NO	NO	V.T. Selapa
15/07/10	Yes	Yes	Yes	Y	NO	NO	Yes	NO	NO	NO	NO	V.T. Selapa
20/ /10	Yes	Yes	Yes	Y	NO	NO	yes	NO	NO	NO	NO	V.T. Selapa

APPENDIX 12: DIAGRAM SHOWING HOW THE ENVIRO-LOO WORKS



Sunlight

Forced Extraction Ventilation

Sunlight **Heats** the Black Inspection Cover

Continuous Ventilation promoting **Dehydration** and **Evaporation**

Airflow through **Vent** to **Liquid Holding Area**

Solids (excrement) accumulate on top of the **Drying Plate**

Liquid drains through **Drying Plate** to **Liquid Holding Area**

Airflow over **Liquid Surface**

APPENDIX 13: EXAMPLE OF TRANSCRIBED INTERVIEW

Interviewer: Maria Interviewees: Linda, Tshepo & JC Date: 28 September 2010 Time: 14H00

1. **When learners were training the entire school community on how to use and manage Enviro-loo toilets, do you think the school community understood/mastered what was taught? Please motivate your answer?**
   Linda: Yes, they did mastered what was taught, and that's why we see them committing everything they were taught how they use Enviro-loo cleaners. They use it perfectly like the way they have been taught.
   Tshepo: No, because we are still having some children misusing the toilets.
   JC: Ja, I think they did understand because ever since after the training there has been a marked improvement on the cleanliness of the toilets... we cleaned them two weeks back and they were not that dirty.

2. **Right now are you satisfied with the way the school community responds to cleaning and operating toilets in your school and why?**
   Linda: I am satisfied about the cleaning; the response of cleaning is amazing and it reduces the risk of getting all the ... and everything.
   Tshepo: No, because the toilets are cleaned after a long time, and again we still having mismanagement of toilets.
   JC: Not quite happy with the way we did as a school because there is reluctance on part of educator population, normally we clean them as a form of punishment but all the same there is reluctance.

3. **The expected life of Enviro-loo toilets is 50 years. Do you think the practices you are implementing in managing sanitation in your school will sustain the toilets? How sure are you?**
   Linda: Ja, but ...not very sure because some pupils after cleaning there is still that smell and the stains can not be removed.
   Tshepo: I don't think so, like I said there is still mismanagement of toilets for example,...
   Maria: Is there anything you think should be done to avoid such mismanagement?
   Tshepo: I don't think there is anything we can do because we have already talked to the kids.
   JC: Yes, I think it will really sustain the toilets, because ever since the training of AGES some people came here who were operating the services of emptying those toilets and as such I think we can just score on that particular way of calling them whenever they are full... As of know the toilets; they are still in better condition compared to some others who were vandalized.

APPENDIX 13 CONTINUED

4. **If the toilets become full what are you going to do?**

   Linda: ...I think we can use the pit toilets because water in the toilet is not allowed and we know gore [that] water is the organic ye e le go gore [that] it can take down all those faeces and create a space for toilet.

   Tshepo: We will get someone to open the inspection lid, take out the faeces and faeces will be used as fertilizers in the school garden... someone who has experience of using Enviro-loo toilets.

   JC: As I have already indicated in my previous response, we have got people who came here and we have their contacts but we don't know their names but I will check their business card.

5. **How will you respond to someone who does not manage/operate the toilet well?**
   Linda: I will exactly and seriously sit with that person down, tell him/her about the risk she is getting herself to and not only herself but other people.
   Tshepo: A person should be reported to the teacher concerned.
   JC: Because we already did training on our learners on how to use the toilets, it might be may be the message did not go across to that particular person , so may be as a form of being pro-active we can also retain that particular person to say this is how we use this toilet because I remember as a school we always work with learners, sometimes they may be absent when others were trained or it might be lack of knowledge, but if that person has got knowledge, some further steps must be taken.
6. **So far do you think the strategies you have already implemented in improving sanitation in your school will sustain the toilets?**
   Linda: The Enviro-loo cleaner, like, it make sure that and those smells there, those bacteria, those things they get are reduced and happy so and happy ending that will create less chances of getting all those (bacteria).
   Tshepo: I think it will sustain the toilets, but we are still having some problems.
   Maria: How will you overcome such problems?
   Tshepo: I think we will have to teach the kids how to use the toilets.
   JC: Yes, I think so, it will sustain the toilets because to a large extend our foundation; that is the Grade 8 & 9, they really understood how to use the toilets and if we keep them they still have a lot time to spend until they pass Grade 12. I think is a better foundation.

7. **According to you, what is it that you think should still be done to improve sanitation besides what was already being done?**

APPENDIX 13 CONTINUED

Linda: Really, but flushing toilets, the flushing toilets doesn't get any monitoring, they can improve sanitation. You don't have to monitor somebody to clean the toilets or something like that, just knows gore [that] if I go there I will flush the toilet and the toilet will be clean.

Tshepo: Besides what was already being done kids still need basins and propersanitation in the toilets, for example, water in the toilets.

JC: One, for starters we can have the basins for washing hands especially at the toilets. Two, provision of running water nearby and the provision of soap. I think those are the three critical things.

8. **As your school is an Eco-Schools, Eco-Schools requires schools to have environmental policy and your project you are involved right now is on sanitation; which means you also need to have a sanitation policy because it is one of the sustainability practices that will help you to improve sanitation. Do you have such a policy? As you are part of the sanitation community of practice, who would you include in drafting that policy; and how would you like that policy to be? Briefly explain.**

Linda: Not really, I don't think so...forming part of the committee?

Maria: What will you include?

Linda: I will include ...to some people who know much about life, some people who know much about life skills and how to live, how to clean and how not to do this and again I would like to include the powerful ...if this was something more than the Enviro-loo cleaner, I will say something more powerful than that.

Maria: Right now we are talking of the policy; something that you write, you draft the school policy. I wanted to know what will you include in that policy? Besides inviting experts to come and workshop you, I want to know gore [that] when you draft the policy, what is it you will write?

Linda: ....

Tshepo: Ja, we have got sanitation policy.

Maria: Who drafted the sanitation policy?

Tshepo: It was drafted by the people of AGES.

JC: Ja, this is one more thing we did not give much attention to, we were just work shopped and work shopped the learners but we did not come and draft the policy in that regard. I think this is a critical factor we should do so that the learners could be able to know what is expected of them.

Maria: What will you include in that policy?

JC: Generally is the conduct of learners when they are there using those facilities.

The program of cleaning the loo is critical. The apparatus that need to go with cleaning and also that need to go with learners when they use those toilets. I think they are very critical and also how to leave the toilet after using them is also of the things to be included in the policy.

APPENDIX 13 CONTINUED

9. What are you doing to ensure that your toilets are properly managed, monitored and well cared?

Linda: We clean our toilets every Friday and we make sure that we use the cleaning kit and once in a month the president of the school addresses us on how to use the toilets, how to manage and how to take well care of them.

Tshepo: Hmm... on a, probably on ... I should feel a monthly basis we have the people who go to the toilets and clean them and we have people who monitor the cleaners to make sure that they clean everything well.

JC: For starters, I think we can reinforce the involvement of our learners because they are used more by them, they should take care or whether through the committee or through the RCL we can reinforce.

10. Using mismanaged sanitation put people at risk. Do you think the sanitation management practices you are implementing will really protect people against risk and why do you say so?

Linda: Yes, firstly I can mention the Enviro-loo cleaners because there is no smell and we know gore [that] the smell in the toilet can really affect people. They can affect their life, lungs, their breathing organs because they are made to do that job and they are keeping people out of risk, away from risk.

Tshepo: Yes, because we encourage kids to wash their hands after using the bathroom and will reduce germs on their hands and we also have kids or people who work in the toilets so as to improve health.

JC: Ja, to a certain extend it may protect them, but, remember we can not protect the toilets 24 hours.

The response from the question of challenges they are facing in managing sanitation was:

11. **Right now I take you as a sanitation overseer in your school, if officials from the department come to your school and accuse your school of mismanaging sanitation, how will you respond to them?**

Linda: Accusing us of mismanaging the toilets? I will really be amazed because I think everything we are doing now, everything we do to clean those toilets, we are making everything to making sure that those toilets are clean and if they come to us and accuse us of mismanaging them, I will think they have changed their way of cleaning because I think we are following the right procedure in managing those toilets.

JC: I wouldn't necessarily agree or disagree because on the part of ourselves I think we are taking care of the toilets, cleaning and making sure they are locked and maybe we can be accused of not cleaning according to expected results; at least we are taking our part; closing them in the afternoon and opening them in the morning."

12. **What challenges are you facing in managing toilets and what alternatives do you think can overcome such challenges?**

Wow! People throw their pads in there; girls! And the means that can overcome this challenge is; if the government produces the toilet paper so That every learner who goes to the toilet is given a piece of toilet paper. I think we can overcome the challenge and when coming to girls with their pads and I think the dust bin can help.
Tshepo: The only challenge we are facing is mismanagement of the toilets and we don't have basins in the toilets.
APPENDIX 13 CONTINUED

JC: The question of reluctance on the part of educators becoming involved is our biggest challenge in supervising learners. I think is the biggest challenge is on reluctance on the part of educators to help , because one cannot be do alone, it needs number of educators to help."

13. **Consultants from AGES gave you toilets cleaning kit after the workshop, having all that kit, what else do you think you also need and why?**
Maria: Have you ever talked as sanitation committee about the toilet papers?
Linda: Not really; like something we think of and never talked about. The musk, we have not more than two, and the risk are high of getting that smell. One more thing are the gloves and importantly we have only one brush.
Maria: If my mind serves me well, when planning was done; the action plan, educators said they will buy extra equipments.
Linda: No, as I am talking right now we have only one brush to clean boys and girls toilets.
Tshepo: I don't think there is anything that we need because the kit (AGES consultants) gave us serves a lot.

JC: I think in addition to what has been provided the face musk is the first thing we need so that we have two; we need also additional three brushes to clean the toilet.

14. **According to you what is a perfect toilet? Why?**
Linda: Smelling nice, clean and well managed from inside to the outside following every rule that the AGES have wanted everybody to follow and like not even making single mistakes of throwing paper in there; that is a perfect toilet.
Tshepo: A perfect toilet is a toilet that is clean and has basins available and is always a perfect toilet.

JC: Is non existence but I think a mere perfect toilet can be one which has got running water nearby and after reliving yourself you get a soap and wash your hands there, two it must be a toilet that is clean or cleaned regularly if it is not clean at that moment and three it must also have all the provisions that we need like using like toilet papers it must also be provided there, and the toilet that is well taken and cared of. I think in that regard and we can have a tissue paper there, and if we have running water there and the basins are almost clean and the floor also clean in a way we can have mere perfect toilet."

APPENDIX 14: Sample of Analytic memos

Category 1

Colour code	Category
Green	Eco-Schools community of practice
Violet	Action competence
Red	Sanitation

What Eco-Schools community of practice does?

Sub-categories	What was being done before the workshop?	What is being done after the workshop?	What should still be done?	Code
School environment improvement	• General school improvement	School environment improvement	School environmental improvement	Doc 1
Provision of cleaning and maintenance kit	No provision of cleaning kit Late comers clean the toilets without proper	Provision of [redacted] from AGES consultants Grade 8 & 9 learners are provided with [redacted] for [redacted] toilets	Provision of cleaning and maintenance kit Itinerary to be compiled by SANCOP and provide cleaning and maintenance kit	W1 FGI 1
School environmental policy	Eco-committee do school audits and draft school environmental policy	Eco-committee do school audits and draft school environmental policy	Eco-committee do school audits and draft school environmental policy	Doc 1 Doc 2
Maintenance, inspection and training	No monitoring was done No inspection was done Level of solids was not measured 12 Golden rules were never displayed in the toilets Demonstration on how	Basic maintenance and monitoring is done 8mm spanner is use to open the inspection lid Level of solids is measured using a rake 12 Golden rules are [redacted] in the toilets and class rooms	[redacted] should be done [redacted] should be done using 8mm spanner to open the inspection lid Level of solids to be [redacted] 12 Golden rules should be [redacted] in the toilets	Doc 3 W1 Doc 3 W1, LObs 3,4,5,6,7 W1, Lobs

	to clean the toilets and monitor the toilets was never done	Demonstrations and training on how to clean toilets was done	Demonstration and regular training on how to clean and maintain toilets should be done	1,2 W1, Lobs 3,4,5,6,7
Monitoring	No monitoring tool was never used	EL 007 cleaning and record schedule is used to monitor: • Cleaned pans • Cleaned toilet seats • Cleaned floors • Cleaned walls • Cleaned windows EL 008 inspection record schedule is used to monitor whether: • Window master is moving • Ventilated pipe is in good condition • Bucket is in good condition • Inspection cover is in good condition • Toilet seat in good condition • Toilets pans are in good condition • Windows in good condition • Doors and door frames in good condition	EL 007 cleaning and record schedule should be used to monitor: • Cleaned pans • Cleaned toilet seats • Cleaned floors • Cleaned walls • Cleaned windows EL 008 inspection record schedule should be used to monitor whether: • Window master is moving • Ventilated pipe is in good condition • Bucket is in good condition • Inspection Wicover is in gooW1d condition • Toilet seat is in good condition • Toilet pans are in good condition • Windows are in good condition • Doors and doorframes are in	W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1 W1

		• Floor and roof in good condition	good condition • Floors and roof are in good condition	W1

Analytic memo category 2: Action competence

Sub-category	SGB members	Learners	Teachers	Code
Interests		[redacted]	[redacted] (FGI 1. 3)	FGI 1
		[redacted]	[redacted] (FGI 1.4)	FGI 1
		[redacted]	[redacted] (FGI 1.4)	FGI 1
		[redacted]	Committee composing of SGB, educators and learners (FGI 1.4)	FGI 1
		[redacted]	Water tank (jojo) to store water (FGI1.4)	FGI 1
		[redacted]	[redacted] (FGI1.4)	FGI 1
		[redacted]	[redacted] (FGI 1.4)	FGI 1
		[redacted]		LI 1.1
	[redacted] from home on how to keep toilets clean			EI1.1
Knowledge and insights	Open inspection lid when [redacted] and [redacted] (W 1)	[redacted]		W1 LI3 Lobs1.8,10, 11,12 13,15

		1,8,10,11,12,13,14		Doc 1
			Monitoring learners(Doc 1)	
			Facilitate action projects (Doc 1& 2)	Doc 1& 2
		Clean toilets following correct procedure using relevant equipments		LObs 3.8, 10, 11,12, 13, 15-LObs 7.8, 10, 11, 12,13, 15
			Organise workshop, advice from experts with the help of node coordinator (NCI 1)	NCI 1
				NCI 1
			Encourage learners to take part in decision-making	
		Train other learners		LObs 3,LI 2.3
		Some did not put on working suits when training other learners (LI		LObs3. 12,15
		Risk people may phase are diseases such as malaria and cholera		LI1.1
		We will get someone to open the inspection lid, take out the faeces and faeces will be used as fertilizers		REI 2.2
			...we have got people who came here and we have their contacts	REI 2.1
Commitment	Fix pavements outside the toilets, cut grass and trees (AP 1)			AP 1
				LObs 1-7
		Sweep floor before cleaning toilets (Lobs 1-7)	Supervise	Doc 1,2
			Encourage	Doc 1
	Inspection monthly- toilets and cleaning equipments (AP)			AP 1

	Measure the [redacted] (W1, AP1)	[redacted] Train other learners how to [redacted] toilets [redacted] (Lobs 1.13,12 sol & vision [redacted] (Lobs 1.11johana We see them committing everything they were taught		AP1 W1, AP 1 AP 1, LI 3 LObs 1.12, 13 LObs 1.11 RLI 1
Vision	Planning with eco-committee (DOC 1,2) Inspection and monitoring of toilets (W1)	[redacted] (W1) Practical demonstrations to other learners and educators (W1, AP1)	Put golden rules on the boards in classes and toilets (W1, AP1)	Doc 1, 2 LObs 3-6.8, 10, 11, 12, 13, 15 & W1 W1 W1 W1, AP 1 W1, AP 1 Doc 2

		Clean toilets using different cloths (W1) Put on hair nets and working suit when cleaning toilet (W1) Clean and rinse all the equipments used after cleaning the toilet (W1) Throw water away after cleaning (W1) Use form EL007 and EL008 to monitor and check how toilets were cleaned and the condition of toilets as a whole (W1, AP1)	Planning (DOC2) Monitoring (DOC 1,2,AP1) Stock taking for cleaning kit (AP1) Buying cleaning kit (AP1)	W1 Doc1, 2 & AP 1 W1 AP 1 W1 AP 1 W1 W1, AP1
Action experience	Provide inputs (Doc 1) Monitoring (Doc 1)	Involved in projects (cleaning toilets) Observe and do monitoring Thorough cleaning Train other learners Use EL007 and EL008 for inspection and monitoring	Assess, advice and monitor	Doc 1 Doc 2, LObs 1-6.8, 10, 11, 12, 13, 15 Doc 1, 2 & AP1 Doc 1 AP 1, LObs 6.8, 10, 11, 12, 13, 15 LObs1-6.8, 10, 11, 12, 13, 15 LI1.3 W1,AP1

Emotional responses, critical thinking and reflection		The response of cleaning is amazing and it reduces risk of getting all the diseases		**RLI 2.1**
			Ever since after the training there has been marked improvement on the cleanliness of the toilets	**REI 2.1**
		Not very sure because some pupils after cleaning there is still that smell and the stains can not be removed		**RLI 2.1**
			I think it will sustain the toilets...we can just score on that particular way of calling them when ever they are full	**REI 2.1**
		I will exactly and seriously sit with that person down tell him/her about the risk she is getting herself to and not only herself but other people		**RLI 2.1**
		A person should be reported to a certain concerned		**RLI 2.2**
			...it might be maybe a message did not go across to that particular person, so maybe as a form of being pro-active we can also retain that particular person to say this is how we use the toilet...	**REI 2.1**
		...it makes sure that and those smells there, those bacteria, those things they get are reduced...		**RLI 2.1**
		I think we will have to teach the kids how to use the toilets		**RLI 2.2**
			... it will sustain the toilets because to a large extend	**REI 2.1**

			our foundation; that is grade 8 & 9 they really understood how to use the toilets...they still have a lot time to spend until they pass grade 12	
			Generally is the conduct of learners when they are using those facilities,...program of cleaning ...apparatus ...how to leave the toilet after using...	REI 2.1
		We clean our toilets every Friday and we make sure that we use the cleaning kit		REI 2.1
		...we encourage kids to wash their hands after using the bathroom		RLI 2.2
		Accusing us of mismanaging the toilets? ...I think we are making everything to making sure that those toilets are clean...will think they have changed their way of cleaning...we are following the right procedure.		RLI 2.1
		People throw their pads in there; girls! If the government produces toilet paper... I think dust bin can help		RLI 2.1
		...we don't have basins in the toilets		RLI 2.2
		Smelling nice, clean and well managed from inside to outside following every rule, like not even making single mistake...		RLI 2.1
			...the face musk as the first thing we need...we need also additional three brushes to clean the toilets	REI 2.1
		A perfect toilet is a toilet		

		that it is clean and has basins available...	...non exite...g...a mere perfect toilet can be one which has got running water nearby and after relieving yourself you get a soap and wash your hands then... clean or cleaned regularly...have provisions ..well taken and cared of...	RLI 2.2

Analytic memos category 3: Sanitation practices improvements and responsibilities after the workshop

Sub-category	Sanitation practices improvements	Responsible person	Code
Training	Operation and components of enviro-loo toilets	Observers (Tshepo, Maria, Johana, Vision, Solly, Lesterina	AP1 AP 1
	Displaying exceptional toilet	Grade 9 learners (Joel, John, Makwela, Caroline)	AP1
	Displaying 12 Golden rules	Kate	AP1
	Teaching other learners how to clean sanitation	Joel, John, Makwela, Caroline	LI3.1,
	Weekly we teach learners how to clean toilets	Grade 9 learners (Joel, John, Makwela, Caroline)	AP1
	Each class is trained how to clean toilets	Joel, John, Makwela, Caroline	LI 3.2, W1, AP1
	After training every class is involved and interested in cleaning toilets	Joel, John, Makwela, Caroline	LI2??LI 3.1, W1
Toilets cleaning	After training every class is involved and interested in cleaning toilets	Grade 8 and 9	LI 3.2
	Trainers trained and demonstrated other learners how to clean toilets and in turn	Grade 8-12	AP 1

	[redacted] Preparations for cleaning toilets done and [redacted]	Trainers (Joel, John, Makwela, Caroline)	LObs 3, LObs 4, LObs 5, LObs 6, LObs 7
	[redacted]	Learner who are trained	LObs 3, LObs 4, LObs 5, LObs 6
	Toilets will [redacted]	Grade 8 and 9	AP 1
Monitoring and maintenance	Monitoring will be done by observers	Maria, Tshepo, Johanna, Vision,Solly, Lesterina	AP1, LObs3.8,10,11,12,13,15-LObs 6.8,10,11,12,13,15
	Educators will monitor	Maria, Tshepo, Johanna, Vision, Solly, Lesterina	Doc1
	EL 007 and EL 008 schedules used for monitoring		W1, AP1,LObs 3.8,10,11,12,13,15, LObs 4.8,10,11,12,13,15, LObs 5.8,10,11,12,13,15, LObs 6.8,110,11,12,13,15, W1, AP1
	[redacted] the leveling solids inside	SGB	W1, Doc 3,AP1

APPENDIX 15: PHOTOGRAPHS TAKEN BEFORE THE WORKSHOP

APPENDIX 16: PHOTOGRAPHS TAKEN DURING THE WORKSHOP

APPENDIX 17: PHOTOGRAPHS TAKEN AFTER THE WORKSHOP

APPENDIX 18: SCHOOL ENVIRONMENTAL POLICY

APPENDIX 19: EXAMPLE OF RECORDING SHEET OF LIQUID LEVEL (EL 009) FILLED IN BY AGES FACILITATOR DURING WORKSHOP DEMONSTRATIONS

Appendix 18

RAMASHOBOHLE HIGH SCHOOL

ENVIRONMENTAL POLICY

WE AS THE PARENTS, EDUCATORS AND LEARNERS OF RAMASHOBOHLE HIGH SCHOOL WILL STRIVE TOWARDS CREATING A LEARNING HEALTHY ENVIRONMENT THAT WILL WORK TOWARDS ENHANCING ACTIVE TEACHING AND LEARNING APPROACH WITH THE HOPE TO:

- **PLAN LESSONS THAT PROMOTE ACTIVE LEARNING.**
- **DESIGN LEARNING FRAMEWORK THAT WILL PROMOTE ENQUIRY TO LEARNERS.**
- **ENSURING THE SUCCESS OF ACTIVE LEARNING PROCESS THROUGH OUTCOMES -BASED EDUCATION.**
- **USENCS LEARNING OUTCOMES AND ASSESSMENT STANDARDS THAT WILL ENHANCE ENVIRONMENTAL LEARNING.**
- **ENCOURAGE LEARNERS TO TAKE CHARGE IN IDENTIFYING ENVIRONMENTAL ISSUES.**
- **IMPROVE SCHOOL ENVIRONMENT TOWARDS SUSTAINABLE DEVELOPMENT.**
- **IMPROVE IDENTIFIED ENVIRONMENTAL ISSUES AND WORK TOWARDS RESILIENCE.**
- **BUILD STRONG WORKING RELATIONS WITH PARENTS AND ENTIRE COMMUNITY.**
- **INVOLVE LEARNERS IN CAMPAIGNS THAT WILL CREATE AWARENESS AND RESPECT FOR THE ENVIRONMENT.**