

A MODEL TO FACILITATE THE MANAGEMENT OF SANITATION AND HYGIENE
PRACTICES AMONGST PRIMARY SCHOOLS IN OHANGWENA REGION, NAMIBIA

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DECLARATION

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ABSTRACT

Schools are great platforms where children can learn hygiene skills, behaviours and practices, and when these become part of children's daily lives, this may lead to a positive impact in families and communities at large. However, effective hygiene promotion in school can be severely affected if sanitation facilities are not adequately managed. UNICEF indicated that, despite the provision of water to schools in Ohangwena region, there are still a high proportion of schools without sanitation facilities. This study thus purposively focused on Ohangwena region in view of the above discussed challenges. The purpose of this study was to develop and describe a model to facilitate the management of sanitation and hygiene practices among primary schools in Ohangwena region. A mixed method design of quantitative, observational, descriptive, cross-sectional study, as well as a qualitative, exploratory, descriptive, as well as a theory generating design were used in the study. The study was based on four phases.

Phase 1: Concept analysis was done by assessing the conditions of sanitation facilities, describing the knowledge, attitudes and practices of schools learners on hygiene practices, and exploring and describing the teachers' perceptions of hygiene promotion in schools. A three-staged stratified sampling was used to select ten primary schools in five circuits, using a proportionate sampling method. A checklist and a questionnaire were used to collect quantitative data from sanitation facilities and (n=450) school learners in 10 primary schools.

Simple random sampling was used to select learners in grades 5, 6 and 7 learners who were seven (7) years and older. Learners gave assent to participate in the study, while parents and teachers, gave permission as 'loco parentis'. Quantitative data were analysed with the Statistical Package for Social Sciences (SPSS) version 23, while Tesch's method of open-coding was used to analyse qualitative data. Teachers were purposively sampled and signed a consent form to participate in the study. Five focus group discussions (FGDs) conducted with teachers to collect were audiotaped and transcribed verbatim. The findings proved that a combination of challenges implicate the management and promotion of sanitation and hygiene practices stemmed from poor collaboration between the schools and parents and inefficient management of resources and facilities in schools, poor knowledge, bad attitudes and practices of learners toward hygiene. The three main concepts of management, collaboration and environment, were identified and analysed.

Phase 2 involved the construction of the relationship statements of the model. The conceptual framework based on the three main concepts of analysis and the practice oriented theory by Dickoff et al (1968), was developed.

Phase 3, a management of the collaborative environment model, to facilitate the management of sanitation and hygiene practices among primary schools in Ohangwena region, was developed and described. The model was described in terms of its purpose, concepts, definitions, structure, relationships and assumptions. Evaluation was done by expert researchers to validate whether the model brought about the desired outcome necessary to meet the study's objectives.

Phase 4 involved the development of the guidelines to operationalise the model. The guidelines were formulated in terms of objectives, strategies and activities based on the four objectives of the model. Recommendations, in terms of their application to the Ministry of Education, public health and nursing practice, as well as future research, were made.

DEDICATION

This study is dedicated to the living memories of my beloved mother Selma Taleni Mwashindange, who has long prophesising me becoming a doctor. No words are adequate to describe my late mom's influence on my educational life. May her soul continue to rest in peace.

I would like to thank my grandmother Johanna Nikanor (GwaNikanor) for raising me into a woman I am today. No words are sufficient to pronounce her contribution to my life. I owe every bit of my being to her.

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LIST OF ACRONYMS

AIDS	-	Acquired immunodeficiency syndrome
CFS	-	Child Friendly School
DHS	-	Demographic Health Survey
ESAR	-	Eastern and Southern Africa Region
EPA	-	American Environmental Protection Agency
FGDs	-	Focus Group Discussions
HIV	-	Human immunodeficiency virus
HO & WT	-	Hygiene Promotion & Water Treatment
HWWS	-	Handwashing With Water and Soap
KAP	-	Knowledge, Attitudes and practices
KM	-	Knowledge management
MAWF	-	Ministry of Agriculture, Water and Forestry
MDGs	-	Millennium Development Goals
MoE	-	Ministry of Education
MoHSS	-	Ministry of Health and Social Services
NNSP	-	Namibian National Sanitation Policy
NNSS	-	Namibia National Sanitation Strategy
NGOs	-	Non-governmental Organisations
SDGs	-	Sustainable development goals
UNAM	-	University of Namibia
UNICEF	-	United Nations Children's Emergency Fund
WASH	-	Water, sanitation and hygiene
WHO	-	World Health Organisation

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CHAPTER 1

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 BACKGROUND OF THE STUDY

Effective management of sanitation and hygiene practices in schools is important in disease prevention and learning. Schools are great platforms where children can learn hygiene skills, behaviours and practices, and when these become part of their daily lives, this may lead to a positive impact in families and communities at large. However, effective hygiene promotion in school can be severely affected if sanitation facilities are not satisfactorily managed.

Sanitation refers to the interventions aimed at promoting human and environmental health by improving the management of human wastes (Ministry of Agriculture, Water and Forestry [MAWF], 2009). Similarly, sanitation can also be referred to “the control of physical factors in the human environment that could harm development, health, or survival” (Environmental Protection Agency [EPA], 2007). The MAWF (2009) define hygiene as practices associated with safeguarding good health, cleanliness and promoting quality of life by preventing illness. Hygiene was further defined by the World Health Organisation [WHO] (2010) as conditions and practices that help to maintain health and prevent the spread of disease. Key safe hygiene practices include proper use of improved toilet facilities, stopping open defecation, handwashing with water and soap after using the toilet, safe disposal of children’s stools, and handwashing with soap after handling children’s stools, protecting food against flies, as well as proper storage of water in the home. Hygiene also covers personal cleanliness, which includes body and clothing.

In this study, the focus of hygiene is mainly on learners’ personal hygiene, and the conditions of sanitation facilities in schools.

According to the Namibia National Sanitation Strategy [NNSS] (2009), the need for portable water and basic sanitation services, was identified at Namibia's independence in 1990 as one of the crucial needs of the nation, especially for people living in communal areas. The NNSS sets out a course of actions and activities for the implementation of sanitation services in a coordinated manner. The significance of sanitation for all was also identified by the United Nations (2016) member countries when they adopted a set of goals, known as the sustainable development goals (SDGs), aimed to end poverty, protect the planet, and ensure prosperity. The sixth SDG is intended to ensure availability and sustainable management of water and sanitation to all by 2030. Although 87% of Namibia's population has access to potable water, the same cannot be reported on sanitation because 75% of rural households indicated they still lack access to appropriate sanitation facilities (Namibia Economist, 2013). The Ministry of Health and Social Services (MoHSS) through its national Demographic Health Survey (DHS) indicated that 21% of households in urban areas and 74 % of households in rural areas lack any toilet facility (MoHSS, 2014). When it comes to the use of sanitation facilities in Namibia, there has not been a big improvement from 28% in 2000 to 34% in 2013 (United Nations Children's Emergency Fund [UNICEF], 2013; MoHSS, 2014). Strategies that are required to reduce the burden of disease from inadequate water, sanitation and hygiene (WASH) services include: enabling personal hygiene, adequate sanitation in households, schools and health facilities, safe management of faecal waste to reduce human excreta in the environment, adequate hygiene practices such as handwashing after defecation, or before food preparation and consumption; and improved access to health care and proper case management of diarrhoea (WHO, 2016). In Namibia, the 2012 mortality rate attributed to exposure of unsafe WASH services per 100 000 population was 9.8% (WHO, 2016).

The WHO (2016) confirmed that in 2012 the 45% of deaths that occurred in the WHO African Region, where 13% of the world population live, a mortality rate of 43 per 100 000 population was attributed to unsafe WASH services; more than triple the 2012 global rate of 12 per 100 000 population. According to the United Nations' SDG report (2016), between 2000 and 2015, the proportion of the Sub-Saharan Africa population using improved sanitation increased from 26% to 30%. The report further stated that in 2015 only 4.9 billion people globally were using an improved sanitation facility. "On contrary, 2.4 billion had no improved sanitation, whereby 946 million people had no facilities at all and continued to practice open defecation" (United Nations, 2016).

According to the NNSS (2009), promotion of sanitation facilities and safe hygiene practices should not only be restricted to households, but should also be implemented in schools. Benefits from adequate hygiene and sanitation include convenience, privacy, and security for women and girls, especially when they use the bush to relieve themselves, as well as an increase in school enrolments for girls. Improved sanitation in schools does not only look at the construction of new sanitation facilities, but it also covers rehabilitation of existing facilities; ensuring that teachers, boy and girl learners have access to separate toilets; provision of handwashing facilities with water and soap; provision of toilet paper; and ensuring that learners comply with all national health and hygiene standards (NNSS, 2009). The Namibian Ministry of Education (MoE) is aspiring for schools to have at least one toilet per 30 learners, but the situation at hand is that in many schools more than 60 learners share a toilet facility (UNICEF, 2010). The MoE further reported that out of 1,641 schools, nearly 23% do not have toilets; many new sanitation facilities need to be built to clear the backlog in schools (MoE, 2009). There are many challenges for school sanitation.

These challenges include rehabilitation of existing facilities; aligning the number of boys/girls per toilet according to the national standards; ensuring separate toilet facilities for teachers, boys and girls; providing handwashing facilities with water and soap, among others. UNICEF (2013) reported that one in five Namibian schools does not have sanitation facilities: it is assumed that it will take until 2030 for all schools to have toilets. The report further stated that even in cases where schools do have toilet facilities, some are in poor conditions and cannot be used. Some toilets do not have toilet paper, handwashing facilities and soap, which are a necessity to upkeep hygiene.

The UNICEF report (2013) further indicated that the levels of sanitation in the northern regions of Namibia are much lower than the national average: Ohangwena 5%, Zambezi 9%, Kavango East and Kavango West 12%, Omusati 15%, and Kunene 19%. The report stated all (100%) schools in the Omaheke and Karas regions have toilet facilities whereas nearly half to a quarter of the schools in the respective regions of Kavango East and Kavango West (44%), and Zambezi (26%) do not have toilet facilities. The report clearly showed the provision of sanitation facilities discrepancies among schools in different regions in Namibia. Shinovene (2014) reported that 1300 out of Namibian 1723 schools do not have flushable toilets. Put differently only 423 schools were reported to have proper flushable toilets. As indicated by UNICEF and Shinovene above, many schools in Namibia are unable to apply and practice basic hygiene because they do not have adequate sanitation facilities. This study purposively chose the Ohangwena region because it is one of the regions that is affected the most.

Inadequate toilet facilities lead to poor sanitation and inappropriate hygiene behaviours within the general population and more specifically learners in schools. In addition, poor sanitation and hygiene are the major causes of morbidity and mortality of children under five years of age (WHO, 2016).

These conditions, related to poor hygiene, and lack of sanitation facilities, are also detrimental to the health of school-aged children, who spend long hours in schools. The physical environment and cleanliness of a school facility can significantly affect the health and well-being of children. In many instances, diseases can easily spread fast in overcrowded spaces with limited ventilation, where neither handwashing facilities nor soap are available, and where toilets are in bad conditions (WHO, 2016). Safe, potable water supplies, and improved, functional sanitation facilities, are considered to be the minimum standard for all schools and hostels in accordance with the NNSS. However, UNICEF (2010), and Shinovene (2014) both reported contrary findings, especially among schools in the northern regions of Namibia.

Poor sanitation can lead to water and foodborne diseases which increase the vulnerability for disease transmission in children. The WHO (2008) unequivocally stated that unsafe drinking water, inadequate availability of water for hygiene, and lack of access to sanitation, together contributes to about 88% of deaths from diarrheal diseases. Lack of safe drinking water, ineffective waste disposal, and inadequate sanitation, contribute to the transmission of diarrheal diseases (Udofia, Yawson, Aduful, & Bwambale, 2014). Lack of the above-mentioned resources means that learners struggle to keep themselves and the toilet facilities, clean. Poor sanitation can be a major problem, especially for children living with the human immunodeficiency virus [HIV] and acquired immunodeficiency syndrome [AIDS]. Poor sanitation conditions, together with an unhygienic ways of disposing excreta, threaten the lives of billions of people in the poor regions of the world, especially the children (UNICEF, 2013). Challenges, with regards to safe drinking water, sanitation, and hygiene practices, have been highlighted in various global studies. Findings from different studies showed the negative impact that poor sanitation and hygiene have on children.

A European study of 1526 schools in Moldova, found that insufficient hygiene, and sanitation conditions systems in schools, are a real danger to children's health, especially in relation to the risk of getting infectious and parasitic diseases (Salaru, Turcanu, Svetlan, & Liudmila, 2010). A study by Joshi and Amadi (2013), on the impact of water, sanitation and hygiene interventions on improving health outcomes among school children, highlighted the positive effects, in terms of an education aspect, on adherence to hygiene practices. The findings of a study by Lau et al (2012), undertaken at elementary schools in Chicago, were that additional hand hygiene instruction, over and above existing hand hygiene practices, resulted in a reduction of illness-related absenteeism. Srivastava (2013) indicated that poor conditions of sanitation and hygiene, in rural areas, lead to children falling ill with infections and missing schools. This not only affects their health but also their learning. Prüss-Üstün, Bos, Gore and Bartram, (2008) stated that "almost one tenth of the global disease burden could be prevented by improving water supply, sanitation, hygiene and management of water resources".

Children, who attend schools that have safe potable water supplies, and reliable sanitation facilities, are healthier, perform better in school, live in a safer environment, and influence hygiene practices in the home and community. The most common causes of mortality in Namibian children, between the ages of one to 13 years, are diarrhoea, gastroenteritis infections, and presumed infections (WHO, 2008). The age group indicated above, covers children that mostly attend primary schools. The schools' situation on sanitation and hygiene, as highlighted in the background discussion above, has a serious implication on learners' health and learning.

1.2 STATEMENT OF THE PROBLEM

Namibia has the lowest sanitation coverage in Southern Africa region with 34% with access to proper toilet facilities while and half of the population still practice open defaecation (UNICEF, 2013).

Although the Namibian Ministry of Education (MoE) aims for the schools to have at least one toilet per 30 learners, the situation at hand is that in many schools, more than 60 learners share a toilet facility (UNICEF, 2010). UNICEF (2010) prescribed that the availability of toilet facilities in schools should be: one toilet per 25 girls, and one toilet plus one urinal per 50 boys, one separate toilet for male staff and female staff, respectively. The MAWF (2009) and NNSS (2009) recommended that schools should have adequate separate sanitation facilities for boys and girls, with a maximum of 40-50 learners per toilet.

A study by UNICEF (2013) found that 298 schools in Namibia do not have sanitation facilities, and 93% (276) of these schools are in the five flood-prone northern regions of Oshikoto, Omusati, Ohangwena, Kavango East and Kavango West, and Zambezi regions. UNICEF further indicated that despite the provision of water to schools in Ohangwena region, there are still a high proportion of schools without sanitation facilities. In view of this report, Ohangwena region was purposively chosen as a study site given the background above. Shinovene (2014) supported the findings of UNICEF by stating that 1300 out of 1723 schools in Namibia have no flushable toilets. In other words only 423 schools were reported to have proper flushable toilets. However, the latter author, as well as UNICEF, fails to indicate, given the cited situations, how the schools are managing their sanitation and hygiene practices. This critique prompted the researcher to consider the following questions:

- What conditions are sanitation facilities in primary schools in?
- How do learners practice hygiene at schools despite lack of sanitation facilities or lack of water?

- What knowledge and attitudes do learners have when it comes to sanitation and hygiene practice?
- How do teachers perceive hygiene promotion in their schools?
- What can be done to facilitate the management of sanitation and hygiene practices in the primary schools?

These questions needed answers as no study has been undertaken in Namibia about the management of sanitation and hygiene in primary schools. The researcher thought that the development of the model would be a suitable approach to address the above multidimensional challenges within the primary school context for the purpose of managing sanitation and hygiene practices.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to develop and describe a model that would facilitate the management of sanitation and hygiene practices among primary schools in Ohangwena region.

1.4 OBJECTIVES OF THE STUDY

The specific objectives of this study were to:

- assess the conditions of sanitation facilities among primary schools in Ohangwena region (Phase 1).
- describe the Knowledge, Attitudes and Practices (KAP) of schools learners on hygiene practices (Phase 1),
- explore and describe the teachers' perceptions on hygiene promotion in the schools (Phase 1),
- develop a conceptual framework regarding the management of sanitation and hygiene practices in primary schools (Phase 2)
- describe and evaluate the model (Phase3)

- develop the guidelines to operationalize such model. (Phase 4)

1.5 PARADIGMATIC PERSPECTIVE/ASSUMPTIONS

A paradigm is a way of looking at a natural phenomenon, it is informed by philosophical assumptions about three things: the nature of reality, ways of knowing, and ethics and value systems that guide a researcher's approach to inquiry (Wagner, Kawulich & Garner, 2012). This study adopted a pragmatic worldview. For the application of the pragmatic paradigm, the researcher used a convergent mixed method approach by employing both a quantitative and qualitative approach to simultaneously collect and analyse both types of data. According to Creswell (2014), pragmatism arises out of actions, situations, and consequences, rather than antecedent conditions. Instead of focusing on methods, researchers emphasise the research problem and use all approaches available to understand it (Creswell, 2014). In this study, the findings are merged to develop the central concepts as a basis for the development of a model on management of sanitation and hygiene practices in primary schools.

The assumptions applied in this study are: meta-theoretical assumptions about the study participants, theoretical assumptions about the researcher's tentative belief system of the way in which the participants experienced and perceived the phenomenon under study; and methodological assumptions about the nature and structure of the study.

1.5.1 Meta-theoretical assumptions

A metatheory is a theory about theory. It is also referred to a set of interlocking rules, principles, or narratives that both describe and prescribe what is acceptable and unacceptable. A metatheory addresses three assumptions: the nature of knowledge (epistemology), the nature of being/existence (ontology), and the nature of values (axiology) (Wagner et al, 2012). A pragmatic worldview, as an assumption, was used by the researcher. Since the study employed a mixed-method approach, an appropriate approach was pragmatism.

The researcher adopted the use of mixed methods research to draw freely from both quantitative and qualitative assumptions. The researcher did not limit herself to only a quantitative or qualitative approach, but employed both approaches to collect and analyze data simultaneously, with the intention to understand the problem at hand better. Through interaction with the teachers, during focus group discussions (FGDs), the researcher listened carefully and actively to how they expressed their perceptions of hygiene promotion in their respective work environments. A positivistic approach that values objectivity was adopted (Polit & Beck, 2012). This approach made use of a checklist to assess the conditions of sanitation facilities in the selected schools. A questionnaire was also used to obtain information on the KAP of learners in relation to hygiene practices.

1.5.1.1 Ontological assumptions

According to Polit and Beck (2012), ontology deals with existence of the reality. The researcher discovered reality in this study based on precise observation and interviews that were conducted in the participants' own environment (Wagner et al, 2012). Since reality cannot be known with certainty, the researcher used an objective view, by triangulating multiple measures, namely observations, structured interviews, and FGDs, to observe the sanitation facilities, as well as the KAP of learners in relation to sanitation and hygiene. These measures were used also to explore the perception of teachers on hygiene promotion in schools. By triangulating, the researcher used a checklist, questionnaire and FGDs to understand ideas, perceptions, experiences of teachers and learners, as well as conditions of sanitation facilities in the school environment. The assumption aimed at finding meaningful indicators of what is 'really' happening on the ground with the problem under investigation.

1.5.1.2 Epistemological assumptions

The nature of knowledge is objective and independent of the values, interests and feelings of a researcher (Wagner et al, 2012).

In this study, the researcher produced objective knowledge from natural setting of the school environment. The researcher was independent of those being studied and did not influence the findings. Data collection instruments, which were used to produce knowledge, were: a structured observational checklist to collect quantitative data, structured interviews using a questionnaire to gather knowledge from learners and focus groups discussions (FGDs) with teachers, based on the variables of the study problem. The findings are interpreted and presented in Chapter 4.

1.5.1.3 Axiological assumptions

According to Wagner et al (2012), axiology has to do with values. For the pragmatic world view, values play a big role in the interpretation of the results. The role of researcher's own values throughout the stages of the research process was assessed. The researcher adopted both an objective and subjective point of view by using a mixed method approach in the collection, analysis, and interpretation of the results. A neutral position adopted by the researcher throughout the study process helped preventing possible biases and errors.

1.5.1.4 Methodological assumptions

Methodological assumptions refer to the process of conducting the research by choosing the right approach, instruments, data gathering methods, and data analysis (Creswell, 2014). In this study, a pragmatism approach, with mixed quantitative and qualitative methods, was used. A quantitative, descriptive approach was used to assess the status of sanitation facilities at schools and to describe the KAP of schools learners on hygiene practices. On the other hand, a qualitative, exploratory approach was used to explore the teachers' perception of hygiene promotion in the schools. The research methodology explained the approaches, data collection tools, analysis methods and the conceptual framework used in the development of the model.

1.5.2 Rhetorical assumptions

This assumption examines the language used, and the writing approach of a researcher (Peterson, 2014). A rhetorical assumption does not concern itself with gathering quantitative data and performing statistical calculations. In this study, a rhetorical approach was used to interpret and describe the qualitative research results. The language used by the researcher to present qualitative data becomes personal, in the form of story, and is based on the definitions that developed during the study rather than being defined by the researcher, in the forms of themes and sub-themes. This process was achieved through exploration of the teachers' perceptions on hygiene promotion (objective number three).

1.6 THEORETICAL BASIS OF THE STUDY

Two theories were used in the study as a basis for development of the model. These theories are described below.

1.6.1 Practice oriented theory

Dickoff, James and Wiedenbach's (1968) Practice Oriented Theory was adopted to guide the development of the conceptual framework. The concepts derived from the findings in phase 1 (concept analysis) are clearly defined and described in terms of agent, recipient, context, dynamic, procedure and terminus.

The conceptual framework formed the basis of departure for the development of the model for facilitating the management of sanitation and hygiene practices in primary schools as described in Chapter 5.

1.6.2 Theory generation

The developed model was based on: the theory generation by Chin and Kramer (2008), and the conceptual framework developed in phase 2. The study was theory generative because the results from study were used to generate a model to facilitate the management of sanitation and hygiene practices in primary schools in the Ohangwena region. The theory generation phases are: concept analysis, construction of the relationship statements, descriptions and evaluation of the model, and development of guidelines for operationalising the model. Figure 1.1 is a schematic presentation of the theory generation phases.

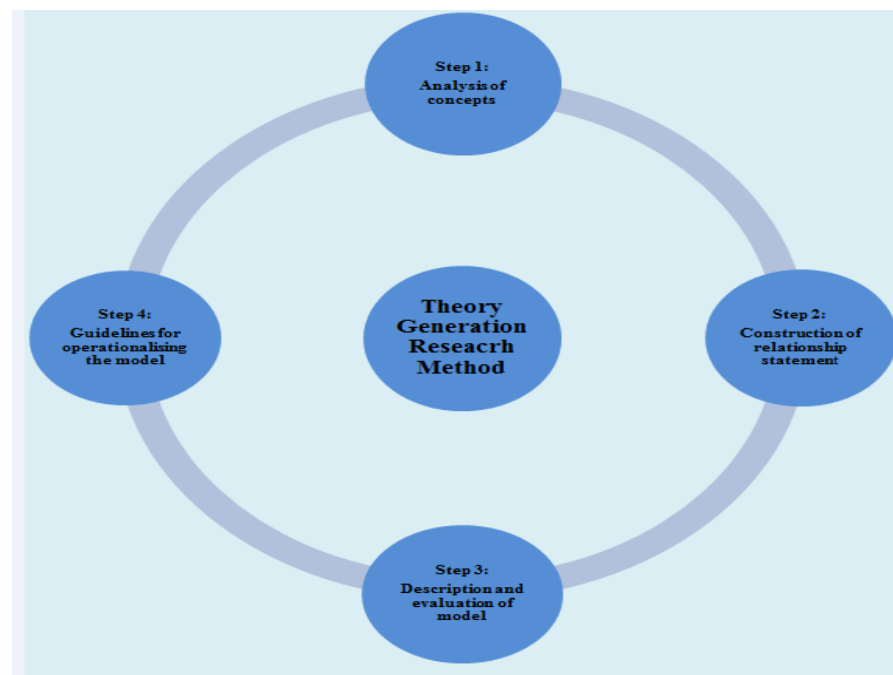


Figure 1. 1 Theory generation steps by Chin and Kramer, 2008.

1.7 RESEARCH DESIGN AND RESEARCH METHODS

1.7.1 Research design

A convergent mixed method of quantitative, observational, descriptive, cross-sectional study, as well as a qualitative, exploratory, descriptive, contextual design, was used in this study.

A single cross-sectional design was chosen because the study was conducted in the present time in a single round of data collection to examine what currently exists; all data were collected during a specific period of time (Des Vos, Strydom, Fousche & Delpont, 2007). A descriptive quantitative approach was used to assess the status of sanitation facilities in the selected schools, as well as to describe the knowledge, attitudes and practices (KAP) of school learners in their natural settings on hygiene practice. In addition, a qualitative, exploratory and descriptive approach assisted the researcher, to gain more insight and understanding, by exploring and describing the perception of teachers on hygiene promotion in the school. The study was contextual in nature as it was conducted at primary schools in the Ohangwena region.

1.7.2 Research methods

A research method is a systematic set of techniques and procedures followed by a researcher when collecting and analysing data (Babbie & Mouton, 2009). The study was based on the four phases of theory generation by Chinn and Kramer (2011) namely: concept analysis (phase 1), Construction of relationship statement (conceptualisation) (phase 2), development and description of the model (phase 3), and development of the guidelines for operationalising the model (phase 4). These phases are described below.

1.7.2.1 Phase 1: Concept analysis

The concept analysis comprised of the first three objectives of the study that corresponded to the three populations of the study: the sanitation facilities, the learners, and the teachers. A structured checklist was used to collect quantitative data by assessing the sanitation conditions of facilities in the schools. Face-to-face structured interviews, using a structured questionnaire, were employed to collect quantitative data from the school learners and to describe their KAP on hygiene practices.

The interviews were designed to elicit responses on phenomena that were not directly observable, e.g. the learners' KAP on personal hygiene. Focus groups discussions were conducted with a group of teachers to explore their views and perceptions on the extent of hygiene promotion in their schools. All the above information is detailed in Chapter 3. The development of the model required concepts. The concepts derived from the findings are used in the model's development.

1.7.2.2 Phase 2: Construction of relationship statement

Dickoff, James and Wiedenbach's (1968) practice oriented theory was adopted to guide the development of the conceptual framework. Concepts derived from the findings in phase 1 are clearly defined and described in terms of agent, recipient, dynamic, procedure and terminus. The framework, detailed in Chapter 5, formed the basis of departure for development of the model to facilitate the management of sanitation and hygiene practices in primary schools.

1.7.2.3 Phase 3: Description and evaluation of the model

The model developed in the study was based on the theory generation by Chinn and Kramer (2008) and the conceptual framework developed in phase 2. The model is described according to the six proposed descriptive components by Chinn and Kramer (2008), namely overview of the theory, the purpose, structure, assumptions, theory definition, and definition of the central statement, relationship statements, nature of the model, and process description of the model. A detailed description of the model is presented in Chapter 6.

1.7.2.4 Phase 4: Development of the guidelines for the operationalising of the model.

The model is to be implemented by teachers, learners and all stakeholders involved in the collaboration for the management of sanitation and hygiene practices in schools. The model was evaluated in accordance with the evaluation criteria for theory generation by Chin and Kramer (2008), namely, how clear; simple; general, accessible, and important the model is.

Evaluation is important to validate whether the model has brought about the desired outcome necessary to meet the study's objectives. The findings are to be incorporated into the final edition of the model. The guidelines are discussed in chapter 7.

1.8 ETHICAL CONSIDERATIONS

Permission to conduct the survey was obtained from the Ministry of Education Research Ethical Committee after approval by UNAM Postgraduate Studies Committee. Permission to take pictures was granted by Ohangwena regional educational directorate and by the school principals.

An informed consent and assent forms obtained from teachers, parents and learners and included purpose, objectives, benefits, methods, and expectations, duration of the study. Written details about the researcher were also explained to the participants. Permission for learners to participate in the study was obtained from their parents and guardians as well as from their teachers as 'loco parentis'. If teachers granted permission to participate, but a child who did not agree to do so, the child was excluded from the study. Teachers signed the informed consent prior commencement of FGDs and verbal consent was given to audiotape the FGDs.

Confidentiality and anonymity was ensured by using codes instead of the personal details of the participants. All participants were treated with dignity and respect. Only the researcher had access to audiotaped FGDs. No names were attached to FGDs. Data were captured on a password-protected personal computer. Research related materials were stored in a locked cabinet that was only accessible by the researcher. Participation was voluntary. Participants were never be forced or coerced to participate in the study. They had the right to terminate participation at any time, to refuse to provide information, and to ask for clarification about the study (De Vos, 2011).

Selection criteria were used to select participants in terms of the study's objectives to ensure fairness. Right to privacy: only information related to the objectives of the study was collected. Potential harm or danger was minimised during the study by not invading the participants' privacy. Only learners, who were seven (7) years and older, were included in the study because at their age, they have normal cognitive development and are able to accept or decline to participate in a study (Grove, Burns & Gray, 2013).

1.9 DEFINITIONS OF CONCEPTS

De Vos et al (2007) refer to a definition as a description and clarification of key terms that require particular attention in a scientific study under review. The important key concepts in this study are defined below.

1.9.1 Management

Management refers to the act or manner of managing, handling, direction, or control (Collins dictionary, 2014).

1.9.2 Sanitation

Sanitation refers to the interventions that improve the management (safe disposal or recycling) of human waste (including excreta and grey water), animal wastes and industrial effluent to promote human and environmental health (MAWF, 2009). Inadequate sanitation facilities that are not managed can be harmful to the health of learners and teachers.

1.9.3 Hygiene

The MAWF (2009) defines hygiene as practices that are associated with ensuring good health, cleanliness, and promoting quality of life by preventing illness.

Hygiene practices include preserving personal, toilet and kitchen cleanliness that help uphold health in the absence of disease-producing microbes; it often starts with the washing of hands after visiting the toilet and before eating or preparing food (Ministry of Agriculture, 2009). Teachers can effectively serve as role models by advocating good hygiene behaviour, practices and skills that once adopted by learners may benefit families and communities

1.9.4 Practices

A practice is a usual, or customary action, or proceeding (Collins English Dictionary, 2012). A good sanitation practice is important to change the hygiene behaviours of school children. It can be influenced through school sanitation and health education. School children can serve as role models by influencing other children in their home and community with good hygiene practices learned at schools.

1.9.5 Primary school

A primary school is a school, or part of a school, in which basic education from the level of the first grade to the level of the seventh grade is provided (Education Act No. 16 of 2001). Schools are stimulating learning environments for children. In addition, childhood is the best time for children to learn hygiene behaviours, and most children are mainly in primary schools. If sanitary facilities in schools are available, they can act as a model, and teachers can function as role models.

1.9.6 Learner

Any person who is registered and receiving basic education or a course of study (Education Act No. 16 of 2001). One of the study's populations was the learners in primary schools in Ohangwena. Schoolchildren in lower grades were included in the study because of their ability to learn and practice life-long positive hygiene behaviours.

1.10 CHAPTERS OUTLINE

The chapters in the study are as follows. Chapter 1 presents the background information to the study, and the problem that prompted the study. Chapter 2 presents the literature reviewed. Chapter 3 presents research designs and methods used. Chapter 4 presents the research findings. Chapter 5 presents the conceptual framework. Chapter 6 describes the model. Chapter 7 presents the guidelines for operationalisation of the management of a collaborative environment model. Chapter 8 covers the conclusion, justification, limitations of the study, and recommendations

1.11 SUMMARY

This chapter presented the background of the study, and the problem that prompted the study. Brief descriptions covered the paradigms, research methods and designs. Ethical considerations were discussed. The outline of chapters was presented. The next chapter describes the relevant literature reviewed in terms of the study.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES

2.1 INTRODUCTION

The previous chapter presented an overview of the study. The background, purpose, objectives, as well as the paradigmatic perspective on which the study was based, were discussed. This chapter presents the context of the review from a range of related literature and published studies, to get an overall understanding of the state of knowledge in the area of sanitation and hygiene management in primary schools. Exploration of a range of literature helped the researcher to discover key variables applicable to the study, to find relationships between ideas and practices, to establish the context of the problem nationally and globally, to justify the significance of the problem, to understand the structure of the subject and related thoughts and theories. Cooper (1988) suggested that literature reviews can be classified according to five characteristics: focus, goal, perspective, coverage, organization, and audience. The understanding and insight gained from the review assisted the researcher to determine the extent of what had already been done in relation to what needs to be done in the area of sanitation and hygiene in schools.

The goal of the review was to identify crucial concerns related to the objectives of the study, and to explain arguments in relation to the outcome. Since most of the literature includes water, for the purpose of the study, more emphasis is placed on sanitation and hygiene. Literature that covered important areas of this study was purposively selected for review and discussion.

2.2 BACKGROUND FOR SANITATION AND HYGIENE

The need for basic sanitation services was identified at Namibia's independence in 1990, as one of the crucial needs of the nation, especially people living in communal areas. In 2009, only 13% of the rural population of Namibia had access to improved sanitation (Ministry of Agriculture, Water and Forestry, Namibia, 2009). The United Nations (2015) recognised lack of safe water, sanitation and hygiene as one of the world's most life-threatening issue. In response to the need, the United Nations (2016) member countries adopted a set of goals, known as the sustainable development goals (SDGs), aimed to end poverty, protect the planet, and ensure prosperity. The sixth SDG is intended to ensure availability and sustainable management of water and sanitation to all by 2030.

According to the NNSS (2009), promotion of sanitation facilities and safe hygiene practices should not be limited to households, but should also be implemented in schools. The MoE (2009) reported that approximately 23% out of 1,641 schools have no toilets, and many new sanitation facilities have to be built to clear the backlog in schools. The report further highlighted challenges for school sanitation such as the need for rehabilitation of existing facilities; aligning the number of boys/girls per toilet according to the national standards; separate facilities for boys and girls; providing handwashing facilities with water and soap. The situation on sanitation was worse among schools in the northern regions as sanitation facilities were: Ohangwena 5 %, Zambezi 9%, Kavango East and Kavango West 12%, Omusati 15 %, and Kunene 19 %.

2.3 SIGNIFICANCE OF SANITATION AND HYGIENE IN SCHOOLS

Schools are settings where many children are introduced to good hygiene behavior, practices and hygiene skills that may not be encouraged, or possible, in their own homes. Children are the future generation and tomorrow's leaders; hence their state of health needs to be taken care of.

In their Child Friendly-Schools (CFS) manual, UNICEF (2012) emphasized on the rights of children that are safe with improved sanitation facilities and hygiene education that encourage the development of healthy behavior through the WASH approach. The purpose of WASH in schools is to improve the health and learning performance of school-aged children by reducing water and sanitation related diseases (UNICEF, 2012). Other social benefits that can be derived from adequate hygiene and sanitation are self-worth, convenience, privacy, security for women and girls, as well as an increase in school enrolments for girls (MAWF, 2009). In their documents on water, sanitation and hygiene standards for schools in low-cost settings, Adams, Bartram, Chartier and Sims (2009) highlighted the role that sanitation and hygiene play on disease prevention, learning, gender and disability, the wider community and life-long skills. Hygiene behaviors and practices are only made possible through a combination of hygiene education, water, sanitation and hygiene, as well as suitable facilities. Children, whose schools have satisfactory water, sanitation and hygiene conditions, are more able to assimilate hygiene education into their daily lives, and can be effective messengers and agents for change in their own homes and the wider community (Adams et al, 2009). UNICEF (1998) emphasized that children are keen to learn and adopt healthy behaviors at a younger age than adults, and if they are brought into the development process as active participants, they can become change agents within their families, and will take care of their own health and that of others.

On the contrary, communities, in which school children have inadequate or absence of water supply, sanitation and hygiene at school, are at risk of contracting diseases. As a result, families will bear the burden of their children's illness due to unhygienic conditions at school. Together with access to a safe water supply, hygienic means of excreta disposal counts amongst the most basic human needs. Failure to meet such a need not only weakens a population's health, it also impacts the economy and natural environment (Tiberghien, Robbins, & Tyrrel, 2011).

Lack of safe drinking water, ineffective waste disposal, and inadequate sanitation, contribute to the transmission of diarrheal diseases (Udofia et al., 2014). This supports the findings of a study of elementary schools in Chicago undertaken by Lau et al (2012), namely that illness-related absenteeism rates decreased when hand hygiene instruction was added to existing hand hygiene practices. Children, who attend schools that have potable water and reliable sanitation facilities, are healthier, perform better in school and influence hygiene practices in home and community (UNICEF, 2013). In schools, improved sanitation and hygiene facilities leads towards a healthy physical learning environment (Josh, 2013). Henceforth, schools need to devote their efforts towards proper sanitation and hygienic practice through continuous reinforcement. A study, conducted by Joshi and Amadi (2013), on the impact of WASH interventions on improving health outcomes among school children, highlighted the positive effect of an education component on the uptake and adherence to hygiene practices. Access to safe water, and basic sanitation, are critical to maintaining a healthy residential and neighbourhood environment (Udofia et al., 2014).

Providing sanitation and hygiene facilities is not sufficient; schools should help learners develop hygiene behaviour, which includes handwashing, proper usage of toilets, etc. Developed hygiene behaviours have an impact in terms of sensitising their neighbourhood along with their kith & kin (Srivastava, 2013). Sanitation seems to be just as effective as a public health measure, as is an adequate water supply; the promotion of sanitation, plus hygiene, are one of the most cost-effective interventions against high-burden diseases in developing countries (Barreto et al., 2007). Poor conditions of sanitation and hygiene which is more prevalent in rural areas, lead to children falling ill with infections and missing school. This not only affects health but also learning of children (Srivastava, 2013).

Literature emphasised that to ensure improved health and learning performance among school learners, schools' efforts should be directed to the provision of adequate and improved sanitation facilities and strengthen health behaviours through hygiene education.

2.4 OVERVIEW OF THE CONDITIONS OF SANITATION FACILITIES AMONG PRIMARY SCHOOLS

The first objective in this study was to assess conditions of sanitation facilities in primary schools. The standards set by MoE are for schools to have at least one toilet per 30 learners. The fact is in line with UNICEF (2010a) specified standards indicators for sanitation facilities in schools. Those specifications are: one toilet per 25 girls, one toilet plus one urinal per 50 boys, one separate toilet for male staff and for female staff, respectively. Toilets should not be more than 30 meters away from users. Toilets should provide child-friendly privacy and security, appropriate to cultural, social and environmental conditions, hygienic to use, easy to clean, and have convenient handwashing facilities close by. In addition, the sanitation facilities should be clean, with light colours, sufficient natural light and ventilation (UNICEF, 2010b). Furthermore, hygiene promotion materials can be used in facilities to strengthen the link between education and practice.

UNICEF (2014) revealed that the coverage level of the proportion of primary schools in developing countries with basic water and sanitation facilities is less than 70 %, and in the least developed and other low-income countries it is less than 50%. The stated coverage by UNICEF (2013) are contrary to the set standards by UNICEF and MoE; and may be associated with lack of adequate sanitation facilities which threatens the lives of many children in the poor regions of the world. In their study of ten Ethiopian schools, Seid and Kumie (2013), found that traditional pit latrines were the main type of human waste management.

Their findings are in accord with other studies pertaining to insufficient latrines or toilet facilities in relation to the school population (Aremu, 2012; Caruso, Dreibelbis, Robert, Awino Ogutu, & Reingans, 2014). The usage of a single latrine by school learners varied between 1:27 to 1:86 with an average of one latrine to 64 learners. The inequality in the ratio was significant by sex ($p < 0.05$), females being the most disadvantaged than males. The findings above are far below UNICEF recommendations. Harvey, Kelly and Sahin (2013), in their studies on Water, Sanitation and Hygiene (WASH) in Eastern and Southern Africa schools, found the following amongst others: where WASH infrastructure exists in schools, services are often poorly maintained and prematurely falling into disrepair and later disuse; soap and water for handwashing are often unavailable, limiting potential behavior change resulting from hygiene education; and most schools do not provide equitable facilities that cater to children with physical disabilities and support menstrual hygiene management. In agreement with the above findings, Srivastava (2013) indicated that poor condition of sanitation and hygiene lead to children falling ill and missing schools, which not only will affect children's health but also their learning.

A review provided by UNICEF (2013) on the status of WASH in schools in the different Eastern and Southern Africa (ESAR) countries, revealed the following: out of 140 schools in seven districts in Zambia, only 58% had handwashing facilities; in the Mangochi district in Malawi, no schools had handwashing facilities. In 2007, at post-intervention follow-up, 33% of handwashing facilities were functional, but the schools were not providing soap. The same trend of insufficient resources, especially lack of soap for handwashing, was observed among schools in Uganda, whereby in a study of 332 schools, only 41% had handwashing facilities and only 8% had soap. In Madagascar, among 61 intervention schools, 36% had handwashing facilities with soap available near the toilets (UNICEF, 2013).

The above-mentioned findings indicated the prevailing challenges faced by learners when it comes to handwashing facilities and availability of resources such as soap at school. Schools with scarce supplies for handwashing such as water provision, soap, or towels, reported less handwashing (Lopez-Quintero, Freeman, & Neumark, 2009). The findings of a survey by Lopez-Quintero et al (2009) in Colombia indicated that, children with access to handwashing materials were three times likely to consistently wash their hands before eating and after toilet usage. These surveys provided some evidence for a potential link between provision of handwashing services and handwashing behavior in school environments. A European study, conducted among 1526 schools in Moldova, found that insufficient hygiene and sanitation conditions in schools are a real danger to children's health, especially in relation to the risk of getting infectious and parasitic diseases (Salaru, Turcanu, Svetlan, & Lyudmila, 2010).

Sibiya and Gumbo (2013) conducted a survey study in eight selected schools in Vhembe districts in South Africa. The study showed that 100% of the schools had a toilet, but only 25% of the schools, mostly in urban areas had access to flush toilet facility, while 75% of the schools, which are from rural areas, had pit latrines. In their study, Sibiya and Gumbo (2013), found that there were no cleaners at many schools to clean the learners' toilets, and in such instances, school authorities task learners to clean the toilets themselves. This especially was prevalent in rural schools, and only one school used volunteers from their community to clean their toilets. This practice may contribute to toilets being dirty in many instances since nobody owns up to being responsible for cleaning the facilities. Furthermore, the study found that none of the schools provided sanitary bins for girls to dispose their sanitary pads. In some occasions, toilets, especially in rural schools, had broken doors and did not provide the privacy required.

A cross-sectional survey by Jordanova et al (2015), on water, sanitation, and hygiene in schools, in low socio-economic regions in Nicaragua, found that 81% of schools did not have handwashing stations, and students at 71% of schools washed their hands solely with water. In their study in Bangladesh, Huda, Unicomb, Johnston, Halder, Yushuf Shaker & Luby, (2011), came to the conclusion that the presence of handwashing facilities does not necessarily indicate, or mean a higher prevalence of handwashing. No handwashing facilities observed near or around the latrines (Caruso et al, 2014). Out of ten schools, only three had designated separate latrines for teachers and learners. Interviews with school principals indicated that the allocation of budget for WASH has not been practiced during the last five years. Although all schools had drinking water available, the ratio of a water tap to school population varied across schools, with an average of 1:114 (Aremu, 2012).

The findings above were similar to South Africa whereby Sibiyi and Gumbo (2013) found that there were no handwashing facilities inside or outside toilets; the only available facilities (a tap without soap) were located at the center of the schools, and were about 100 meters from the toilet facilities. Only 25% of the schools had handwashing areas that were located inside the flush toilet building. The schools in rural areas (75%) did not have taps inside or outside the toilets for washing hands, and such a lack of handwashing facilities might be linked to the non-availability of water inside toilet facilities. Such situations, where handwashing facilities are located far from the toilets might discourage learners from washing their hands immediately after using the toilet. In their qualitative study among schools in Kenya, Caruso et al (2014) found that clean locations motivated pupils to use the facilities. Learners were however discouraged from using a school latrine if the building was compromised or if they found something disgusting inside a latrine, such as urine, faeces, saliva, blood, vomit, maggots, flies, a strong smell or a full pit.

Sibiya and Gumbo (2013) found out that the department of health and social development only provides promotional material such as posters to schools upon request, which led to the school authorities having an impression that the department did not recognize the importance of promoting safe hygiene and sanitation in schools. McGuffey (1982), and Weinstein (1979) cited in Bascia (2014) emphasized that clean, well-maintained and appropriately resourced facilities are associated with higher accomplishment, less disciplinary incidents, better school attendance, and more positive attitudes among learners toward learning. Therefore, ideally, schools should have a cleaning and maintenance routine in operation that ensures that clean and functioning toilets are available at all times.

2.5 KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) OF SCHOOLS LEARNERS ON HYGIENE PRACTICES.

The second objective in this study was to describe the KAP of schools learners on hygiene practices. UNICEF (2003) defines knowledge “as a state or condition of understanding that permits factual information to be related to other information and knowledge, synthesized into broader concepts and usefully applied”.

The term attitudes is used in the context of life skills education “to encompass the broad domain of social norms, ethics, morals, values, rights, culture, tradition, spirituality and religion, and feelings about self and others (UNICEF, 2003)”. Knowledge is underscored in several reviewed studies as being a facilitator in the uptake of hygiene practices and interventions. Vivas et al (2010) conducted a cross-sectional study on KAP of hygiene on school learners who were in grades 1-6 at Angolela Primary School, located in rural Ethiopia.

A remarkably high number (76.7%) of learners reported that washing hands after defecation is important, but only 14.8% reported actually following this practice. Although knowledge of hygiene exists, lack of appropriate resources may adversely affect proper handwashing practices. For example, only 36.2% of students who washed their hands reported using soap, which may be attributed to a lack of soap in schools and at home. Studies in Ethiopian rural schools indicated that only 36% and 14% of students said they washed their hands with soap before eating and after defecation, respectively (Vivas et al., 2010). Similarly, a study in Kenya among 666 school children by Nyuguna et al., as cited by UNICEF (2013) found that only 22% could demonstrate proper handwashing. Although learners' knowledge on the importance of washing hands after defecation is high, it does not correlate with actual practice. It is necessary for the practice of proper hygiene in the school environment. In addition, a practice question also asked if they always wash their hands after toilet use and before eating. Factors contributing to this disparity between knowledge and actual practice could be laziness, a rush to play with friends, or even the lack of handwashing facilities close to the latrines, hence needs further exploration. In this study a knowledge question asks learners whether they know that hands should be cleaned after defecation. The researcher wished to determine how much knowledge learners have and how it relates to actual practice.

The results of a cross-sectional survey, conducted by Jordanova et al (2015) on water, sanitation, and hygiene in schools in Nicaragua, indicated that 82% of school directors reported that students had a tradition of washing hands at least once per day while at school. However, this is not likely to be actual hand washing rates, since self-reporting of handwashing behavior has been shown to be biased and produces much higher rates than those reported from observed behavior. This information was important for the researcher to note since learners in the study were asked to self-report their practice of hand hygiene.

The researcher was thus mindful of being vigilant in observing whether effective handwashing took place during the study to establish whether there was correlation between the two. Knowledge, attitudes and practices of hygiene were assessed in a study done in Ethiopia whereby it was found that 52% of children were classified as having proper knowledge of hygiene (Vivas et al, 2010). Their study found that there is a need for integrating handwashing and hygiene education programmes in schools. Successful implementation of such programmes is likely to contribute to reductions in morbidity and mortality associated with communicable diseases. Handwashing, especially after defecation, is one of the most effective ways to prevent diarrheal infections especially among children.

A study (Vivas et al., 2010) of individual hygiene of learners used a checklist to assess the following variables: clean clothing, clean fingernails, trimmed fingernails, clean face, eye discharge and clean hair, presence of footwear, condition of clothing, presence of scabies, cuts, and bruises. The researcher employed a cross-sectional study of primary schools, and most of these variables were included as they cover hygiene practices. According to Sibiya and Gumbo (2013), about $78.90 \pm 1.69\%$ of the respondents felt that teachers were not doing enough in terms of informing learners about practicing safe hygiene and sanitation. They agreed with Vivas et al (2010) that school budgets were identified as a barrier to adequate WASH resources such as tap, soap, and chlorine repurchase. In Vietnam, limited school budgets were the primary cause of inconsistent latrine maintenance and lack of anal cleansing materials (Xuan, Hoat, Rheinlander, Dalsgaard & Konradsen, 2012). In their study on handwashing among schoolchildren in northern rural Vietnam, Xuan and Hoat (2013) found that handwashing with water and soap (HWWS) was not a part of a school and home schedule, where nobody reminded schoolchildren to HWWS, such as requesting them to HWWS before eating or cooking.

Lau et al (2012), in their study of elementary schools in Chicago, found that additional hand hygiene instruction, over and above existing hand hygiene practices, resulted in a reduction of illness-related absenteeism. Their findings reflected failure from both teachers and parents in reinforcing the correct behaviour of handwashing. These findings underscore the need to prioritise education on HWWS among schoolchildren. A determination of the level of KAP on hygiene led to the conclusion that learners in the study area have sufficient knowledge about safe hygienic practices. It however seems that knowledge is not properly applied as numerous visits in schools confirmed that maintenance of sanitary systems in schools was actually poor. In terms of the questionnaire's results, attitude and practices were also found to be high among learners, while numerous field visits indicated that there is lack of knowledge and practices.

A study conducted by Sarkar (2013) among primary schools in Kolkata, India shows that there was a wide gap between practice and knowledge regarding personal hygiene. The study showed that 98 (94.23%) primary school children washed their hands after visiting a toilet and 88 (84.62%) washed their hands before eating. Also, 50 (48.08%) primary school children combed their hair, 52 (50%) brushed their teeth, 80 (76.92%) trimmed their nails, 44 (42.31%) took daily bath, 58 (55.77%) wore shoes and only 13 (12.5%) wore clean clothes.

The observations above clearly indicate that hygiene practices for all the indicators of personal hygiene were not adequate among the study population. Some studies show a discrepancy between the practice of sanitation and hygiene behaviours at school and at home. Both teachers and pupils commented that younger students were most likely to use spaces, other than the latrines, and they were also the most likely to create a 'mess' inside latrines because they did not have experience using them. For many young pupils, their first experience with a latrine was at school, since at home they do not have latrines.

Learners acquire the habit of using the bush at home, and continue to do so at school. At some homes, parents urinate near fences or bushes; children copy what they do (Caruso et al., 2014). The result is that insufficient sanitation facilities that do not suit pupils' needs, learners' practices do not always reflect the knowledge they have, since they are disadvantaged of acceptable opportunities to practice proper sanitation-related behaviours they are taught, which drives them to make impossible choices that are harmful to their dignity and health (Caruso et al., 2014).

Other than disgusting stuff inside the latrines and on floors, queues may be too long, or if they were far in the queue, pupils felt they did not have enough time to get to the latrine and back before the end of a break; they are pressed and cannot wait, hence they think of an alternative, for example, behind the latrine or in the bushes. In Zambia, reasons given by students for not using the toilet included that they were dirty, full, about to collapse, or congested. When latrines are engaged, 44% said they wait until these are free to use, while others use the bush, go behind the latrine, behind a tree, or wait until they are home as observed by Village Water Zambia as cited by UNICEF (2013).

In their study, UNICEF (2013) found that of 20 schools in Zambia, only 18% of learners reported that soap was consistently available; yet many admitted not washing their hands after using the latrines. In another study, based on student pocket voting in 50 schools, 22% and 30% wash their hands with soap after using the toilet at control and programme schools, respectively, Kambole as cited by UNICEF (2013). In their study conducted in Zimbabwe, Sisimayi and Masuku, as cited by UNICEF (2013) found the following: only 57% of student focus group participants felt that handwashing after defecating at school was common, and students who did wash their hands said they were likely to use soap after defecation, but much less likely after urination or before eating, especially when very hungry.

In Zimbabwe, toilet use at school was not considered a common practice by focus group participants; they reported that some children defecate just outside or behind the toilet. Reasons for non-use included unavailability of water, full pit, toilet in use and one cannot wait, dirty toilet, fear of falling in and fear of darkness. In Ethiopia, 45% of girls surveyed said they felt uncomfortable using the latrine, as they reported foul smell, lack of privacy, crowding, dirtiness, darkness and flies (Fehr, 2010).

The conclusion from the literature above indicated how big a struggle is, for the learners to balance the messages and knowledge they are taught in school and the reality of the conditions and accessibility of the facilities available to them. In addition, it is important to involve parents and communities in sanitation and hygiene promotion if schools are to see success in this important area.

2.6 PERCEPTIONS OF TEACHERS ON THE EXTENT OF HYGIENE PROMOTION IN THEIR SCHOOLS

The third objective of this study was to explore and describe the teachers' perception on the extent of hygiene promotion in their schools. In many societies, teachers are highly regarded.

The researcher included them in the study because of their position in society. They could be a useful vehicle in sanitation and hygiene promotion. Matengu (2013), found that teachers hold high status in the society because of their teaching role hence they can encourage families to engage in behavior change such as washing hands, keeping drinking water clean and personal cleanliness. Due to their influential nature, it was important for the researcher to assign teachers a major role of being an agent in coordinating management of sanitation and hygiene practices among school learners and other stakeholders.

The teachers perceived the following factors as having a major contribution to the dirty conditions of the latrines in their schools: lack of resources to clean facilities properly, an inadequate number of latrines to serve the population of the learners at school, and learners not knowing how to use latrines properly because they have not been trained on latrine use (Caruso et al., 2014). As presented above many studies focused on the KAP of learners with regards to sanitation and hygiene practices, as well as on conditions of sanitation facilities. However, there seems to be limited literature regarding teachers' perception on whether hygiene promotion in their schools is lacking.

2.7 METHODOLOGICAL PERSPECTIVES

This study employed a mixed method research framework. A mixed method of quantitative, observational, descriptive, cross-sectional study, as well as a qualitative, exploratory, descriptive, contextual design, was used. Bethany et al (2014) used focus group discussions in their study. Most of the studies conducted in the area of sanitation and hygiene among schools were cross-sectional; the schools were mainly selected by a simple random sampling technique (Aremu, 2012). The strength in Saskar's study (2013), was that other than questions specifically for children, the questionnaire included questions of the literacy status of both mother and father, as well as any illness over the last 15 days among the primary school children.

The morbidities listed in the questionnaire were fever, with or without cough / cold, diarrhea, passage of worms in stool, head lice, dental caries, scabies and multiple boils. In their study, learners were also examined clinically for the presence of signs of any illness, mainly to correlate with their reported illnesses. This is another strength which the researcher will adopt in her study to determine the presence of hygiene related illnesses. However, in this study, parents are not part of the population hence they are excluded from this study.

Bresee, Caruso, Sales, Lupele and Freeman (2016) used role-play and focus group discussions in their qualitative research in five schools in rural Zambia to assess pupils' potential perceived ability to serve as change agents in the context of a school-based WASH intervention. In their study, pupils were given homework to set up and build a handwashing station, and were encouraged to engage their family. Thereafter, they conducted focus group discussions with pupils and mothers on their experiences with the 'homework'. They found that pupils were enthusiastic about engaging with parents, successful at constructing handwashing stations, capable of communicating knowledge and behaviors to family members. Pupils were able to enact small changes to behavior. Mothers reported high levels of trust in children to relay health information learned at school.

2.8 MODEL DEVELOPMENT PERSPECTIVES

Little is known whether or not school-based interventions can achieve significant behavior change and pathogen reduction among learners. Some school-based handwashing trials have had a positive impact on reported absence, without examining intermediate objective measures of improved hand hygiene or reduced pathogenic exposures. Greene et al (2012) conducted a cluster-randomized control trial of two different school-based WASH interventions in western Kenya, in which a sub-study assessed their impact on exposure to microbiological contamination on pupils' hands. At baseline, they observed that none of the schools had soap for handwashing on the day of data collection, and 93% (control) to 100% (Sanitation and hygiene promotion (HP) & water treatment (WT) of pupils claimed there was never soap at the school. Hygiene conditions improved substantially in many intervention schools compared with control schools at follow-up. Although soap was not supplied by the intervention, they observed soap in 33% of HP&WT and 60% of Sanitation + HP&WT schools on the day of follow-up data collection compared with zero at control schools.

Despite increased global efforts to improve school WASH infrastructure and behaviour, lack of soap or handwashing at schools in low-income countries, in particular, has been cited as a major challenge, with some studies reporting as few as 2–7% providing soap for children.

2.9 CONCLUSION

The researcher did review related studies, but no studies on the management of sanitation and hygiene practices were found in the literature reviewed. Many related studies, conducted among schools learners on sanitation and hygiene, were mostly on conditions of sanitation facilities, KAP, handwashing, and health education on hygiene. Most were cross-sectional, qualitative or quantitative in nature, and very few used mixed methodology. In the literature there seems to be a dearth of teachers' perception on hygiene promotion.

Common findings in the literature are insufficient sanitation facilities in relation to learners' population; lack of handwashing facilities in many schools; lack of resources such as soap, toilet paper, and posters. School budgets were identified as a barrier to adequate WASH resources. Poor sanitation facilities discouraged usage by learners. There is a wide gap between practice and knowledge regarding most hygiene practices. There is a concern that the prevailing low WASH in schools may continue, given the coverage uncertainty to sustain access and complete availability of sanitation facilities. Several gaps were identified. No study has been conducted to determine how teachers perceive hygiene and sanitation promotion in their schools. Although many studies have been done about the condition of sanitation facilities and KAP, they were mostly done separately and not at a single time. This is a gap that this study bridges.

The research methodology in the literature is mostly qualitative or quantitative, and not mixed. A few mixed methods were used, in which a focused group was conducted especially among learners and not among teachers. This current mixed method study contributes immensely by addressing the gaps identified.

The next chapter presents the research design and methods employed in the study.

CHAPTER 3

RESEARCH DESIGNS AND METHODS

3.1 INTRODUCTION

Chapter two covered the literature reviewed, and studies that are related to this study. This chapter presents research design and methods used in the development of a model to facilitate the management of sanitation and hygiene practices in primary schools in the Ohangwena region. In addition, the study populations, sampling technique, research instruments, procedures used to gather data, are also discussed.

3.2 RESEARCH DESIGN

Research design refers to a series of decisions made by a researcher about how a study will be conducted. A research design encompasses an outline of activities that will achieve the research objectives (Burns & Grove, 2012). Research design is a form of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific guide for actions in a research study (Creswell, 2014). This study employed a convergent mixed method research framework, as well as the theory generative approach by Chinn & Kramer (2008). A quantitative, as well as a qualitative design, were used concurrently. A single cross-sectional design was chosen because the study was conducted in the present time in a single round of data collection to examine what currently exists (Des Vos, Strydom, Fousche & Delpont, 2007). The theory generation, as well as practice oriented theory, guided the development of the management of a collaborative environment model.

3.2.1 Theory generative design

Theory generation is a dynamic process of research whereby scientific knowledge is generated (Mouton, 2001). The design involves a focused, creative and structuring of dominating ideas that project a tentative, purposeful and systematic outlook of phenomena (Chinn & Kramer, 2011). Walker and Avant (2010) argued that the process of developing a theory is a complex one which involves identification of concepts, statements, theories, linkages and definitions concurrently. Furthermore, the relationship statements have to be constructed. Consequently, the model has to be described and evaluated. Finally, the guidelines that guided the implementation of the model had to be developed. Dickoff et al in Chinn and Kramer (2008) emphasised the importance of generating a theory that would achieve its practice and purpose. In this study, the theory generating design was used since it has features that were a necessity in the development of the model to facilitate the management of sanitation and hygiene in primary schools, which was the main aim of the study.

3.2.2 Mixed method approach

Creswell (2014) defined a mixed method research as an approach of inquiry that combines both qualitative and quantitative forms of research. This study used a convergent mixed method design whereby both quantitative and qualitative data were collected in a similar timeframe. The researcher based the inquiry on the assumption that collecting various types of data in a single study best provides a more complete understanding of a research problem than only quantitative or qualitative data. A mixed methods approach holds a pragmatic worldview of the simultaneous collection of both quantitative and qualitative data in one study. During this convergent mixed method study, a quantitative approach was used to assess the conditions of sanitation facilities and to describe the KAP of schools learners on hygiene practices, among primary schools in Ohangwena region.

The study commenced with a survey whereby by a checklist and questionnaires were used as quantitative data collection instruments in order to generalize results to a population. In addition, the qualitative approach assisted the researcher to gain more insight and understanding through exploring, and describing, the teachers' perceptions on the extent of hygiene promotion in their schools. A main open-ended question, as well as probing ones, was used through FGDs to collect detailed views from the participants. Both quantitative and qualitative data were collected concurrently in the first phase, namely concept analysis. Thereafter, analysis of two sets of data was done separately. The results were integrated and interpreted in order to develop a conceptual framework that guided the development of the model.

Another reason for using mixed method research, as noted by Creswell and Plano Clark (2011) is that using both kinds of research in one study helps make up for in-built weaknesses of each type should they be used individually. The principle behind the use of quantitative and qualitative approaches in combination is that it heightened the understanding of research problems. In this study, a model was developed to facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region.

Qualitative design: Qualitative research refers to the collection and interpretation of narrative and visual data in order to enable a researcher to gain insights into the phenomenon of interest (Polit & Beck, 2012). Fraenkel & Wallen, 1990; Locke et al., 1987; Merriam, 1988 as cited in Creswell (2014) stated that qualitative research focus on research participants' perceptions and experiences, and the way they make sense of their lives. Since qualitative designs focus on people, the researcher adopted a qualitative approach to discover and convey the story of teachers' perceptions on hygiene promotion in primary schools.

The researcher, through the use of FGDs and field notes, obtained answers to the main question on how the teachers promote hygiene in their schools. Subsequently, the researcher made interpretations of the data to understand their in-depth meaning (Creswell, 2014). Teachers' perceptions were unknown; hence FGDs were conducted to explore their perceptions in order to get an insight and understanding about hygiene promotion. The following structured question was asked to generate qualitative findings: *What are your perceptions about hygiene promotion in your school?* Probing questions were used to address issues that were related to or may have had an influence on hygiene promotion. Probing questions assisted in gathering more information on the subject matter.

Quantitative design: A quantitative design is a formal, objective, systematic process for obtaining quantifiable information about the variables of a study. A quantitative approach was used to assess and describe the status of sanitation facilities among schools, as well as to describe the KAP of school learners in their natural settings on hygiene practice. By using this research design, the researcher aimed to gain more information of the phenomena under study: the conditions of sanitation facilities as well as KAP of schools learners on hygiene practices. In this study, the associations between variables were established, and where association existed, this was confirmed by the p-value of less than 0.05. The findings are presented in Chapter 4. Quantitative approach findings are presented in a numerical form, and quantified, which allows for the use of statistics to analyse the collected data. The design was used to describe and test the relationships among the study's variables.

Cross-sectional design: A single cross-sectional design was chosen because the study was conducted in the present time in a single round of data collection to examine what currently exists thus all data were collected during a specific period of time (Des Vos, Strydom, Fousche & Delport, 2007).

Rivers (2016) highlights the advantages of a cross-sectional study as follows:

- Used to prove and/or disprove assumptions
- Not costly to perform and does not require a lot of time
- Captures a specific point in time
- Contains multiple variables at the time of the data snapshot
- The data can be used for various types of research
- Many findings and outcomes can be analyzed to create new theories/studies or in-depth research.

Contextual design: Pequegnat, Strover and Boyce (2011) referred to context as a particular setting, environment, people, phenomenon in which a study is taking place. This study was contextual as it was conducted in rural, peri-urban and urban primary schools in the Ohangwena region. Conducting a study in the participants' own context was done intentionally so as not to disturb the natural setting of the phenomenon under study. The approach therefore ensured true, valid, and accurate information without the influence of external factors. This study is contextual because the school learners, as well the teachers, were studied in their own school settings. The contextual settings may have had an influence on their KAP, as well as perceptions. Chapter 1 provided the background to the study, and the setting in which it was conducted.

3.3 REASONING STRATEGIES

The reasoning strategies in the four stages of this study were deductive reasoning, inductive reasoning, inferences, bracketing and reflectivity, synthesis, derivation, and analysis. The strategies were used by the researcher in order to organise data during the analysis process of the theoretical and pragmatic concepts. They helped with the conceptualisation of the findings, description of guidelines for the operationalisation of the model, and with the justification, conclusions, and recommendations.

3.3.1 Inductive reasoning

According to Burns and Grove (2012), inductive reasoning is the opposite of deductive reasoning because it involves moving from the specifics to more general concepts of knowledge. It starts out with a general statement, or hypothesis, and examines the possibilities to reach a specific, logical conclusion. It makes broad generalisations from observed phenomenon or principles specific observations. Inductive reasoning was used in Phase 1 of the study during field work to collect data through questionnaires, observations, and focus group discussions. The conditions of sanitation facilities were assessed. The KAP of learners and the perceptions of teachers were explored and described. It was also applied in Phase 2 during the development of themes and subthemes, and during the development of the conceptual framework. Its application led to the identification of concepts that formed the basis for the development of a model and the guidelines in Phase 3.

3.3.2 Deductive reasoning

Deductive reasoning, or deduction, as stated above, is the opposite of inductive reasoning. A deductive approach involves working from broad to specific, and is often referred to as a top-down approach (Burns & Grove, 2012). This type of reasoning is used mainly in quantitative research studies. In this mixed method study, deductive reasoning was used in Phase 1 by using the instruments to observe the conditions of sanitation facilities at primary school, as well as to assess the KAP of learners. The process involved a general concern about the management of hygiene and sanitation among learners in primary schools, designing specific objectives, data collection tools as well as data collection. The findings helped to get to the specifics by pinpointing where the challenges were. This helped the researcher in the development of the model. Deductive reasoning was used in the conceptualization process in Chapter 5.

After concept identification and description, deductive reasoning was used to describe the collaborative model necessary for the management of sanitation and hygiene in schools. The researcher used this reasoning in the development of the guidelines for the implementation of the model, and to describe, and evaluate the model, according to the principles of Chinn and Kramer (2008).

3.3.3 Inferences

Inferences refer to the process of drawing a conclusion about something known from factual knowledge or evidence (Chinn & Kramer, 2011). The researcher drew some inferences by interpreting data collected during interviews with learners, observation of sanitation facilities, and focus group discussions with teachers. The data collected helped the researcher to draw inferences about the population from a study sample. These inferences, from information gathered from the study population, helped with the conclusion, and allowed for a relatively smooth process of development of the model because of the evidence gathered.

3.3.4 Bracketing

Bracketing is a method used in qualitative research to ease the potentially harmful effects of preconceptions and biases that may flaw a research process (Tufford & Newman, 2010). The process of identifying personal biases, and then setting them aside so as not to make judgements about what is being heard or observed, demonstrates the application of bracketing. In this study, the researcher applied bracketing, by remaining neutral, and by not letting her beliefs and ideas to influence the study. The researcher did not influence or prejudice the study, only the questions in the questionnaire were asked.

During the FGDs the researcher asked the main question that was pre-set, and probing was only done by asking questions relevant to the topic and those that could lead to the clarification of the phenomenon under discussion. Bracketing was applied during the FGDs with the teachers: besides the main question, probing questions were used to guide the discussion. Bracketing interviews can increase a researcher's clarity and engagement with participants' experiences by unearthing forgotten personal experiences; it also can protect researchers and participants in emotionally charged research topics, and simultaneously develop a researcher's capacity to understand the phenomena in question. During the writing up of the data, bracketing was used to give voice to the participants' thoughts, and the interview themes, thus imparting the researcher's critical analysis and understanding. The researcher remained neutral and honest about her own beliefs and thoughts to minimize possible altering the research interpretation.

3.3.5 Analysis

The process of analysis aims at clarifying or redefining existing concepts, statements and models (Walker & Avant, 2010). Analysis was used both inductively and deductively in Phase 1 of this study for concept analysis, as well as for concept identification, definition and classification. In this phase of the study it helped the researcher to understand better the raw data collected from the samples. Concepts and statements formed the basis for the development of a model. The understanding gained was useful for the identification of the main concepts that helped with the process of conceptualisation, and the main aim of the study, namely development of the model.

3.3.6 Derivation

Derivation may be defined as a process in terms of which an entire set of interrelated concepts and statements is either borrowed or shared from another field and modified to fit the theory developed.

A derivation process involves adopting, adapting and borrowing related concepts from other fields or authors by adjusting them to fit the phenomena under study (Walker & Avant, 2010). In this study it was applied through the process of literature review and by adopting the components of the practice-oriented theory by Dickoff et al. After the analysis and derivation process had taken place, involving sifting and redefining of concepts, statements from another field were employed. The process helped with the formulation of meaningful concepts that eventually facilitated the development of the model. This was done in order to formulate meaningful concepts, and a central statement in terms of the model for facilitating male partner involvement in reproductive health.

3.3.7 Synthesis

Synthesis is a scientific process that deals with abstracts, or pulling together concepts and statements from data, a set of observations or an empirical statement, which has been acquired through both qualitative and literary approaches (Burns & Grove, 2012; Walker & Avant, 2010). In synthesis, information, based on interviewing and observation, is used to construct a new concept or new theory (Walker & Avant, 2010). After analysis, the researcher, in this study, combined or synthesised concepts that had been broken down in order to produce a whole or a meaning through interpretation of findings. After synthesising findings from concept analysis, the researcher was able to:

- Draw conclusions and recommendations based on the interpretations of findings.
- Describe the conceptual model using the interrelation statements.
- Use Tesch's method of analysis during concept identification.
- Construct relationship statements.

3.4 THEORY GENERATING RESEARCH METHOD

The theory generation research methods, as explained by Chinn and Kramer (2008), were adopted and utilised in order to develop a model to facilitate the management of sanitation and hygiene practices. The model developed was based on the theory generation by Chin and Kramer (2008) and the conceptual framework developed in Phase 2. The theory generation phases under which this study conducted are:

- Phase 1: Analysis of the concepts: this process comprised of identification of concepts, definitions, and classification of concepts.
- Phase 2: Construction of the relationship statements.
- Phase 3: Descriptions of the structure, process and evaluation of the model.
- Phase 4: Formulation of guidelines for operationalising the model.

“Research methods involve the forms of data collection, analysis and interpretation that researchers proposed for their studies” (Creswell, 2014). Collectively, research methods refer to the systematic approach a researcher has to follow throughout a process to ensure reliability of data collected, with the aim of getting to a concrete solution to the research problem under study.

The methodology included the population, sampling, data collection methods and data analysis methods. Figure 3.1 below indicates the structures of the study.

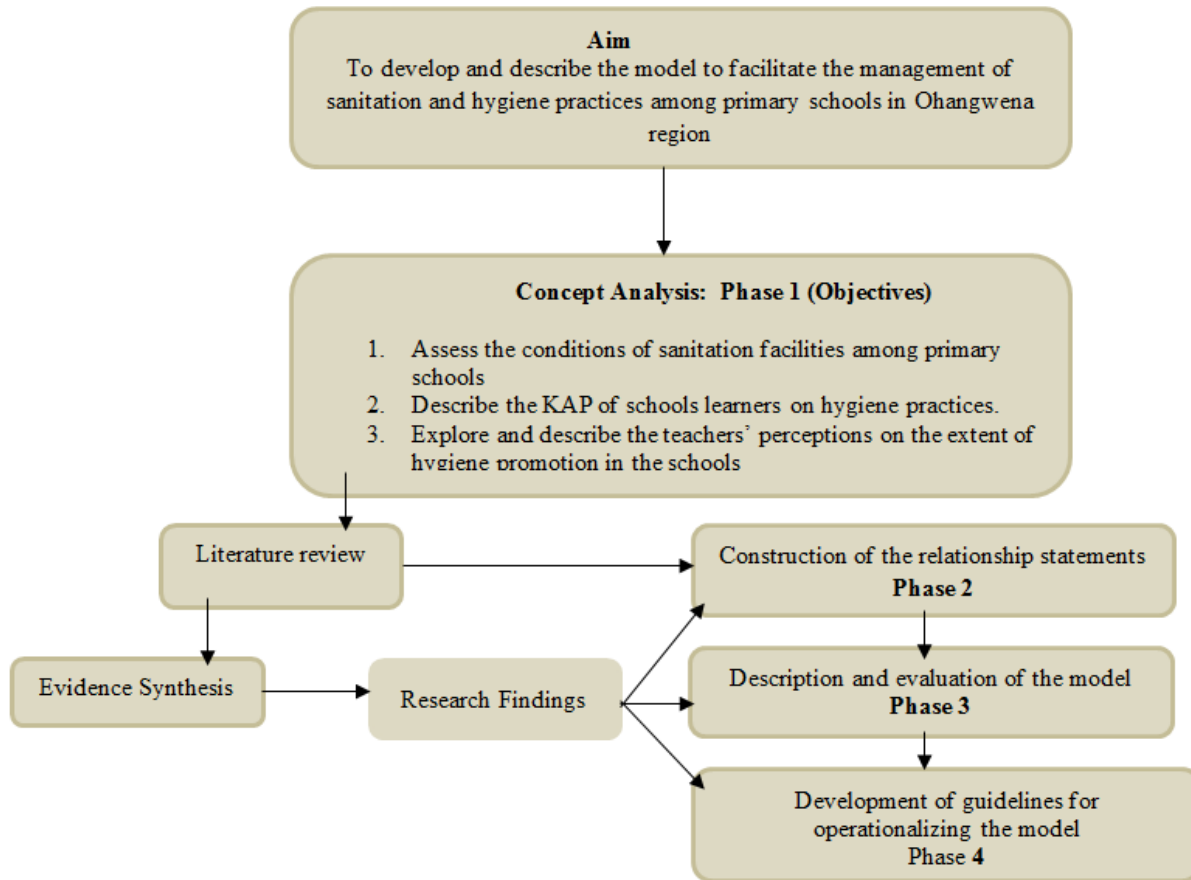


Figure 3.1: The phases that illustrate the study synthesis.

3.4.1 Phase 1: Concepts analysis

The first phase in theory generation design involves analysis of concepts. The process of analysing concepts comprises of identification, classification and definitions of concepts (Chinn & Kramer, 2008). The concepts identified led to the development of the model for the facilitation of management for sanitation and hygiene practices. Since the study employed a mixed method approach, the discussion of the research methods is in accordance with the study's objectives.

A quantitative approach was used to collect quantitative data from the first two objectives:

- To assess the conditions of sanitation facilities among primary schools in the Ohangwena region.

- To describe the KAP of schools learners on hygiene.

In addition, an exploratory, qualitative approach was employed to gain more insight by exploring and describing teachers' perceptions on the extent of hygiene promotion in their schools: the third objective. The objectives underpin the study population, sample and sampling method, data collection and data analysis.

Part A: Identification of the concepts

The first step involves analysis of concepts and identification of concepts. The analysis was made by assessing, exploring and describing different contextual factors concerning the management of sanitation and hygiene among primary schools in the Ohangwena region. The three objectives of the concept analysis were to assess the conditions of sanitation facilities among primary schools in the Ohangwena region, to describe the KAP of schools learners on hygiene practices, and to explore and describe the teachers' perceptions on the extent of hygiene promotion in their schools. The first two objectives are quantitative in nature while the last objective is qualitative. The concepts used in the development of the model originated from empirical data such as life experiences or clinical practice (Chinn & Kramer, 2008). After data collection, the data were analysed, interpreted and classified into themes and sub-themes. After data analysis, the researcher used deductive reasoning to identify the main concepts of the model. Since the study is a mixed method and has different objectives, the objectives directed the discussion on research methods.

3.4.1.1 Objective 1: To assess the conditions of sanitation facilities among primary schools in the Ohangwena region

Population

The population for this objective was the sanitation facilities in primary schools in Ohangwena region.

Sanitation facilities are the main sites in which sanitation and hygiene is actually being practiced. The report by UNICEF (2013), as well as Shinovene (2014), revealed that the criteria set by UNICEF and /or MAWF (2009) on the ideal number of sanitation facilities at schools were not met, since many schools have inadequate toilet facilities compared to the number of learners in those schools. In view of this sanitation facilities were considered to be a population in the study. The researcher was interested to observe the present status of sanitation facilities, and the actual management of the facilities on the ground. The conditions of sanitation facilities in 10 sampled schools were assessed. Table 3.1 presents the total population of the school circuits, clusters and primary schools in the Ohangwena region.

Table 3.1: Study population of primary schools in the Ohangwena region

CIRCUITS	CLUSTERS	PRIMARY SCHOOLS (PS)
1. EENHANA	1. Eenhana	1. Eenhana PS 2. Shifidi PS 3. Otaukondjele PS
	2. Haimbili Haufiku	4. Hanghome PS 5. Twaalulilwa PS 6. Paulus Hamutenya PS
	3. Onambutu	7. Onakaale PS 8. Onaisaati PS
	4. Onanona	9. Onamambo PS 10. Shatiwa PS
	5. Omphanda	NO PS
2. EPEMBE	6. Epembe	11. Okanaimbula PS 12. Uuhahe PS
	7. Omulunga	13. Ombinga PS
	8. Onduulinawa	14. Ewanifo PS
	9. Oshamono	15. Onambaladi PS
3. ENDOLA	10. Eengedjo	16. Omungwelume PS 17. Engungumano PS
	11. Eembo	18. Onhenga PS 19. John Shaetonhondi PS
	12. Omundudu	NO PS
	13. Shituwa	20. Endola PS 21. Onangubu PS

	14. Ongenga	22. Ongenga English private PS 23. Joseph Shifeta PS 24. Nambongo Kasita P.S	
	15. Okambebe	25. Oushakeneno PS	
4. ENYANA	16. Oshisho	26. Omuuni PS	
	17. Enyana	27. Oshikuni PS	
	18. Oidiva	28. Oidiva PS 29. Oluhupa PS	
	19. Oshamukweni	NO PS	
5. OHANGWENA	20. Engela	30. Ndilokelwa PS 31. Weyulu PS 32. Mennonite Brethren C PS 33. Ndjukuma PS	
	21. Oshikango	34. Elao PS 35. Savo Nuts PS 36. Nghiteke PS	
	22. Pönhofi	37. Omutaku PS 38. Nakambuda PS	
	23. Onekuta	39. Ndapona Yashikende PS 40. Okadila PS 41. Omuuva-mutilifa PS	
	24. Udjombala	42. Haikonda PS 43. Shingunguma PS 44. Ohaingu PS 45. Onyofi PS	
	25. Etameko	46. St. Bartholomeus PS 47. Oipya PS	
	6. OHAKAFIYA	26. Ohakafiya	48. Limbadungila PS 49. Onehova PS
		27. Okahenge	50. Oshipala PS 51. Ohauwanga PS 52. Omundaungilo PS
		28. Onakalunga	NO PS
		29. Oshikunde	53. Etakaya PS 54. Haihambo PS 55. Onghwiyu PS 56. Okadidiya PS
		30. Eputuko	57. Efuta PS 58. Omukukutu PS
7. OKONGO	31. Oluwaya	59. Lazarus Haufiku PS 60. Okalimbanombwa PS 61. Onamihonga PS	
	32. Oshela	NO PS	
	33. Okongo	62. Kongo PS 63. Onhumba PS	
	34. Oupili	NO PS	
8. ONGHA	35. Ongha	64. Kapombo PS 65. Nailenge PS	
	36. Omuve	66. Ohalushu PS	

	37. Onamahoka	67. Erkki Nghimtina PS
		68. Eenghushe PS
	38. Okatope	69. Mandume PS
		70. Helao Mwiinduli PS
	39. Oshawapala	71. Ongonga PS
		72. Oshitambi PS
9. ONDOBE	40. Edudja	73. Edundja PS
		74. Oumbada PS
		75. Tuyoleni PS
	41. Eembahu	76. Malangu PS
		77. Efidu PS
		78. Ehenene PS
	42. Onamunama	NO PS
	43. Onamukulo	NO PS
44. Onangwe	79. Ehoma PS	
	80. Onailonga PS	
45. Mwadikange	81. Ofifiya PS	
9	45	81

Sample and sampling method

According to the Ministry of Education (MoE) establishment register for 2015, there were nine circuits, 45 clusters, and 81 primary schools in the Ohangwena region. Eight clusters out of 45 had no primary schools. A probability sampling method was used to sample schools. Stratified multi-staged sampling was used to select schools by using a proportionate sampling method. Stratified multi-staged sampling is based on grouping elements into subpopulations termed strata (Jain & Hausman, 2006). Stratified multi-staged sampling is a proficient sampling method that combines techniques of stratified sampling and multi-staged sampling. A three staged stratified multi-staged sampling was employed.

Stage 1: In the first stage, a list of the nine circuits in the region was made and every circuit was assigned a number.

Numbered papers were made for all the circuits in the region, folded and placed in a box, and one card was randomly picked. Subsequently, five circuits were randomly selected. The five circuits selected were Eenhana, Endola, Ondobe, Ongha, and Ohangwena.

Stage 2: The above exercise was repeated to sample the clusters whereby a list of all 20 clusters (out of 45) that belonged to the five sampled circuits was made and every cluster was assigned a number. Ten clusters were then selected: Eenhana, Haimbili Haufiku, Shituwa, Eengedjo, Engela, Ponghofi, Ongha, Okatope, Eembahu, and Mwadikange.

Stage3: The process was repeated to randomly select schools. A list of primary schools, in each sampled cluster, was listed and assigned a number. One school from each cluster was randomly picked. In the end, 10 schools out of 24 schools from 10 clusters were sampled. The 10 schools sampled schools were Omungwelume, Endola, Efidi, Ofifiya, Weyulu, Udeiko Haufiku, Eenhana, Omutaku, Mandume, and Kapombo. The sanitation facilities in the 10 sampled schools were all assessed. The process used for sampling schools and learners was similar to that employed by Dube and January (2012) in their study of factors leading to poor water sanitation hygiene among primary school going children in Chitungwiza, Zimbabwe. Table 3.2 depicts the 10 sampled primary schools.

Table 3.2: Sampled circuits, clusters and primary schools for the study

Circuits	Clusters	Primary schools
1. Eenhana	1. Eenhana	1. Eenhana PS
	2. Haimbili Haufiku	2. Udeiko Haufiku
2. Endola	3. Eengedjo	3. Omungwelume PS
	4. Shituwa	4. Endola PS
3. Ondobe	5. Eembaxu	5. Efidi PS
	6. Mwadikange	6. Ofifiya PS
4. Ongha	7. Ongha	7. Kapombo PS
	8. Okatope	8. Mandume PS
5. Ohangwena	9. Engela	9. Weyulu PS
	10. Ponghofi	10. Omutaku PS
5	10	10

Data collection method and procedure

For data collection, a checklist, observation, and camera, were used as data collection instruments.

Checklist: A structured checklist written in English was used as a data collection instrument to collect quantitative data on the conditions of sanitation facilities in above-mentioned 10 primary schools. The instrument consisted of 29 item-scale questions. The items were mostly close-ended questions about availability and types, of sanitation facilities, cleanliness of sanitation facilities, location, conditions of immediate environment, handwashing materials, availability of waste bins and hygiene posters, availability of supplies such as soap, toilet paper, and so forth. Options to tick the correct response upon satisfaction from the researcher's observation were provided on the checklist. Refer to Annex D.

Observation: The researcher observed the internal and external environment, as well as the nearby surroundings of all the toilet facilities, at every sampled school. In addition to sanitation facilities, the school environment, classrooms, and the dumping sites, were observed. Observation helped to capture information that was otherwise impossible to understand through notes only as stories from participants. Observation supplemented data collection tools by strengthening the quality of data collected. Observation was one form of triangulation that enhanced trustworthiness of the results.

Camera: A camera was used during data collection to photograph the sanitation facilities observed at each school. Permission for that purpose was granted by Ohangwena regional educational directorate and by the school principals. Some information could not be emphasized by writing or observation only; hence a picture/photograph can assist more in understanding the nature and status of observed places, etc. Knoblauch, Baer, Petschke and Schnetter (2008) are of the opinion that collected visual data provide a more direct record of the actual events being studied. This is not possible with other data methods.

The photographs, as visual data of the sanitation facilities at all sampled schools, were used to complement written and observed data. Photographs of sanitation facilities in this study are presented and described in Chapter 4.

Data analysis

Statistical analysis was done to analyse the collected quantitative data from the first objective. After completion of data collection, each completed checklist was manually checked to ensure the quality of data collected. Quantitative data, from checklists, were then entered into an electronic database and analyzed using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics were used to categorize and describe continuous variables, which were summarized using frequency distributions and percentages for categorical variables; and the mean, standard deviation, mode, maximum and minimum values for continuous variables. The findings are presented in tables, pie charts, and bar charts.

3.4.1.2 Objective 2: To describe the KAP of school learners on hygiene practices

Population

The population, for this objective, was grade five, six and seven primary school learners. Primary schools learners were chosen to determine how they managed sanitation and hygiene given the challenging situations of inadequate sanitation facilities in their schools. Matengu (2013) indicated a possible advantage of school children being taught sanitation and hygiene at schools: they have the potential to develop positive attitudes and behaviour that they use even when adults. They can act as positive role models in the promotion of sanitation and hygiene in their communities.

The below are reasons for targeting learners in grades five, six and seven.

- They are more likely to be older than 7 years old, and cognitively developed to be able to give coherent meanings.

- They are being taught about sanitation and hygiene in social studies, a subject in their curriculum.
- The researcher wished to determine if their KAP correlate with what they are learning.

Sample and sampling method

A probability sampling method was used to sample the school learners. After the 10 schools were sampled in stage 3 in the first objective above, the final stage involved simple random sampling of school learners from the 10 sampled primary schools. Two lists of learners' names, (one for boys and one for girls) in grade five, six and seven classes at each sampled school, were made. There were mostly two classes of grades five, six and seven at each school. The number of learners in the above-mentioned grades was between 30 and 35.

The numbers brings to a target population total of 2830 learners. Finally, a third of each grade at each sampled school, an average of 15 learners per grade, were selected. To determine the sample size, given the population size of 2830, expected with the margin error of 5%, and a confidence level of 95% and a response distribution of 50%, a sample size of 339 was calculated. Since the researcher preferred to balance the number by selecting 15 learners in each class, that brought her to the sample size of 450 learners.

The researcher used a simple random sampling method, by using random numbers to select 15 learners: seven boys and eight girls or vice versa, in grades five, six and seven at every participating school. Forty-five learners were sampled from each school. The process resulted in 450 learners who were randomly selected to participate in the study.

The following were the inclusion criteria for sampling and selection of learners.

- Had to be seven years or older.
- Willing to participate by giving assent.
- Boys and girls of any race.
- Had to be a learner in grade five, six or seven.
- Ability to speak and understand English or Oshikwanyama

A child, who is seven years and older with normal cognitive development, is able to provide assent or dissent to participate in a study (Grove et al., 2013). At each school, the principal, or a teacher assigned by a principal, signed an 'in loco parentis' consent form granting permission for learners' participation. In addition, learners themselves provided their assent to participate in the study, and those who refused to participate were not coerced to participate, since participation was voluntary. The minimum representative sample size, selected for this study, was 450 learners.

Data collection method and procedure

Questionnaire and observation were used to collect quantitative data. A questionnaire was used as a quantitative data collection instrument to collect data from school learners about their KAP on hygiene practices. While a mixture of closed and open-ended questions was used in the questionnaire, most of the questions were closed, which made it easier to compare the responses to each item. Some questions had fixed responses of yes or no, Likert rating scale, while some were narrative in nature with a space provided to answer. At the end of the questionnaire, learners were provided with space to add any additional comments or suggestions.

The researcher personally distributed questionnaires to the learners in grade five, six and seven and requested to personally complete the questionnaire. Learners participating in the study were gathered in one classroom. Although the learners' questionnaires were intended to be self-administered, the researcher was available to interview those experiencing difficulties in understanding questions, as well as those who could not read properly. The researcher was present throughout the process of the learners' completion of the questionnaire. The questionnaire took 30 to 45 minutes to complete.

The English questionnaire was translated to Oshikwanyama. The questionnaire, as a research instrument, was used for the following reasons.

- They ensure a high response rate.

- They require less time and energy to administer.
- They offer the possibility of anonymity because subjects' names are not required on the completed questionnaires.
- There is less opportunity for bias as they are presented in a consistent manner.

The questionnaire consisted of five sections and instructions on how to answer the questions were included. Section A: demographic data, Section B: knowledge questions, Section C: attitude questions, Section D: practice questions, and Section E: general questions on hygiene and sanitation promotion. Demographic data collected in Section A were sex, grade, and age of each participant. Section B consisted of six-item questions on learners' knowledge. Likert's 5 point scale was used: Strongly agree (SA), Agree (A), Do not know (DK), Disagree (D), and Strongly Disagree (SD), with 5 being the highest score and 0 the lowest score. Section C, also used a 5-point Likert scale as that used in section B, and consisted of five-item questions on learners' attitudes.

In addition, two yes/no questions, and an option to provide reasons for selecting 'no', were included. Section D consisted of questions on learners' practices. This section too included a mixture of yes or no questions, with an option to state reason if the answer was 'no'. A 4-point Likert-type scale was included: Very clean (VC), Clean (C), Dirty (D), and Very dirty (VD). Section E consisted of general questions on hygiene and sanitation promotion in school. The section also comprised of a mixture of yes or no questions, with an option to state reason if the answer was no and one 4-point Likert-type point question.

Observation: In addition to the questionnaire, learners' personal hygiene was observed by the researcher. The following aspects were observed: cleanliness of learners' clothing (school uniforms), fingernails, face, hair, scalp, fingernails as well as eyes for the presence of discharges.

Data analysis

Statistical analysis was done to analyse the collected quantitative data from the second objective. Before entering data in the software for analysis, each completed questionnaire was manually checked to ensure the quality of data collected. After checking, data from questionnaires were entered into an electronic database and analysed using the Statistical Package for Social Sciences (SPSS) version 23.

Descriptive statistics were used to categorise and describe continuous variables, which were summarised using frequency distributions and percentages for category variables; and the mean, standard deviation, mode, maximum and minimum values for continuous variables. The interpreted findings were presented in tables, pie charts, and bar charts.

3.4.1.3 Objective 3: To explore and describe the teachers' perceptions on the extent of hygiene promotion in the schools

Population

The population for this objective was school teachers in primary schools in the Ohangwena region. Teachers, like learners, are in the same school environment with inadequate sanitation facilities. In addition, they are the ones that teach learners about sanitation and hygiene. In their capacity, they may have a different perspective when it comes to the phenomenon under study. Matengu (2013) stated that the high status that teachers hold in society can help motivate families and communities at large to engage in behaviour change such as washing hands, keeping drinking water clean, and personal cleanliness.

Sample and sampling method

A non-probability, purposive, convenient sampling method was used to purposively sample teachers for FGDs. A sample of six to twelve teachers was acceptable to conduct a FGD at each sampled school.

Teachers, who were eighteen years and older, willing to participate, male or female, from any race, and of mentally sound to consent to participation, were sampled. Teachers irrespective of the grades or subject being taught were sampled to take part in the study. Five FGDs, comprising between six to ten teachers, were conducted. Omungwelume, Endola, Omutaku, Efidi, and Kapombo, were the primary schools where FGDs were conducted.

Data collection method and procedure

Focus group discussions (FGDs) guide, field notes, and an audio tape recorder, were used to collect qualitative data. Each method and instrument used is described below.

Focus group discussions (FGDs) guide: A FGDs guide was used to conduct five FGDs over five days at Omungwelume, Endola, Efidi, Omutaku, and Kapombo primary schools to explore the perceptions of teachers on the extent of hygiene promotion in their schools. Each group consisted of six and ten teachers and lasted between 45-60 minutes. The discussions were audiotaped after verbal permission granted by the teachers. Five FGDs were conducted, four FGDs were conducted in one of the classrooms in those schools and one was conducted in the teachers' office.

The researcher personally conducted FGDs with the teachers to explore the perceptions of teachers on the extent of hygiene promotion in their schools. Firstly, the researcher introduced herself, and then briefed them about the whole process before giving them consent form to give permission towards participation and the use of audiotape. Additionally, she encouraged them to express themselves without fear and to participate actively. The researcher presented, and established the ground rules, to regulate the smooth interaction of the participants in either a nondirective or a directive manner (De Vos et al, 2007). The researcher used a discussion guide, with a main question and probing questions. A main, or central question, is a broad question in qualitative research. Its aim is exploration of the central phenomenon or concept in a study which was hygiene promotion (Creswell, 2014).

The guide had a main open-ended question: *What is your perception on the extent of hygiene promotion in school?* Furthermore, follow-up questions and probing questions were done as necessary, depending on the nature of responses. Probing questions in the data collection instrument were asked to help getting more insight.

The types of probing questions that were used were:

- Is there a hygiene education plan in the school on hygiene behaviour?
- If yes, is the hygiene education actually happening at school?
- When does it happen (frequency)?
- Is there a focal person who is leading hygiene activities at school? In your opinion, do you think what is done is enough? Is there any arrangement on handling menstrual waste disposal in girls' toilets?
- What are the challenges towards effective promotion of hygiene and sanitation among school learners in your school?
- What do you think can be done to improve the situation?

Refer to ANNEX M for the FGDs guide.

Field notes: The researcher took field notes during the process of data collection by making observational notes after each FGD, and assessment of facilities. The process helped the researcher to remember and retrieve information about aspects observed during the discussions, and to describe the underlying themes, as well as the dynamics during the interviews.

Additionally, field notes assisted the researcher to incorporate and correlate observed information with the tape-recorded data in order to meet the requirement of trustworthiness. Field notes supplemented data collection by capturing information that could not be portrayed by an audio tape recorder: nonverbal communication as well as a description of the layout of the schools, for example.

Observational notes: Observational notes are defined by de Vos (2007) as self-conscious, planned attempts by a researcher to discover meaning from some, or all observational notes. Polit and Hungler (2006) stated that observational notes are impartial descriptions of the proceedings and discussions. Notes about information were made of, for example, time, place and activity. Observational notes may be accomplished by observing and listening to the proceedings in a situation. In addition, the researcher took notes of direct quotations of what was said during FGDs. It is not easy to remember all aspects pertaining to the study, hence observational notes were written to relieve the researcher of some of the burdens of recalling information.

Audio tape recorder: An audio tape recorder, to record the FGDs, was used as a data collection instrument to supplement the qualitative data collection. After receiving verbal permission from participants, an audio tape recorder was then used to record the interactions between the researcher and teachers. The recorded discussions were used for verbatim transcription. The aim of using an audio tape was to prevent loss of information which can be caused through possible distraction during discussions (Henning, Stone & Kelly, 2009).

An audio tape recorder, as a data collection instrument, collected exact information as told directly by the participants. The use of audio tape recording provided a good record of factual data with referential adequacy, an aspect which ensures credibility (Babbie & Mouton, 2009). It therefore served as a backup that supplemented the field notes.

Data analysis

Text analysis was performed to analyse qualitative data collected from the third objective, which aimed at exploration and description of teachers' perceptions on hygiene promotion in schools. Qualitative data comprised audiotaped FGDs and field notes. The aim of qualitative data analysis was to search for general statements about relationships among different categories of data.

Qualitative data analysis was done in line with Tesch's eight steps of the coding process (de Vos et al 2013; Creswell, 2014). These steps entail a process of breaking down, reducing, examining (visualising), comparing and categorising the raw data, and by putting them together differently, in a way that would be more meaningful. The researcher opted for these steps because they are a systematic approach with clear descriptions.

Analysis of qualitative data started with reading the field notes, with the aim to extract themes and sub-themes. Transcripts and field notes were organised and prepared for analysis by reading all FGDs' data. The generated raw data were manually transcribed verbatim. The researcher listened to all five audiotaped FGDs and carefully transcribed them word-by-word. During transcription, every participant's information was transcribed in detail including involuntary vocalisations, laughter and pauses (Olivier, Serovich, & Mason, 2005). Through reading, the researcher listened and coded relevant information that related to one another.

The analysis of data resulted in condensing data that were very huge to manage. This was then followed by transcription of participants' responses. This involved reducing data through removal of extraneous conversation and comments so that only relevant and useful portions of discussions remained. Concept formation was enhanced through open coding; writing theoretical notes to explain the researcher's thought process. To ensure trustworthiness of the transcribed data, the researcher kept transcripts and the audio recorded FGDs for referral purposes. The process of analysis resulted in the identification of three main themes and eleven sub-themes, presented in Table 4.21 in Chapter 4. The eight steps of qualitative analysis are described in Table 3.3.

Table 3. 3: Tesch’s steps of data analysis and its application to the study

Tesch’s Steps of qualitative data analysis	Application to the study
<p>1. Get sense of the whole. Read all the transcriptions carefully and jot down some ideas as they come to mind. This step necessitates careful and repeated reading of the transcriptions obtained to identify significant words and phrases</p>	<p>The researcher read the entire transcripts several times and immersed herself in the details by trying to get a sense of the FGDs as a whole by breaking them into parts. By looking over the field notes from interview transcriptions, the researcher disregarded predetermined answers and see what the respondents have.</p>
<p>3. Arrange those topics into columns of major topics, unique topics and leftovers.</p>	<p>The researcher wrote notes in the margins of transcripts in order to explore the database. This task was completed with several participants and similar topics were clustered together in a column as themes and sub-themes.</p>
<p>4. Assign each topic with a code and write the codes next to the appropriate segment of the text and see if new categories and codes emerge.</p>	<p>After arranging topics into columns in this study, the researcher went back to the data by abbreviating the topics as codes and wrote codes next to the appropriate segments of the text. In coding, the emphasis was on trustworthiness and credibility. Similar items were given the same code.</p>
<p>5. Find the most descriptive wording for your topics and turn them into categories. Seek for ways of reducing your total list of categories by grouping topics that relate to each other.</p>	<p>The researcher used the coding process to generate descriptions. All topics that were grouped together were checked for coherency. Therefore, coding generated a number of themes that appeared as major findings of this study that have been used as headings in the findings section.</p>
<p>6. Make a final decision on the abbreviation of each category and alphabetize these codes. To arrive at the</p>	<p>A final column with themes and sub-themes was created.</p>

final set of categories and codes, the researcher has to go through the materials many times.

7. Group the data material belonging to each category in one place and perform a preliminary analysis. Data reduction is a form of analysis that sharpens, sorts, focuses discards and organizes data in such a way that final conclusion can be drawn and verified.

The act of giving the same codes to the descriptions was in essence a way of to reduce data.

8. Recode your data, if necessary.

Data were re-coded after an initial coding.

(Adopted from Creswell, 2014; Silverman, 2011).

After data analysis, three main concepts, namely collaboration, management and environment, were deducted from the findings. The process of concept analysis was important in the development of the model to facilitate the management of sanitation and hygiene practices; it involved a thorough examination of the attributes of the three main concepts. Wilson's (1989) steps, cited and modified by Walker and Avant (2010), were used to undertake concept analysis of management, collaboration and environment, and are presented below.

- Select or identify a concept.
- Determine the aims or purposes of the concept analysis.
- Identify uses of the concept.
- Determine the defining attributes.
- Construct model and borderline cases.
- Identify antecedents and consequences.
- Define empirical referents.

The concept analysis process is presented in Chapter 5.

3.4.1.4 Merging the findings for the central concepts

After the separate analysis of quantitative and qualitative data, the findings from the two databases were merged. The approach used to merge these mixed method databases is called a side-by-side comparison. The researcher first reported the quantitative statistical results and thereafter discussed the qualitative findings (e.g. themes) that either confirmed or negated the statistical results (Creswell, 2014). These comparisons can be seen in the discussion sections of mixed methods results in Chapter 4. Mixed methods writers call this a side-by-side approach because a researcher makes the comparison within a discussion, presenting first one set of findings and then the other.

The findings from the concept analysis are based on the research objectives that guided the direction of the study. Discussion of the findings led to the identification of the central concepts and interpretation of the central statement that guided the development of the model. Figure 3.4 presents the stages involved in the implementation of the mixed method approach, including the point where the two databases are merged.

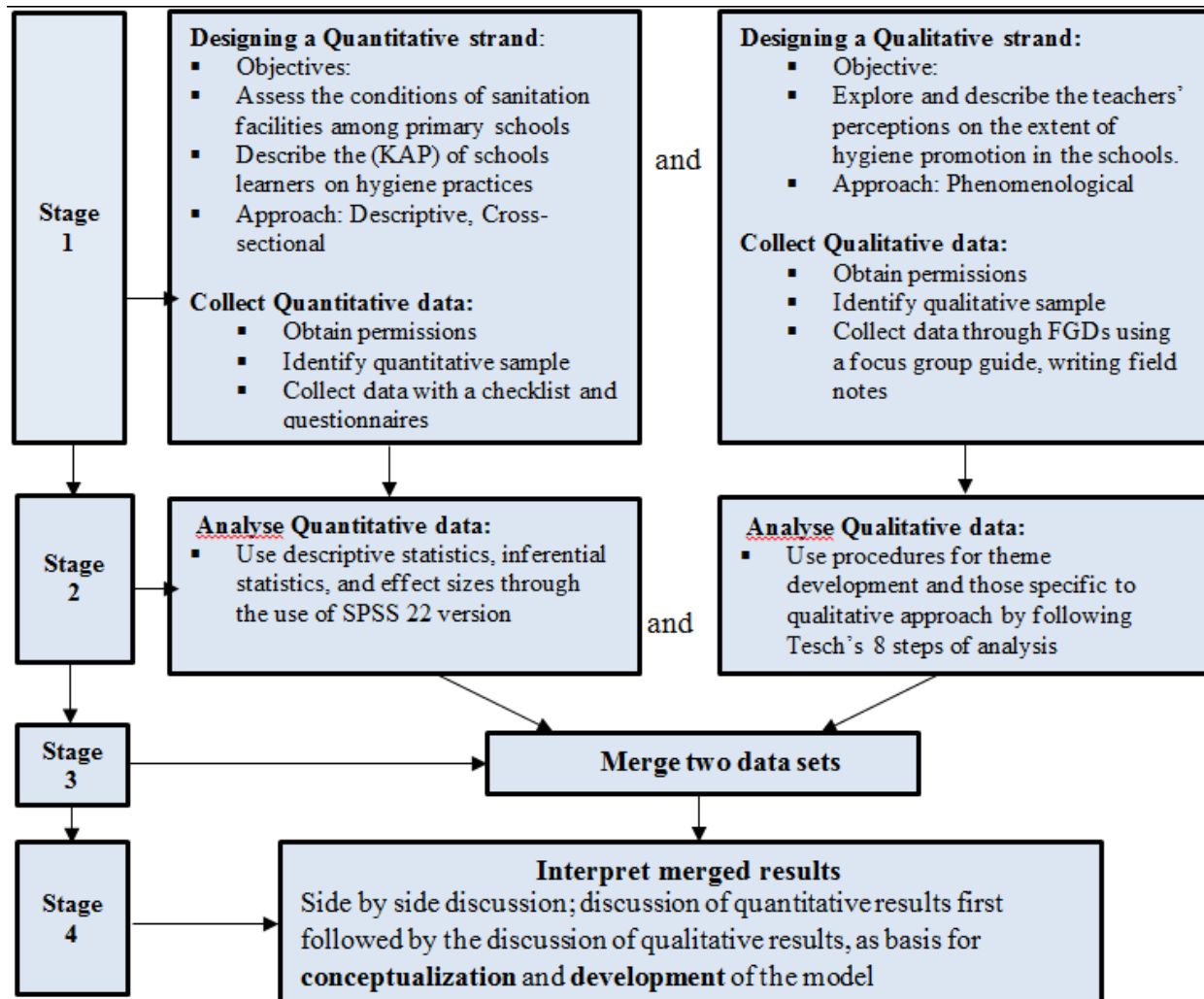


Figure 3. 2 Flow chart of the implementing convergent mixed method design as adapted from Creswell and Plano Clark (2011).

3.4.1.5 Pilot study

According to Creswell and Plano Clark (2011), a pilot study is significant in determining the appropriateness of the data collection instruments. The instruments used in this study were pilot tested in July 2015 in the Oshikoto region because it was not part of the study.

Three primary schools in which instruments were piloted were: Ondundu primary school located in an urban town of Tsumeb, Onayena primary school, and Oniipa primary school located in a rural area in the north part of Namibia. The researcher ensured that the environment was quiet, and distractions, such as the telephone, were eliminated. Pilot studying enabled the researcher to identify challenges associated with the practicality of collecting data. The outcome of the pilot study was as follow:

- The checklist: The instrument used to assess sanitation facilities did not pose any challenge to the researcher; all the questions were very clear. However, given the state of some sanitation facilities, the researcher added a question to determine when the school was established and when the facilities were built.
- The questionnaire: Initially, there was only one instruction on the first page asking participants to answer all the questions. The researcher noted that it was not clear because some learners kept asking for clarification on how to answer, since questions were different and had different ways of answering. As a result, instructions on how to answer questions were placed at every section in the final version. Few questions that were not very clear were also made clear to the learners. Since the questionnaire was in English was not translated in the vernacular; some learners in the two schools in the rural area, needed more time to complete the questions compared to learners in Ondundu primary school. It was later translated in Oshikwanyama.
- Focus group discussions (FGDs): FGDs were too long especially at Oniipa primary school because the researcher could not properly control dominant teachers, especially after data was saturated on the point of discussion.
- After listening to the audiotaped FGDs, the researcher was able to improve the way of interacting and managing group dynamics in the actual study.

The pilot study helped the researcher to become aware of her own level of interviewing and observation skills, as well as the level of the participants, especially school learners. The completed questionnaires, and checklists, were analysed using SPSS 21 version. The researcher transcribed the tape recording of the FGDs verbatim. Field notes were taken during the data collection process.

A comparison of the findings of the pilot study showed almost the same trend with the main findings of the study, in terms of management of sanitation and hygiene. The three schools has available water supply and they all have separate sanitation facilities for girls, boys, and teachers. Ondundu primary school has flushed toilet facilities with handwashing facilities, however, soap and toilet paper was not available. Like the other two schools, there were no posters or materials to remind learners about safe hygiene practices. The same however cannot be said for Oniipa and Onayena Oniipa and Onayena primary schools have very old pit latrines, and some were no longer in use because of poor maintenance. Some toilets were in a bad state, with unhygienic conditions, and need to be demolished. The two schools all had hand sanitation facilities in the form of buckets located in the open space outside the classrooms, however, the water was not soapy. As at Ondundu primary school, soap, toilet paper, and posters were not available.

Over 70% percentage of learners in Ondundu School had the correct KAP towards hygiene practices compared to the poor knowledge of learners at the other two schools. Aproximatelt 56% of learners in Oiipa and Onayena primary schools had poor knowledge, while over 60% have a bad attitude towards toilet use. Teachers in both schools shared their challenges that hinder hygiene promotion: meagre budget, lack of resources, and lack of community involvement in hygiene promotion.

Necessary adjustments were made to the instruments after the pilot study; mostly rewording of questions, clarification of instructions and additions of some questions that helped to clarify other questions. The questionnaire was also translated in Oshikwanyama, a local language in Ohangwena region. The adjusted instruments used in the main study are included as Annexures D, E, F, G and H.

3.4.1.6 Communication skills used during data collection

Communication skills were of paramount importance during the research process to enable participants to express themselves freely during data collection with the purpose of enriching data collected (De Vos et al, 2007). The communication skills employed throughout the data collection process are discussed below.

Language use: The researcher communicated mainly in the participants' vernacular to ensure that they clearly understood the proceedings of the study. The questionnaire was translated into the Oshikwanyama language. Three FGDs were conducted in Oshiwambo since most teachers felt comfortable to express themselves in their vernacular. Only two FGDs were conducted in English. Therefore, the researcher used language and terminologies that were simple and understandable in order to facilitate the participants' ability to express themselves freely.

Observation skills: These skills were used to observe the expression of participants during the data collection procedure. The condition of sanitation facilities, the school environment, as well as the personal hygiene of learners, were observed. These skills enhanced trustworthiness of data collected.

Patience and flexibility: The researcher exercised patience in that some participants needed more time or took long to express themselves or not answering to the point during FGDs. The same applied to the learners since some took longer to complete their questionnaires. This was accomplished by accommodating and allowing extra time for participants to finish instead of rushing them.

In addition, the researcher exercised flexibility especially with the time of actual data collection. There were instances where the FGDs, or survey, could not start at the agreed time, but flexibility was maintained by waiting for the optimum time for all involved.

Listening to both verbal and non-verbal messages was important throughout the FGSs. Listening was employed to give participants a chance to express themselves freely, to enable the researcher to write field notes and grasp the messages first before responding. Non-verbal messages, such as giggling, or shaking of heads in disagreement with point stated or nodding in agreement, coughing at background, were all captured.

Responding: After listening to the participants' expressions, the researcher conveyed what was understood back to them.

Reflecting feelings involved using own words to feedback to the participants. The process was achieved by observing their non-verbal expressions, and by reading between the lines about information that was not explicitly stated (Uys & Middleton, 2014). Words such as "you feel"...et cetera, were used to reflect feelings.

Paraphrasing was used to translate the information expressed into more precise words without adding new ideas to restate a participant's message.

Clarification was used when the researcher was not sure of the meaning of a participant's message. It enabled the researcher to ascertain that what was heard was correct.

Focusing was used to direct the conversation between the participants and the researcher in such a way that they focused only on the question being asked or on the topic of discussion.

Silence was a means to give both the participants and the researcher, as the interviewer, a chance to think, and also to motivate them to talk and to share perceptions.

Probing was used mostly as a follow-up to previously asked questions or previously given answers in order to elicit detailed information from participants than what was initially offered during FGDs.

Additionally, probing assisted them to identify and to explore their perceptions in such a way as to help them to engage more constructively in communication and to pursue their lines of thought (Polit & Beck, 2012).

Part B Definition of concepts

Analysis of the two databases (quantitative and qualitative data) resulted in the identification of essential and related concepts. After analysis, the main concepts of management, collaboration and environment, were identified. The process was followed by the definitions of concepts identified. According to Walker and Avant (2010), a theoretical definition refers to as conceptual definitions, and is a means by which a theorist introduces a reader to the critical attributes of the concepts. Chinn and Kramer (2008) emphasised the importance of defining concepts to avoid confusion in the process of developing a model. Both dictionary and subject definitions of the main concepts are provided in Chapter 5 to clarify the concepts of management, collaboration and environment.

Rossouw (2000) applied the following five rules to ensure that ambiguity is limited in the process of concept definition.

- The definitions must indicate the core characteristics of the concept.
- The definitions must not be circular.
- The definitions must not be too broad or too narrow.
- The definitions should not be stated in a figurative language.
- Definitions should not be formulated negatively.

Determine the defining attributes

After defining the concepts, their criteria were identified. Similar meanings for each central concept identified were reduced to form both essential and related criteria.

Essential and related criteria that contribute to the formulation and meaning of the concepts of management, collaboration and environment are discussed in Chapter 5.

Development of a model case

The essential and related concepts formulated from the dictionary and subject definitions were used to construct the model as presented in Chapter 5.

3.4.2 Phase 2: Construction of relationship statements

Chinn and Kramer (2008) stated that related statements describe or predict the nature of interactions between the concepts of a model. The two processes involved were the creation of conceptual meaning and structuring and contextualising of the theory. Essential concepts identified in Phase 1 were defined and described in terms of agent, recipient, dynamic, procedure, and terminus. In addition to findings, various sources of evidence, literature and dictionary meanings, for example, were used to gather information for the development of conceptual meaning.

The related statements were formulated to provide links among and between concepts (Walker & Avant, 2010). The practice oriented theory of Dickoff et al (1968) was adopted to guide the development of the conceptual framework. The concepts identified were arranged according to their relationship through interrelation statements. Chapter 5 provides detailed information on conceptualisation. The framework formed the basis of departure for development of the model that facilitated the management of sanitation and hygiene practices in primary schools.

3.4.2.1 Conceptual framework of the study

Chin and Kramer (2008) described a conceptual framework as a “crucial process for generating a laborious way of constructing ideas while purposefully and analytically viewing the phenomena.”

Dickoff et al (1968), as cited in Chinn and Kramer (2011), defined a conceptual framework as an organised set of ideas and theories that assists investigators to identify research problems accurately. The conceptual framework guided the development of the model to facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region.

The above mentioned practice oriented theory was adopted to guide the development of the conceptual framework for this study. The classification of the concepts was based on Dickoff et al's (1968) survey list: the context, agent, recipient, dynamic, procedure, and terminus.

- Context: In which setting must the activities be carried out?
 - The primary schools in the Ohangwena region will carry out the activities.
- Agent: Who performs the activities?
 - The researcher and the teachers at primary schools.
- Recipient: Who are the recipients of these activities?
 - Learners and other stakeholders at primary schools and community.
- Dynamic: What will the dynamic be?
 - Challenges identified from both the school and community environments.
- Procedure: What is the procedure?
 - The mode with its guidelines and activities indicated.
- Terminus: What will be the end product?
 - Improved management of sanitation and hygiene practices in primary schools.

3.4.3 Phase 3: Development, description and evaluation of model

Walker and Avant (2010) underscored the significance that clear definitions, careful observation, and thinking play in the development of a theory.

The process of concept identification, definition, and classification, is followed by the model description. The model developed was based on the theory generation by Chin and Kramer (2008), and the conceptual framework developed in Phase 2.

3.4.3.1 Description of structure and process for the model

The purpose of the model is to facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region. Chinn and Kramer (2008) indicated that the structure of a model gives form to the conceptual relationships within it. The model was described according to the below six criteria suggested by Chinn and Kramer (2008).

- Concepts: What are the concepts that form the model?
- Definitions: How are the concepts defined?
- Relationships: What is the relationship among concepts of the model?
- Structure: What is the structure of the model?
- Assumptions: On what assumptions does the theory build?

A detailed description of the model is presented in Chapter 6.

3.4.3.2 Evaluation of the model

After a model has been described, the next phase is its evaluation. Evaluation was done to validate whether the model brought about the desired outcome necessary to meet the study's objectives. The evaluation of the model was carried out in accordance with the criteria for the evaluation for theory generation as proposed by Chinn and Kramer (2008):

How clear is the model? Reference is made to clarity of the main concepts, and whether relationships between the attributes, antecedents and consequences of these concepts are easy to understand.

How simple is the model? This question answered whether the structure of the model and its components are easy to understand.

How general is the model? Reference is made to the scope and purpose of the model.

How accessible is the model? Refers to evidence of empirical accessibility in the model.

How important is the model? The importance of the model relates to its purpose, which is the facilitation of sanitation and hygiene practices in primary schools.

Evaluation process of this model is covered in detail in Chapter 6.

3.4.4 Phase 4 Guidelines for the operationalization of the model

After the model evaluation in Phase 3, the next process was to determine its application in the context it was designed for. Therefore, it was important to determine the guidelines that would lead to the realisation of the model in a school context. The implementation of the model in the practical setting was guided by the guidelines. The guidelines to operationalise the model are discussed in Chapter 7.

3.5 MEASURE TO ENSURE VALIDITY AND RELIABILITY

Mathews and Ross (2010) defined reliability as a measure of research quality, meaning that other researchers would expect to get the similar results if they carried out research in the same manner, or the original researcher would expect to get the similar results if they carried out study in the same manner. Reliability refers to the accuracy of the data collection instrument. In order to assess the reliability and validity, and to find out whether the questionnaire items measured the same concept, the researcher used Cronbach's alpha for internal consistency. In this study, the Cronbach's alpha (a correlation coefficient) calculated was 0.794 and the Cronbach's alpha, based on standardised items, was 0.796.

Tavakol and Dennick (2011, p.53) stated that “internal consistency describes the extent to which all the items in a test measure the same construct and hence it is connected to the inter-relatedness of the items within the test”. The high Cronbach’s alpha for the data in this study shows that the research instrument was reliable. Reliability was ensured by minimising sources of measurement error like data collector bias. Data collector bias was minimised by the researcher’s being the only one to administer the questionnaires, and standardising conditions such as exhibiting similar personal attributes to all respondents, such as, friendliness and support. Barbie, as cited by de Vos et al. (2010), defined validity as an extent to which an empirical measure accurately measures the concept it is intended to measure. External validity refers to the degree to which inferences can legitimately be made from a study context to other people, places or times; construct validity refers to the degree to which inferences can legitimately be made from the theoretical constructs on which the study’s operationalisation was based.

Multi-staged cluster sampling was done to select schools, by using proportionate sampling method to ensure that the sample was a representative of the target population. Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, questionnaires included a variety of questions on the KAP of learners on sanitation and hygiene. Face validity and representational or theoretical construct validity of the instruments was established by study supervisors and a statistician by ensuring the linkage between the objectives and the coverage of questions on the instrument. Representativeness enhanced generalisation of the findings to the target population. The ability to generalise the findings ensured external validity of the instruments. Pilot-testing before conducting the main study enhances the study’s construct and external validity. If the same question yields the same results from pilot testing, then the instrument is reliable.

The checklist also included a variety of questions on the conditions of sanitation facilities at schools. Content validity was achieved since questions used covered the objectives of the study. All completed the questionnaires in the presence of the researcher. This was done to prevent them from giving questionnaires to other people to complete on their behalf. Table 3.4 presents validity and reliability in the study.

Table 3.4: Validity and reliability

Criterion	Provision made by the researcher
Reliability	
Calculation of Cronbach's alpha	Cronbach's alpha (a correlation coefficient) was calculated to establish how reliable the tools were. The Cronbach's alpha is a measure of internal consistency that measures how closely related a set of items (questions) are as a group
Minimisation of data collector bias	Data collector bias was minimised by the researcher's being the only one to administer the questionnaires, and standardising conditions such as exhibiting similar personal attributes to all respondents, e.g., friendliness and support.
Same result yielded after pilot study	Since the same question from actual study yields same results from pilot testing, it was an indication that the instruments were reliable.
Validity	
Construct and external validity	Pilot-testing before conducting the main study was done to in the Oshikoto region
Content validity	Questionnaires included a variety of questions on the knowledge, attitudes and practices of learners on sanitation and hygiene. The checklist also included a variety of questions on the conditions of sanitation facilities at schools. Questions used covered the objectives of the study.
Face validity/theoretical construct validity	Data collection instruments were evaluated by study supervisors and a statistician who looked at coverage of the questions.
	Multi-staged sampling was done to select schools by using proportionate sampling method to ensure that the sample was a representative of the target population.
Representativeness / content on data validity	Representativeness enhanced generalisation of the findings to the target population.

3.6 MEASURE TO ENSURE TRUSTWORTHINESS

The researcher adopted credibility, confirmability and transferability as strategies that were suggested by Lincoln and Guba, as cited by Tappen (2011), to establish trustworthiness of the data collected.

3.6.1 Credibility

Credibility is the alternative to internal validity, in which the goal is to demonstrate that the survey was conducted in such a manner as to ensure that the participants were accurately identified and described (de Vos, Strydom, Founche & Delport, 2007). Credibility was achieved through face-to-face engagements with participants, field notes, peer debriefing, triangulation of data collection methods, and immediate transcription of focus group interviews. Table 3.7 summarises the application of credibility in this study.

Table 3.5: Application of credibility criterion

Criterion	Provision made by the researcher
Face-to-face engagements with participants	Sufficient time spent with respondents during focus group interview ensured face to face engagements with participants
Field notes	Persistent field notes taken during focus group interview about respondents' behaviours and general impressions.
Peer debriefing	Maintained through ongoing consultations with experts such as research supervisors, colleagues other organisation such UNICEF.
Triangulation of data collection methods	Different data collection methods such field notes, pictures, audio record, observation, focus group interview were used to enrich the data collection process.

Immediate transcription of focus group interview after data collection minimised the risk of misinterpretation	Transcription of focus group interview immediately after data collection was done to
Tactics to help ensure honesty in respondents	The right to voluntary participation was explained to each person approached to ensure that the data collection sessions involved only those who were genuinely willing to participate and prepared to give data truthfully.

3.6.2 Transferability/applicability

Lincoln and Guba, as cited by de Vos et al (2010), viewed at transferability as an alternative to external validity or generalisability to other contexts. Application of transferability criteria are presented in Table 3.6.

Table 3.6: Application of transferability criterion

Criterion	Provision made by the researcher
Sample	Demonstrated by providing a detailed description of the respondents and samples: Learners aged 7 years and older, teachers aged 18 years and older and sanitation facilities in sampled primary schools in the Ohangwena region.
Triangulation of data collection methods	Different data collection methods such field notes, pictures, audio record, observation, focus group interview were used to enrich the data collection process.

3.6.3 Confirmability

According to de Vos et al. (2010), confirmability captures the concepts of objectivity.

In this study, confirmability was achieved by maintaining objectivity towards data through triangulating interviews, field notes, and photographs. Table 3.7 provided a summary of the application of confirmability in the study.

It was applied through external audit whereby all field notes, tape records, summaries, coded data, themes and interpretations were sent to an expert to review the material. Interpretation of photographs and field notes was done to ensure interpretive validity. Findings may be generalised if applicable to the settings. Different data collection methods, such field notes, pictures, audio recordings, observation, focus group interviews, were used to enrich the data collection process.

Table 3.7: Application of confirmability criteria

Criterion	Provision made by the researcher
External audit	all field notes, tape records, summaries, coded data and themes and interpretations will be sent to an expert to review the materials
Triangulation of data collection methods	Different data collection methods such field notes, pictures, audio record, observation, focus group interview were used to enrich the data collection process.

3.7 ETHICAL CONSIDERATION

A code of ethics refers to ethical principles that govern scholarly research in the disciplines (Creswell, 2014).

Because of ethical implications involved in this study, it was important to observe social and moral values involved in conducting social research with a particular emphasis on treatment of participants. This study was conducted under the following ethical guiding principles.

3.7.1 Principle of non-maleficence

This principle is about having a duty to prevent, avoid and minimise harm to participants of a study. Potential harm or danger was minimised during the study by not invading the participants' privacy and by not prolonging the interview sessions unnecessary. Participants were treated with dignity and respect. No intrusive or sensitive information, that could harm participants' emotions, was collected, other than those covered in the questions. Anonymity was ensured by not writing the participants' names or their contact details on the instruments, but codes were used instead.

3.7.2 Principle of beneficence

Although participants did not benefit directly from participating in the study, primary schools involved in the study and their learners should in future benefit from the intervention to be developed and implemented. It is hoped that the study will benefit the Ministry of Education in general, as well as Namibian society, if a model is successfully implemented.

3.7.3 The principle of autonomy

Only people with a capacity to act with autonomy were selected. Persons with diminished competence and/or decision-making capacity were excluded from the study. Participants in the FGDs were all adults, over the age of eighteen years old. Only learners who were seven years and older were included in the study, because they have normal cognitive development, and could provide assent or dissent to participate in the study (Grove et al., 2013). Permission for learners to participate in the study was given by their teachers as 'loco parentis'.

Children who did not agree to participate in the study were excluded, even if their teachers/parents had granted permission for their participation. The researcher provided sufficient information to the participants in the language they understood, using words that were communicated at the level of their understanding. Informed consent and assent which included purpose, objectives, benefits, procedure, expectations, duration of the study and identification of the researcher, was written and explained to the participants, which helped them make an informed decision on their participation in the study. Participation was voluntary.

Participants were never coerced to participate in the study. They were informed of their right to terminate participation at any time, to refuse to provide information, and to ask for clarification about the study (De Vos, 2011). Participants were assured that the information that they provided would be treated with strict confidentiality. Data were captured on a password-protected personal computer; other material was stored in locked cabinet that was only accessible by the researcher. Permission to take pictures was granted by Ohangwena regional educational directorate and by the school principals.

3.7.4 The principle of justice

Justice refers to fair treatment. Participants were selected based on the selection criteria for the study in relation to the problem being studied to ensure fairness. The study commenced after permission to conduct the study was granted by UNAM Postgraduate Studies Committee, UNAM Research Ethical Committee, and the Ministry of Education. Table 3.8 summaries the application of ethical issues in the study.

Table 3. 8: Application of ethical issues

Levels where research ethical issues can occur	Type of ethical issues	Management of an ethical issues
Before conducting the study	Identify a research problem that will benefit participants.	Conduct needs assessment and confirm the existence of the problem with credible sources such a UNICEF report.
	Seek approval from University of Namibia	Proposal submitted to the Ethical Research Committee of the School of Post Graduate of the University
	Seek permission from the Ministry of Education Seek permission from the participants	Request letter seeking approval from MoE written, approval granted. Informed consent and assent written to seek approval from participants
Beginning the study	Disclose purpose of the study.	Inform participants the purpose and benefits of the study.
	Do not force participants to participate in study	Tell participants that participation is voluntary, they have the right to refuse or withdraw anytime if they so wish.
	Be sensitive to needs of vulnerable populations (children).	Obtain appropriate consent /assent from teachers, parents and children.
Data collection	Treat all participants equally	Participants treated with dignity and respect
	Do no harm	Fair selection based on study criteria Inform participants about confidentiality of information provided No additional information collected other than those covered in the questions.
	Respect the privacy and anonymity of participants.	Participants identity were protected with codes
Data analysis	Avoid siding with participants	Report multiple perspectives.
	Avoid disclosing positive results only.	Report contrary findings.
Data reporting and dissemination	Avoid falsifying, evidence, data, findings and conclusions.	Report honestly.
	Do not plagiarize. Share data with others.	APA referencing system used Provide copies of report to stakeholders and other researchers.
	Keep raw data and other materials such as details of procedures and instruments.	Store data and materials for 5 years

3.8 SUMMARY

In this chapter, the research design and methods, the population and sample selection used in the study, were discussed. The processes for collecting data, as well as the reasons for using mixed method approach, were described. Data analysis for both approaches was described. Measures used to ensure trustworthiness (credibility, confirmability and applicability) and validity as well as reliability were discussed. Application of ethical principles in the study was explained. The next chapter presents the findings of the study.

CHAPTER 4

RESEARCH RESULTS, DISCUSSION AND IDENTIFICATION OF CENTRAL CONCEPTS.

4.1 INTRODUCTION

Chapter 3 discussed the research designs and methodology that were followed in the implementation of this study. This chapter describes the mixed method data that were analysed, followed by a discussion of the findings. The findings from concept analysis are based on the research objectives that guided the direction of the study. Discussion of the findings led to the identification of the central concepts, and depiction of the central statement, that guided the development of the model to facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region.

The results from the concept analysis are twofold: the descriptive analysis of results from the first two quantitative objectives, as well as the narrative results from the qualitative objective. The quantitative findings were derived from the first two objectives, namely: to assess the conditions of sanitation facilities among primary schools in Ohangwena region, and to describe the KAP of schools learners on hygiene practices. The descriptive results are presented in tables, graphs and figures. Qualitative data were derived from the exploration and description of the teachers' perception on the extent of hygiene promotion in their schools. The narrative results are presented as verbatim quotes of the participants, and the quotes are presented in italics. The quantitative and qualitative data, from the mixed method study, are merged using a side-by-side comparison approach; comparison was made within the discussion. The researcher reports the quantitative statistical results first, followed by the qualitative findings that either confirm or negate the statistical results.

4.2 DISCUSSION OF DESCRIPTIVE RESULTS FOR OBJECTIVE 1:

ASSESSMENT OF THE CONDITIONS OF SANITATION FACILITIES.

Ten primary schools, Omungwelume, Endola, Efidi, Ofifiya, Weyulu, Mandume, Eenhana, Omutaku, Udeiko Haufiku and Kapombo, were multi-stage randomised from circuits to clusters. All of the schools from five circuits (Endola, Ondobe, Eehnana, Ongha and Ohangwena) are public schools. In the study eight schools are in rural areas, one is a peri-urban school, and one an urban school. Seven schools were established between 1937 and 1982. Three schools were established after Namibia's independence; between 1991 and 2001. The oldest school was 79 years old and the youngest being 15 years old. The highest number of learners was 690 and the lowest 265. None of the ten schools had physically disabled learners, with the exception of learners living with albinism. The results indicated that all of the schools (100%) have toilet facilities, and water was readily available. There was only a single water tap available in all the rural schools and the peri-urban one. The tap was positioned at a central point in the school yard. It was found that there no supervision of learners at the water point. This lack of supervision means some learners end up wasting a lot of water in the process.

One urban school, and one rural area school, have flushing toilets, the rest (80%) have either ventilated improved pit latrines (VIP) or pit latrines with a slab. None of the schools were found to be using either bucket toilets or composting toilet facilities. One rural school had a pit latrine with a slab that is located near the toilet facilities. It is not used anymore because it is very open. It does however pose a risk of children falling into it. Figure 4.1 depicts the pit latrine with a slab.



Figure 4.1: An open pit latrine with slab (source: researcher’s own picture).

VIP latrines were observed at 80% of the schools. Some schools have both VIP latrines and pit latrines without slab. Table 4.1 presents the types of toilet facilities available in the circuits. Figure 4.2 shows VIP latrines,

Table 4.1: Types of toilet facilities found at different the school circuits in the Ohangwena region

		<i>Eenhana</i>	<i>Endola</i>	<i>Ondobe</i>	<i>Ongha</i>	<i>Ohangwena</i>
<i>Flush toilets</i>	Yes	10.0	0.0	10.0	0.0	0.0
	No	10.0	20.0	10.0	20.0	20.0
<i>Composting toilet</i>	Yes	0.0	0.0	0.0	0.0	0.0
	No	20.0	20.0	20.0	20.0	20.0
<i>Bucket toilet</i>	Yes	0.0	0.0	0.0	0.0	0.0
	No	20.0	20.0	20.0	20.0	20.0
<i>Ventilated Improved Pit (VIP) latrine</i>	Yes	10.0	20.0	10.0	20.0	20.0
	No	10.0	0.0	10.0	0.0	0.0
<i>Pit latrine with slab</i>	Yes	0.0	20.0	10.0	10.0	20.0
	No	20.0	0.0	10.0	10.0	0.0
<i>Pit latrine without slab</i>	Yes	0.0	0.0	0.0	0.0	0.0
	No	20.0	20.0	20.0	20.0	20.0
<i>Other types of toilets</i>	Yes	0.0	0.0	10.0	0.0	0.0
	No	20.0	20.0	10.0	20.0	20.0



Figure 4.2: Ventilated improved pit (VIP) latrines (source: researcher's own picture).

With the exception of one urban school, the toilet facilities are in the schools' yards, as standalone buildings separate from the school buildings. Although there were no physically disabled learners at the schools, there is no provision of suitable toilets at all of the schools, if needed in the future by such learners. The distance to the toilet facilities ranged between 10 meters to 50 meters. All the schools have separate toilet facilities for boys, girls, and teachers. The researcher ran a one-way ANOVA to compare the least square difference (LSD), assuming that the variances were or were not equal. Where the variance was not equal, the Dunnett T3 was used. Although there are toilet facilities for boys, and girls, at the schools, many discrepancies were found in terms of the number of toilets allocated across the circuits.

In Namibia, the MoE's planning norm is one toilet for every 30 learners. The UNICEF recommends a minimum of one toilet per 25 female learners, one toilet for female staff, one toilet and one urinal for per 50 boy learners, and one toilet for male staff (UNICEF, 2013). Such recommendations were not evident in this study. More than double the recommended number of learners shares a toilet. In Ohangwena circuits, 93 learners share a toilet. In Eenhana circuits, 66 boy learners share a toilet, with a standard deviation of 0.3 and a standard error of 0.25 with a 95% interval varying from 61 to 63 boys sharing one toilet.

A one-way ANOVA was used to establish whether there was a difference between the circuits and the location to determine the number of toilet facilities per learners. The number of boy learners sharing a toilet was found to be higher in rural schools compared to urban ones. Table 4.2 presents descriptive statistics on number of learners per toilet across circuit.

Table 4.2: Descriptive statistics on number of learners per toilet across circuits

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Learner_boys_per_Toilet	Eenhana Circuit	2	66.2500	.35355	.25000	63.0734	69.4266	66.00	66.50
	Endola Circuit	2	69.1667	5.42115	3.83333	20.4595	117.8738	65.33	73.00
	Ondombe Circuit	2	113.0000	56.56854	40.00000	-395.2482	621.2482	73.00	153.00
	Ongha Circuit	2	93.5000	18.38478	13.00000	-71.6807	258.6807	80.50	106.50
	Ohangwena Circuit	2	124.4167	52.44375	37.08333	-346.7718	595.6051	87.33	161.50
	Total	10	93.2667	35.99204	11.38168	67.5195	119.0138	65.33	161.50
Learner_girls_per_Toilet	Eenhana Circuit	2	45.4792	1.62045	1.14583	30.9200	60.0384	44.33	46.63
	Endola Circuit	2	74.5000	39.59798	28.00000	-281.2737	430.2737	46.50	102.50
	Ondombe Circuit	2	104.1250	98.11107	69.37500	-777.3680	985.6180	34.75	173.50
	Ongha Circuit	2	73.6667	17.91337	12.66667	-87.2786	234.6119	61.00	86.33
	Ohangwena Circuit	2	72.0833	15.43850	10.91667	-66.6261	210.7927	61.17	83.00
	Total	10	73.9708	41.10368	12.99812	44.5670	103.3746	34.75	173.50

The WHO recommends one toilet each for female and male staff, but in this study 70% were compliant in terms of male toilet allocations. The other three schools have two to three toilets for male teachers. For female toilets, only 40% of the schools adhered to the norm. Three schools have two toilets for female teachers, and three have three toilets for female teachers. In some schools, over 300 hundred boy learners have to share two toilets with teachers, who, in some schools are less than 20. The practice above shows an unfair the allocation of toilet facilities for the learners. It cannot be ruled out that at times learners relieve themselves outside the toilet facilities since too many share available toilets. The general conditions of the toilet facilities ranged from in very good condition, to fair or poor condition. Poor condition toilets require major repairs. Many toilet facilities are not well maintained, especially those in rural schools. This was also confirmed by teachers in their FGDs. Figure 4.3 is a picture of a poorly maintained toilet facility with old ventilated pipes. Table 4.3 shows the aassociation between circuits and the condition of the toilet facilities.



Figure 4.3: A toilet building with dilapidated vent pipes (source: researcher’s own picture).

Table 4.3: Association between circuits and the condition of the toilet facilities

		<i>Eenhana</i>	<i>Endola</i>	<i>Ondobe</i>	<i>Ongha</i>	<i>Ohangwena</i>	Pearson Chi-Square Test <i>p-value</i>
<i>All in good condition: no improvement necessary</i>	Yes	10.0	10.0	0.0	10.0	0.0	0.582
	No	10.0	10.0	20.0	10.0	20.0	
<i>Fair condition: minor repairs are necessary</i>	Yes	10.0	20.0	0.0	20.0	20.0	0.092
	No	10.0	0.0	20.0	0.0	0.0	
<i>Poor condition: major repairs are required</i>	Yes	0.0	0.0	20.0	10.0	20.0	0.092
	No	20.0	20.0	0.0	10.0	0.0	
<i>Very poor condition: complete (re)construction required</i>	Yes	0.0	0.0	0.0	0.0	0.0	
	No	20.0	20.0	20.0	20.0	20.0	

*P value determined by Pearson chi-square test

Of the ten schools, one urban school has handwashing facilities within the same building as the toilets. A rural school had two handwashing facilities located immediately outside the toilet facilities. These handwashing facilities were not operational. One is secured but not connected to water and the other one is damaged. Only two schools have flushed toilets. At one school the handwashing facilities are located in classrooms. The handwashing facilities in the remaining eight schools (80%) are located outside far from the toilet facilities, and two of these schools have handwashing facilities inside classrooms. Buckets, on stands that are filled with soapy water are provided in the schools that do not have flushable toilets.

The handwashing facilities that are available in most schools are buckets filled with water with a tap secured and a bowl to hold used water, which is discarded later. This set-up is shown in Figure 4.4. Ideally, the water in the buckets is supposed to be soapy, but not schools provided soapy water. The reason for non-soapy water in some schools was because the water is used for both handwashing and drinking. Although many learners were observed going to the sanitation facilities, very few of them went to the buckets to wash their hands after toilet use.

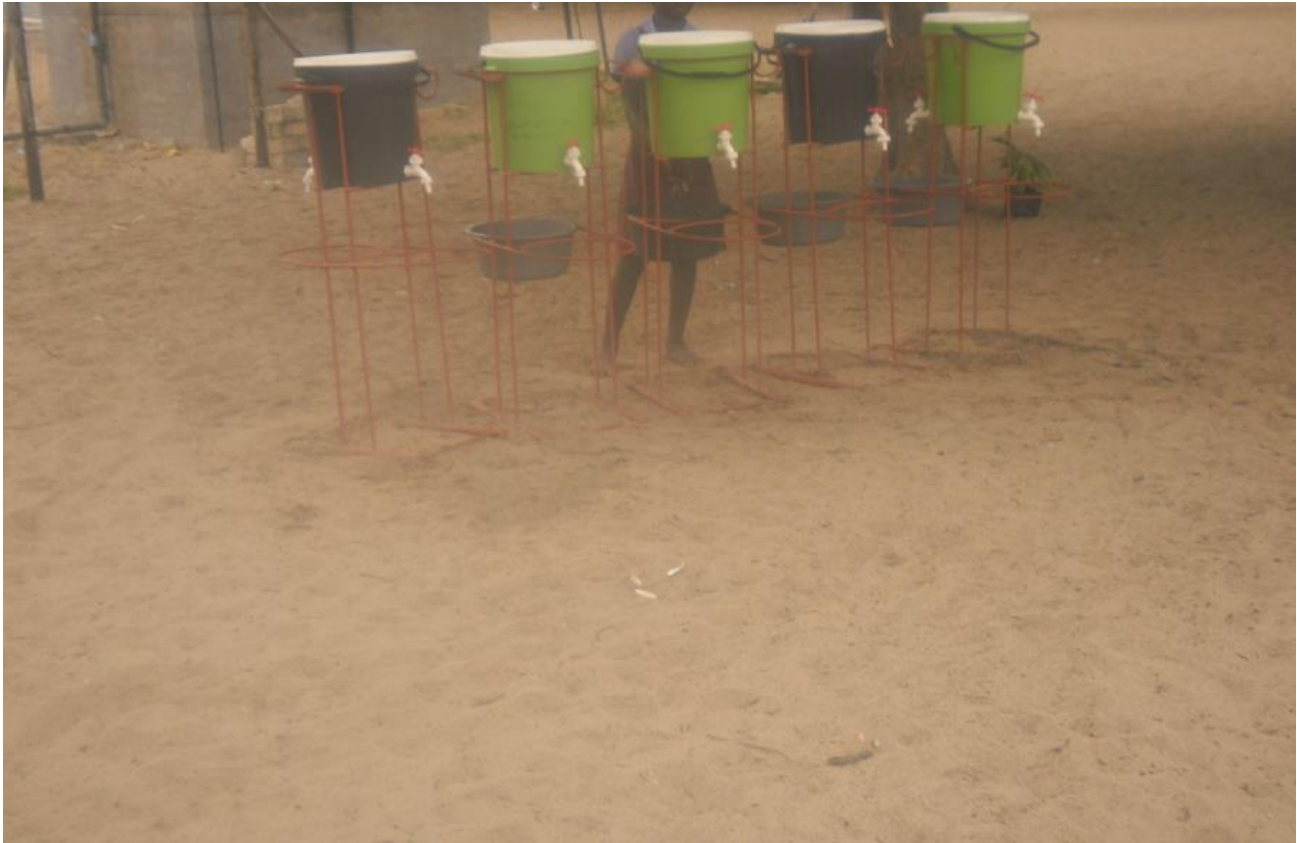


Figure 4.4: Handwashing facility at one of the schools (source: researcher's own picture).

One school had a handwashing facility immediately outside the toilet, but it was in a sorry state. The location of this facility poses a risk of accident to learners. They can bump into it when running round, or when going to or from the toilets. The damaged handwashing facility is shown in Figure 4.5.



Figure 4.5: Damaged handwashing facility (source: researcher's own picture).

The handwashing facility was not working at one of the schools that have these facilities inside classrooms. There was no other handwashing facility seen in the school environment; the ones that were in classes were dirty, and did not have water, indicating that they had not been used in a long time. Figure 4.6 is an example of non-operational facilities.



Figure 4.6: Unused handwashing facility (source: researcher's own picture).

Most of the lids of these buckets were dirty, as was the tap. This raises the concern of the effectiveness of handwashing practice, which may lead to possible transmission of infections from an unclean tap.

Figure 4.7 shows bucket washing facilities.



Figure 4.7: Handwashing buckets (source: researcher's own picture).

No bins were observed in the toilets in all ten schools. For the pit latrines, personal used cleaning materials are disposed inside the toilet hole. For flushable toilets, this may pose a challenge, especially for girl learners who may use sanitary towels. The absence of bins means the girls are placed in an uncomfortable situation. They would be required to carry soiled pads to dispose them in the dustbins outside in the yard. This process might force some to flush their used pads. This could lead to blockages since they are not flushable. Only two schools had toilet paper in the learners' toilet facilities. Many toilets that had toilet paper were found in the teachers' facilities. The teachers indicated the challenges of shortage of suppliers such as toilet paper and soap.

For example, they stated:

“We do have sometimes but they [toilet papers] are not always available.”

“We do not have toilets (papers) and sanitary pads; we have a problem getting them.”

“The government should give us enough suppliers such as enough toilet papers, towels for drying hands.”

During the FGDs some teachers stated that in schools that do not place toilet paper in toilets, each teacher collects toilet paper for the learners in her/his own class. Learners must ask their teacher to provide toilet paper, when needed. In some schools, toilet paper is placed in a specific place in the classroom. To control the use of the toilet paper, learners unroll the sheets needed. The reason for this practice is that some learners used to take out all the toilet paper in the toilets.

The practice disadvantaged the other learners as there was then no available toilet paper for their use, hence the implementation of toilet paper being located in classrooms. It is not an ideal resolution to the problem as it may compromise some learners who may not feel comfortable being seen by their peers or the teachers taking toilet paper. This may lead to some learners’ not using toilet paper, or resort to using other materials to clean themselves, which may lead to toilet blockages, especially the flushable ones. Only one school confirmed to not experiencing a problem with toilet papers inside the toilets. The learners are disciplined. They all know that the toilet paper is for all to use.

The condition of the immediate area around the toilet buildings and entrance of many toilets varied. Good maintenance means the toilet is clean, free from bad smell, free of trash, dirt, and waste water. Poor maintenance means the toilet is dirty, there is trash present, and there is a bad smell. Some toilets at one rural school require urgent intervention. The toilets were extremely dirty, unsightly and had a bad smell.

There was no soap observed in all school toilets, with the exception of teachers' toilets at two schools in the. The reason might be because most schools (80%) have handwashing facilities outside, in the form of buckets that have soapy water. None had hand dryers, or towels. There were no reminder notices for the children to wash their hands. An urban school was the only one that had a toilet, with soap, hand towels and handwashing facilities, for use by teachers.

Nowhere in any of the schools were there posters, stickers or other signs in the toilets that encourage good hygiene practices. Although learners indicated being given materials related to hygiene such as posters, leaflets, and so on, none was seen in the toilets or in classes. Posters in class rooms were teaching posters showing numbers, shapes, colours, and so forth but not necessarily on hygiene and sanitation. There were no bins found to manage wastes in 80% of schools. Two schools did have bins. Many schools had cardboard boxes as bins in the class rooms. Some were observed to be filled to their capacity as shown in Figure 4.8. It was not evident when they were going to be emptied. This can pose a risk to learners: some were observed checking in the bins as if they were looking for something. Although teachers indicated there was a daily roster for learners to clean their classes, many classes at six schools were observed to be very dirty.



Figure 4.8: A cardboard box bin in one of the classroom (source: researcher's own picture).

Designated dumping sites, in school yards far from the school buildings were evident in the majority (90%) of schools. In some schools there were signs of burning of waste at these sites. Figure 4.9 is an example of uncontained waste. Waste was seen to be freely flying around at some sites. This could result in flying waste landing in close proximity to the school building.



Figure 4.9: A dumping site at one of the schools (source: researcher’s own picture).

At one school the dumping site was located close to the main entrance of the school. Figure 4.10 shows apparently young learners scavenging through the rubbish. The results of this study revealed that learners, in the age group of 10-12 years old, did not have acceptable knowledge, that “*playing near rubbish or waste water is dangerous.*” The association was confirmed by the p-value of 0.002, which is less than the normal p-value of 0.005. That practice poses a risk of infections to learners or harmful accidents if they find dangerous waste material that they can play with. The sight is also unpleasant in the eyes of visitors since the waste dump it is located at the school gate.



Figure 4.10: A dumping site located close to a school entrance (source: researcher’s own picture).

The main observed challenges regarding to the conditions of the sanitation facilities are presented below.

- None of the ten schools have a toilet facility specially designated for learners with disabilities. This will pose a big challenge if schools, in the future, admit learners who have physical challenges; it will be difficult for them to use facilities that are not user-friendly.

- The situation may compel learners living with disabilities to use other possible means, which may be friendly to them, but they may expose themselves, or other learners, to the risk of infection. An example is that such learners may opt to use to relieve themselves outside the toilets, or if they use available facilities, they could mess the toilet seats or floors. This may lead to other learners not being able to use messy facilities. Transmission of disease is a possibility.
- Only 20% of the schools have flushing toilets with handwashing facilities in the toilet buildings. VIP latrines are available at the remaining (80%) schools. At these schools, buckets filled with soapy water, serve as handwashing facilities, and are located far from the toilet facilities.
- The location of handwashing facilities discouraged many learners from washing their hands. Many did not remember, or do not have time, to go to wash their hands at facilities far from the toilets. Some go to play immediately with others, which may increase the risk of disease transmission.
- The numbers of school toilet facilities are few in relation to the number of learners. This situation is worse in rural schools.
- Many toilet facilities were dirty, and messy. Some were old, and some did not have doors. Thus there is a safety risk of learners using them. They may not feel confident to use such toilets.
- In 80% of the schools, there was no toilet paper and soap.
- Some water in the buckets was not soapy, while some buckets were physically dirty.

None of the schools, including those with flushing toilets and handwashing facilities inside, had materials encouraging, or reminding learners, to wash their hands.

Although dumping sites were observed at all the schools, in some schools waste is not immediately destroyed or burned, attracting learners to play with the waste. This practice exposes the learners to dangers such as accidents or infections. The findings indicated that the school environment was not conducive to practice hygiene; hence management of sanitation facilities and resources necessary for hygiene promotion is needed.

4.3 DISCUSSION OF DESCRIPTIVE RESULTS FOR OBJECTIVE 2: DESCRIPTION OF KAP OF SCHOOL LEARNERS ON HYGIENE PRACTICES

A structured Likert scaled questionnaire was used to collect data from the learners. The data were analysed by means of the Statistical Package for Social Science (SPSS 23), with Chi-square test for independence at a significance level at 95% confidence interval and relative risks.

4.3.1. Socio-demographic data of the study population

The demographic data of the study population included learners' age, gender school grade, location, and the education circuit. Data was collected from 450 learners in grade five, six and seven, from ten sampled primary schools in Ohangwena region. The learners' age ranged between 10 and 19 years. Of the 450 learners, 48.4% were boys, and 51.6% were girls. The majority of learners (80%) were from rural schools; 20% were from urban and peri-urban schools, respectively. The socio-demographic information of the respondents is presented in Table 4.4.

Table 4.4: Distribution of study participants by socio-demographic characteristics

Characteristic	Sex		Total (n= 450) %	*P value
	Male (n= 218) %	Female (n =232) %		
Age of Learners (years)				
10 – 12 years	20.0	24.9	44.9	0.330
13 - 15 years	25.3	24.4	49.8	
16 - 18 years	2.9	2.2	5.1	
> 19 years	0.2	0.0	0.2	
Grades				
Grade 5	18.0	19.6	37.6	0.935
Grade 6	16.4	16.7	33.1	
Grade 7	14.0	15.3	29.3	
Locations				
Urban	5.1	4.9	10.0	0.852
Peri-Urban	5.1	4.9	10.0	
Rural	38.2	41.8	80.0	
Education Circuits				
Eenhana Circuit	9.1	11.1	20.2	0.764
Endola Circuit	10.0	10.0	20.0	
Ondobe Circuit	10.0	10.0	20.0	
Ongha Circuit	10.4	9.3	18.8	
Ohangwena Circuit	8.9	11.1	20.0	

*P value determined by Pearson chi-square test

The findings on the distribution of the participants by socio-demographic characteristics showed no significant difference between male and female learners as confirmed by the greater p-value of higher than 0.005. The mean age of the learners was 12.82 with a 95% confidence interval varying between 12.67 and 12.97. The median age was 13 years, which reflected that 50 % of the learners were 13 years old, with a lower quartile of 12 and upper quartile of 14. At least 25 % of the learners were 12 years of age, and 75 % 14 years old. Most learners were 13 years old (Mode). The youngest learner was 10 years old, and the oldest was 22 years old. Table 4.5 below presents the learners' ages.

Table 4.5: Learners' ages

	Descriptive statistics									
	N	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Learners' ages	450	10	22	12.82	.076	1.619	.825	.115	1.993	.230
Valid N (list wise)	450									

4.3.2 The level of learners' knowledge on hygiene and sanitation

The learners' knowledge about sanitation and hygiene was assessed. In order to measure their knowledge, Likert scaled questions were asked about specific areas of hygiene and sanitation. The six knowledge question concepts are listed below.

- a) Human faeces contain germs.
- b) If hands look clean, no need to wash them before eating or after *kaka*.
- c) Washing hands with water only after toilet use is enough to protect illness.
- d) Playing near the rubbish or waste water is not dangerous.
- e) *Kaka* in the open/bush can lead to spread of illness.
- f) Poor hygiene and sanitation can lead to diarrhoea and lung illnesses.

Possible responses to knowledge questions were: Strongly agree (SA), Agree (A), Do not know (DK), Disagree (D), and strongly disagree (SD). Each question had 5 rating points: 5 was the highest score and 0 the lowest score, for an overall perfect score on hygiene of 30. Learners were asked to indicate the extent to which they agreed or disagreed with each one of the specific hygiene concepts above, and the results are presented below.

Human faeces contain germs

With regard to the knowledge whether human faeces contain germs or not, 283 (62.9%) knew that human faeces contain germs; 167 (37.1%) did not have the appropriate knowledge. Based on the survey data, using the Pearson Chi-Square statistical test, there was a statistically significant association between the learner' school grades and the question related to human faeces containing germs ($p\text{-value}=0.002 \leq 0.05$).

If hands look clean, no need to wash them before eating or after defaecation (kaka)

More than half (53%) of learners had the correct knowledge on when to wash hands, and the remainder (47%) did not have the appropriate knowledge. The majority of learners (53%) did not know that hands have to be cleaned before eating or after using a toilet whether they look clean or not. There was a statistically significant association between the learner' school grades and the question on cleaning of hands before eating or after using a toilet ($p\text{-value}=0.000 \leq 0.0, 5$). The results are presented as a pie chart in Figure 4.11.

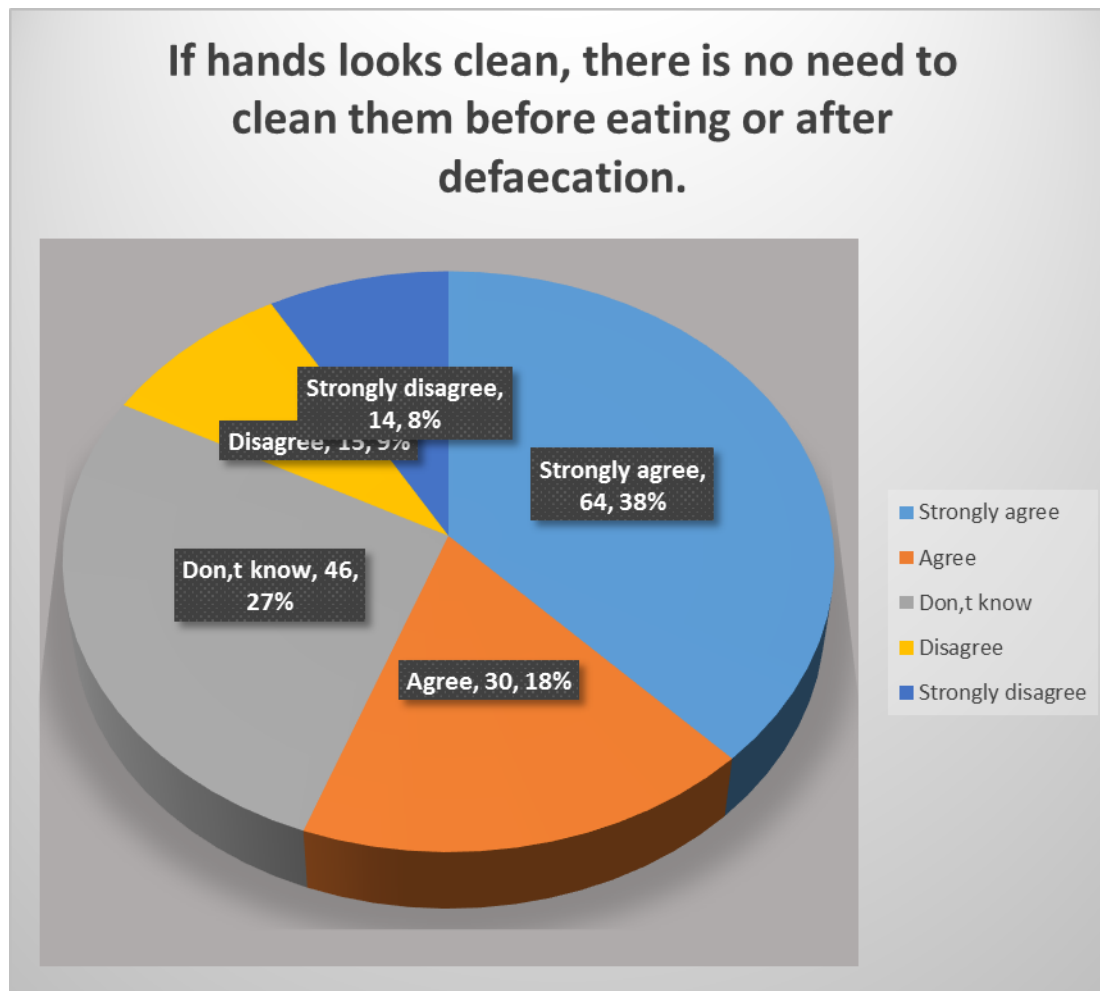


Figure 4.11: The level of knowledge on the need for hand cleaning before eating or after defaecation.

Washing hands with water only after toilet use is enough to protect illness

The findings indicated that 45% of learners knew that washing hands with water only after visiting a toilet does not protect illness. The rest of the learners (55%) did not have the correct knowledge. The majority of these learners (191/42.3%) who did not have the correct knowledge were in the lower grades 5 and 6. The researcher found that there was a statistical significant association between the learners' grade and the question related to handwashing with water only ($p\text{-value}=0.000 \leq 0.05$).

Kaka in the open/bush can led to spread of illness.

The findings showed that 53% of learners did not know whether kaka or defecation in the open or bush can lead to the spread of illness, whereas the remainder (43%) did confirm this fact. The response to the question that playing near rubbish is not dangerous was that 49.56% disagreed with this statement, and 50.44% did not have the relevant knowledge. Learners (57.5%) who did not have the correct knowledge were in the lower grades 5 and 6. The doughnut chart in Figure 4.12 indicates that 37% of learners did not have correct knowledge on the association between poor hygiene and disease transmission such as diarrhoea and lung illness. The majority of the learners (27.7%) without the correct knowledge were in grades 5 and 6. The findings showed a statistical significant association between the learners' grade and the question related to the effects of poor hygiene and sanitation on illness development ($p\text{-value}=0.000 \leq 0.005$).

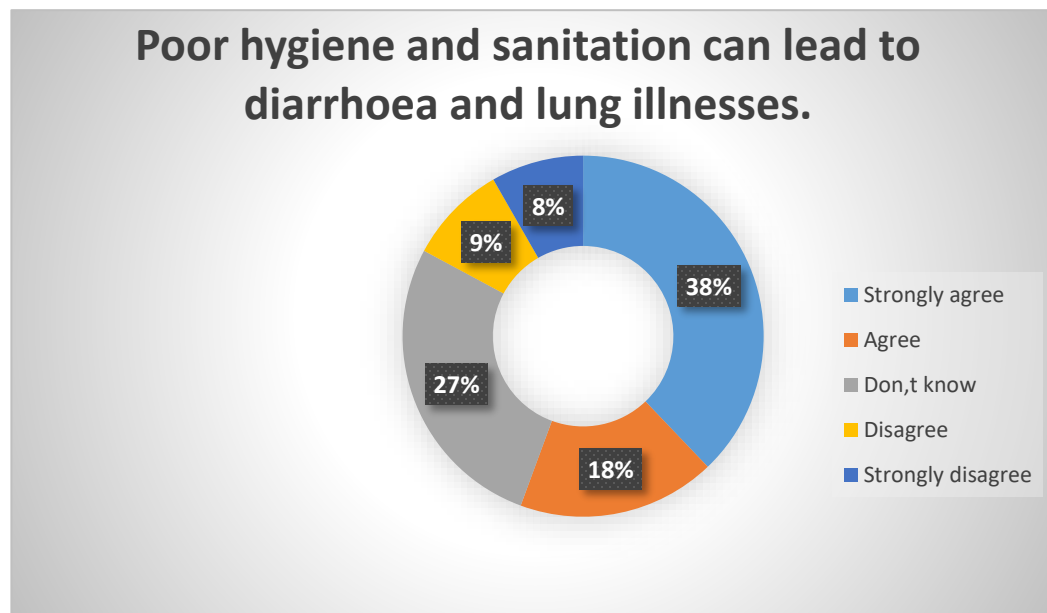


Figure 4.12: Poor hygiene and sanitation can lead to diarrhea and lung illness.

Table 4.6 shows the statistical significant association found between the learners' grades and questions related to knowledge, as indicated by the p-value of less than 0.005. This indicates that lower and higher level grade learners were likely to be significantly different with regards to their views and perceptions on hygiene and sanitation. This is a logical conclusion that older learners become more aware, and become cautious about hygiene and sanitation issues.

Table 4.6: Association between school grades and learners' knowledge on hygiene and sanitation

	Grade	Strongly Agree	Agree	Disagree	Strongly disagree	Pearson Chi-Square Test <i>p-value</i>
<i>Human faeces contain germs</i>	Grade 5	4.4	1.6	9.8	21.8	0.000
	Grade 6	6.7	1.3	6.7	18.4	
	Grade 7	11.1	0.4	3.8	14.0	
<i>If hands looks clean no need to wash them before eating or after</i>	Grade 5	18.7	10.4	5.8	2.7	0.000
	Grade 6	14.2	8.0	5.3	5.6	
	Grade 7	8.2	7.6	5.8	7.8	
<i>Washing hands with water only after toilet use is enough to protect illness</i>	Grade 5	24.7	8.7	1.3	2.9	0.000
	Grade 6	16.9	8.0	3.8	4.4	
	Grade 7	12.9	3.8	5.3	7.3	
<i>Playing near rubbish or waste water is not dangerous</i>	Grade 5	19.7	10.7	5.3	2.4	0.000
	Grade 6	12.9	9.6	3.8	6.9	
	Grade 7	7.6	8.9	5.6	5.6	
<i>Kaka in the open/bush can lead to spread of illness</i>	Grade 5	3.6	18.0	10.7	5.3	0.001
	Grade 6	6.9	11.6	11.1	3.6	
	Grade 7	8.4	9.1	8.4	3.3	
<i>Poor hygiene/sanitation can lead to diarrhoea and lung illness</i>	Grade 5	4.4	20.9	6.9	5.3	0.000
	Grade 6	7.1	12.2	9.1	4.7	
	Grade 7	10.7	9.3	6.2	3.1	
	Grade 6	6.7	0.7	3.8	22.0	
	Grade 7	11.8	0.9	2.2	14.4	

*P value determined by Pearson chi-square test

The study revealed that over two thirds of learners did not have adequate knowledge about the relationship between human feces and germs. For example, 74% disagreed that human feces contain germs. A significant association with a p-value of 0.004 was found between the age of the learners and their knowledge. Learners who did not have the adequate knowledge were young age groups of 10-12years and 13 -15years. In other words the younger the learners the less knowledge they have. There was no association between gender and knowledge (p-value 0.537). The study also revealed that the lower the grades, the less their knowledge (p-value 0.000). No association was found between the learners' knowledge and the circuits (p-value 0.018) or location (p-value 0.259).

Table 4.7 shows the statistical significant association found between the learners' ages and questions related to knowledge, as indicated by the p-value of less than 0.005. The last question on whether *Kaka in the open/bush can lead to spread of illness* was not statistically significant as indicated by the p-value of 0.017.

Table 4.7: Association between age and learners' knowledge on hygiene and sanitation

	Age	Strongly Agree	Agree	Disagree	Strongly disagree	Pearson Chi-Square Test p-value
Human faeces contain germs	Age 10-12	6.4	2.4	11.6	24.4	0.004
	Age 13-15	13.8	0.9	8.0	27.1	
	Age 16-18	1.8	0.0	0.7	2.7	
	Age ≥ 19	0.2	0.0	0.0	0.0	
If hands looks clean no need to wash them before eating or after	Age 10-12	22.2	13.1	5.8	3.8	0.001
	Age 13-15	16.9	12.2	10.0	10.7	
	Age 16-18	1.8	0.7	1.1	1.6	
	Age ≥ 19	0.2	0.0	0.0	0.0	
Washing hands with water only after toilet use is enough to protect illness	Age 10-12	27.8	11.1	2.4	3.6	0.000
	Age 13-15	23.6	8.7	7.6	10.0	
	Age 16-18	2.9	0.7	0.4	1.1	
	Age ≥ 19	0.2	0.0	0.0	0.0	
Playing near rubbish or waste water is not dangerous	Age 10-12	21.6	14.4	4.4	4.4	0.002
	Age 13-15	16.0	13.3	9.1	11.3	
	Age 16-18	1.8	1.3	1.1	0.9	
	Age ≥ 19	0.0	0.0	0.0	0.0	
Kaka in the open/bush can lead to spread of illness	Age 10-12	5.6	18.7	114.2	6.4	0.017
	Age 13-15	11.8	17.1	15.3	5.6	
	Age 16-18	1.3	2.9	0.7	0.2	
	Age ≥ 19	0.2	0.0	0.0	0.0	
Poor hygiene/sanitation can lead to diarrhoea and lung illness	Age 10-12	6.2	22.2	10.2	6.2	0.025
	Age 13-15	14.2	18.4	10.9	6.2	
	Age 16-18	1.6	1.8	1.1	0.7	
	Age ≥ 19	0.2	0.0	0.0	0.0	

**P value determined by Pearson chi-square test*

No association was found between the learners' gender and their knowledge on hygiene and sanitation. This is indicated by the *p-value* of greater than the common alpha level of 0.05 (ranging between 0.088 and 0.939) in all questions related to knowledge, which indicates that the findings are not statistically significant.

There was no statistically significant association between the school circuits and the learners' knowledge on different knowledge question. However, the study revealed that there was a significant difference with regards to the circuits, implying that some differences in knowledge such as "*if hands look clean no need to wash them before eating or after using the toilet*" was due to geographic location as shown in Table 4.9. This indicates a health challenge that requires urgent attention as confirmed by a *p-value* of 0.002. The rest of the knowledge questions, in relation to school circuits, had a *p-value* ranging between 0.018 and 0.958. This is greater than the common alpha level of 0.05.

Table 4.8: Association between circuits and learners' knowledge on hygiene and sanitation

	Circuits	Strongly Agree	Agree	Disagree	Strongly disagree	Pearson Chi-Square Test p-value
<i>Human faeces contain germs</i>	Eenhana	4.4	0.0	5.8	10.0	0.018
	Endola	5.6	0.2	2.9	11.1	
	Ondobe	3.8	0.7	3.3	12.2	
	Ongha	4.2	1.8	4.9	8.9	
	Ohangwena	4.2	0.7	3.3	11.8	
<i>If hands looks clean no need to wash them before eating or after</i>	Eenhana	8.9	4.4	1.1	5.8	0.002
	Endola	7.6	6.4	3.3	2.7	
	Ondobe	6.9	5.3	4.4	3.3	
	Ongha	10.2	4.4	3.8	1.3	
	Ohangwena	7.6	5.3	4.2	2.9	
<i>Washing hands with water only after toilet use is enough to protect illness</i>	Eenhana	12.4	3.1	0.9	3.8	0.040
	Endola	10.0	3.6	3.6	2.9	
	Ondobe	9.6	5.3	1.8	3.3	
	Ongha	12.7	4.2	1.6	1.3	
	Ohangwena	9.8	4.2	2.7	3.3	
<i>Playing near rubbish or waste water is not dangerous</i>	Eenhana	9.8	4.4	1.8	4.2	0.073
	Endola	6.0	7.8	2.9	3.3	
	Ondobe	7.1	7.1	3.3	2.4	
	Ongha	8.9	4.7	3.8	2.4	
	Ohangwena	7.8	5.1	2.9	4.2	
<i>Kaka in the open/bush can lead to spread of illness</i>	Eenhana	3.8	10.0	5.3	1.1	0.106
	Endola	3.8	8.2	6.0	2.0	
	Ondobe	2.9	7.3	5.8	4.0	
	Ongha	4.4	7.3	6.2	1.8	
	Ohangwena	4.0	5.8	6.9	3.3	
<i>Poor hygiene/sanitation can lead to diarrhoea and lung illness</i>	Eenhana	5.1	9.8	3.6	1.8	0.713
	Endola	4.4	8.4	4.4	2.7	
	Ondobe	4.0	7.1	5.6	3.3	
	Ongha	4.4	8.4	4.9	2.0	
	Ohangwena	4.2	8.7	3.8	3.3	

*P value determined by Pearson chi-square test

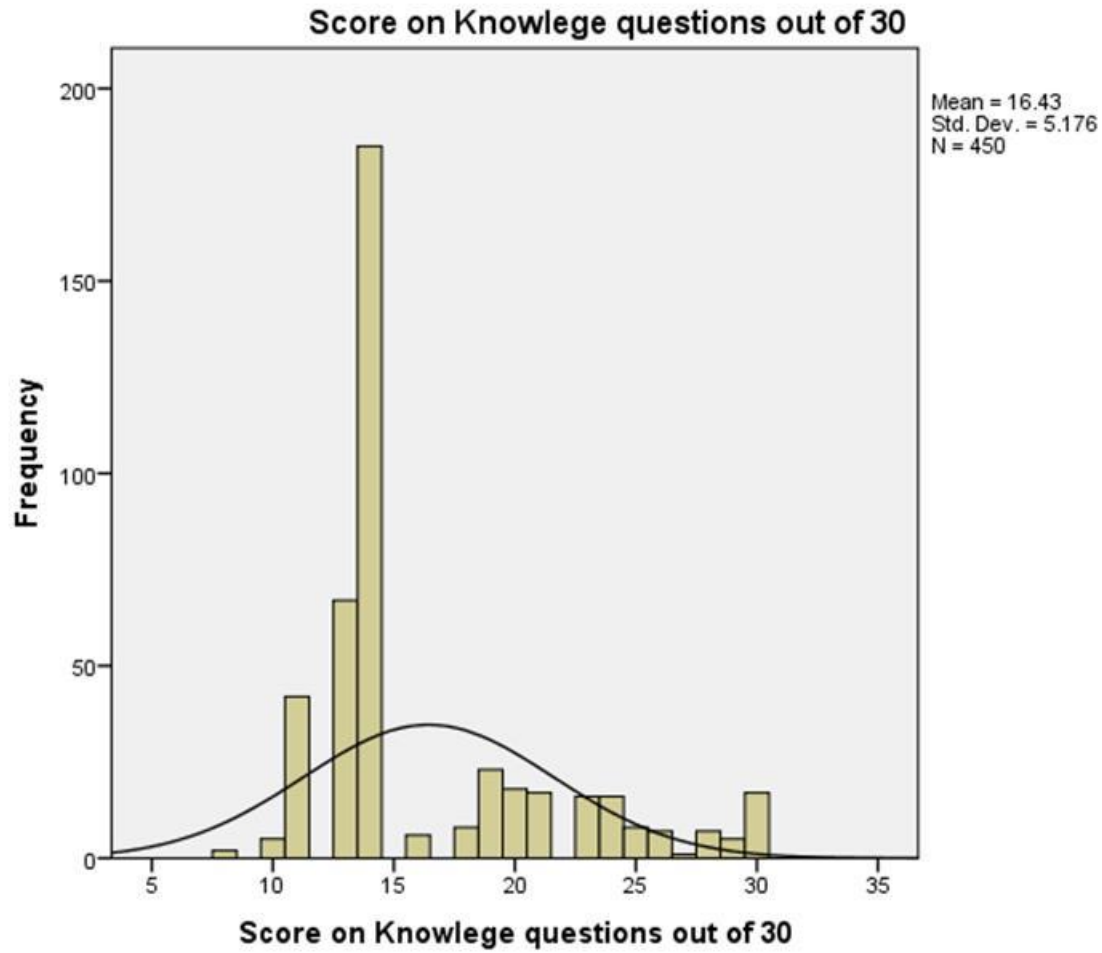


Figure 4.13: Score on knowledge questions.

The normal distribution of the score on knowledge in Figure 4.13 shows that the learners' score is right skewed meaning more learners scored less than the average score of 16 out of 30. A logistic regression analysis was performed to identify factors associated with.

Table 4.9: Logistic regression analysis of factors associated with acceptable knowledge on hygiene and sanitation

	B	S.E.	Wald	df	p-value	OR	95% C.I.for OR	
							Lower	Upper
Age	.275	.086	10.334	1	.001	1.317	1.113	1.558
Grade 5			12.591	2	.002			
Grade 6	-1.100	.323	11.575	1	.001	.333	.177	.627
Grade 7	-.722	.267	7.297	1	.007	.486	.288	.820
Location			2.147	2	.342			
Location(1)	.718	.518	1.925	1	.165	2.050	.744	5.654
Location(2)	-.187	.503	.138	1	.711	.830	.309	2.224
Circuit			.661	4	.956			
Circuit(1)	-.123	.442	.077	1	.781	.884	.372	2.102
Circuit(2)	-.278	.411	.460	1	.498	.757	.338	1.693
Circuit(3)	-.213	.339	.394	1	.530	.808	.415	1.572
Circuit(4)	-.071	.335	.044	1	.833	.932	.483	1.797
Gender(1)	-.143	.217	.431	1	.512	.867	.566	1.328
Constant	-3.520	1.213	8.414	1	.004	.030		

OR: Odd Ratio , CI: Confidence Interval

4.3.3 The level of learners' attitudes on hygiene and sanitation

The attitudes vis-à-vis hygiene and sanitation were also similarly scored with an overall correct attitudes score of 25.

- a) Hands should be cleaned before eating at school and at home.
- b) Hands should be cleaned after defecation.
- c) Hands should be cleaned after blowing nose with plain hands.
- d) It is my duty to keep the toilet clean.
- e) It is my duty to keep the school environment clean.

Two thirds of the learners (66.7%) had a poor attitude towards hygiene and sanitation. The rest (33.3%) had a good attitude towards hygiene and sanitation. There were not much gender differences in terms of poor attitudes: females (50.7%) and males (49.3%). There was no significant statistical association noted between attitudes and school circuits (p-value 0.937), or geographic location of schools: urban, peri-urban and rural (p-value is 0.592). All the p-value in those areas were greater than 0.005, as shown in Table 4.10.

Table 4.10: Association between school location and learners' attitudes towards hygiene and sanitation

	Location	Strongly Agree	Agree	Disagree	Strongly disagree	Pearson Chi-Square Test p-value
<i>Hands should be cleaned before eating at school/home</i>	Urban	3.8	3.3	2.7	0.2	0.350
	Peri Urban	2.2	2.9	4.2	0.7	
	Rural	22.0	27.3	24.0	6.7	
<i>Hands should be cleaned after kaka</i>	Urban	3.1	2.9	3.3	0.7	0.449
	Peri Urban	3.3	1.8	4.2	0.7	
	Rural	19.1	24.9	28.2	7.8	
<i>Hands should be cleaned after blowing nose with plain hands</i>	Urban	3.6	0.7	1.6	4.2	0.235
	Peri Urban	2.2	0.4	2.7	4.7	
	Rural	18.4	23.1	23.1	30.2	
<i>It is my duty to keep the toilet clean</i>	Urban	3.6	0.2	0.2	6.0	0.495
	Peri Urban	2.2	0.2	1.1	6.4	
	Rural	18.9	2.0	8.2	50.9	
<i>It is my duty to keep the school environment clean</i>	Urban	3.3	0.2	0.0	6.4	0.212
	Peri Urban	2.0	0.0	0.9	7.1	
	Rural	16.9	2.9	4.2	56.0	

*P value determined by Pearson chi-square test

There was however an association between attitudes and learners' ages and school grades. For example, 78.7% with poor attitudes were in the lowest grade, whereas 21.3% were in grade 7. This evidence shows that as learners advance and get older in school they are more likely to be responsible and adopt positive attitudes. Learners gain more knowledge in advanced classes. The significant association was confirmed by the p-value of 0.000. The association between learners' attitude and school grade is shown in Figure 4.14.

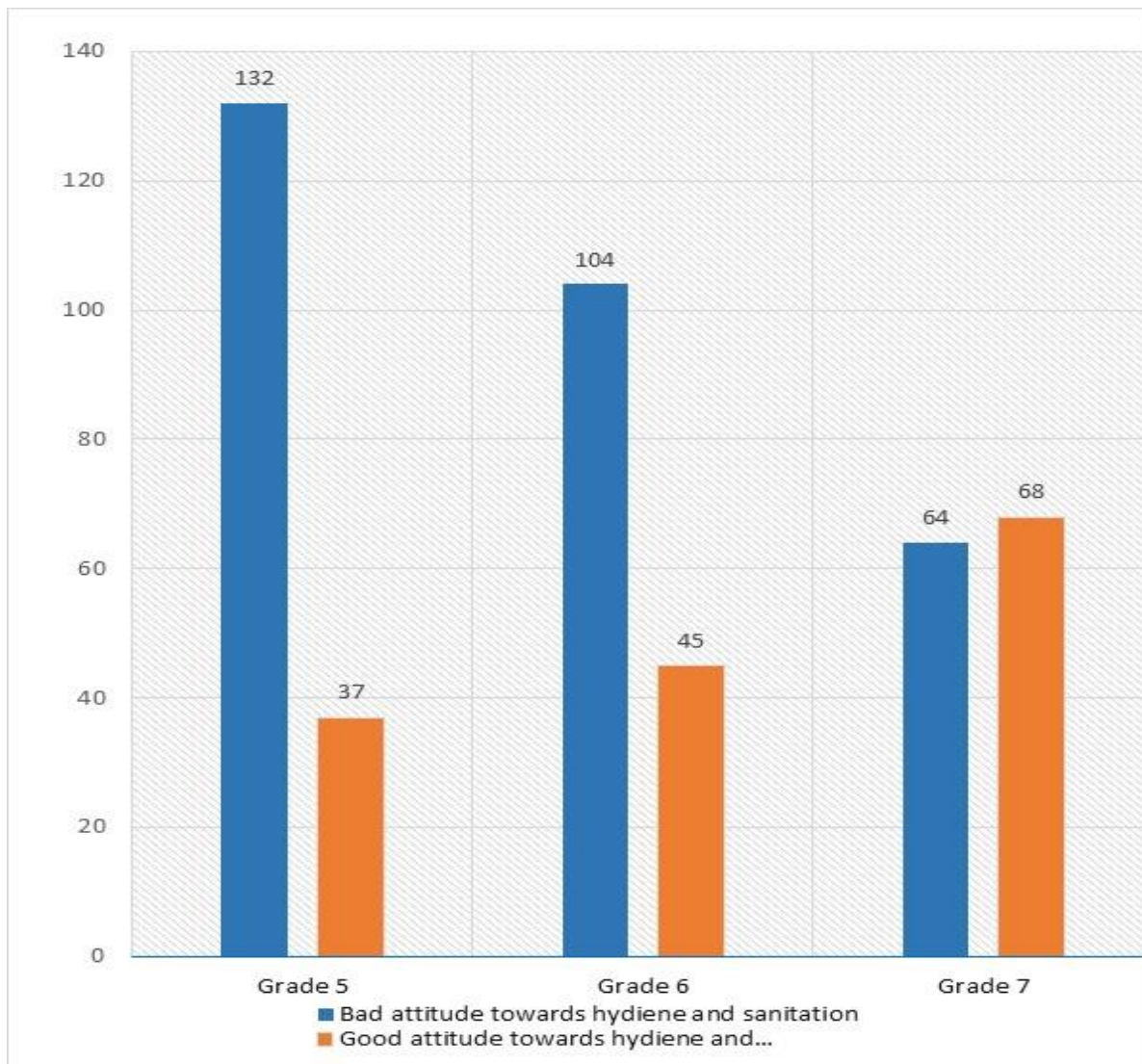


Figure 4.14: Relationship between school grades and attitudes towards hygiene and sanitation.

A statistical significant association was found between the attitude and the learners' age. This was confirmed by the p-value of 0.000, less the normal p-value of 0.005. The majority of the learners were in the two age groups of 10-12 years and 13-15 years, which indicated that younger learners are not careful enough or they adopt a do not care attitude when it comes to hygiene, unlike older learners. The chart in Figure 4.15 confirms the association between learners' ages and attitude.

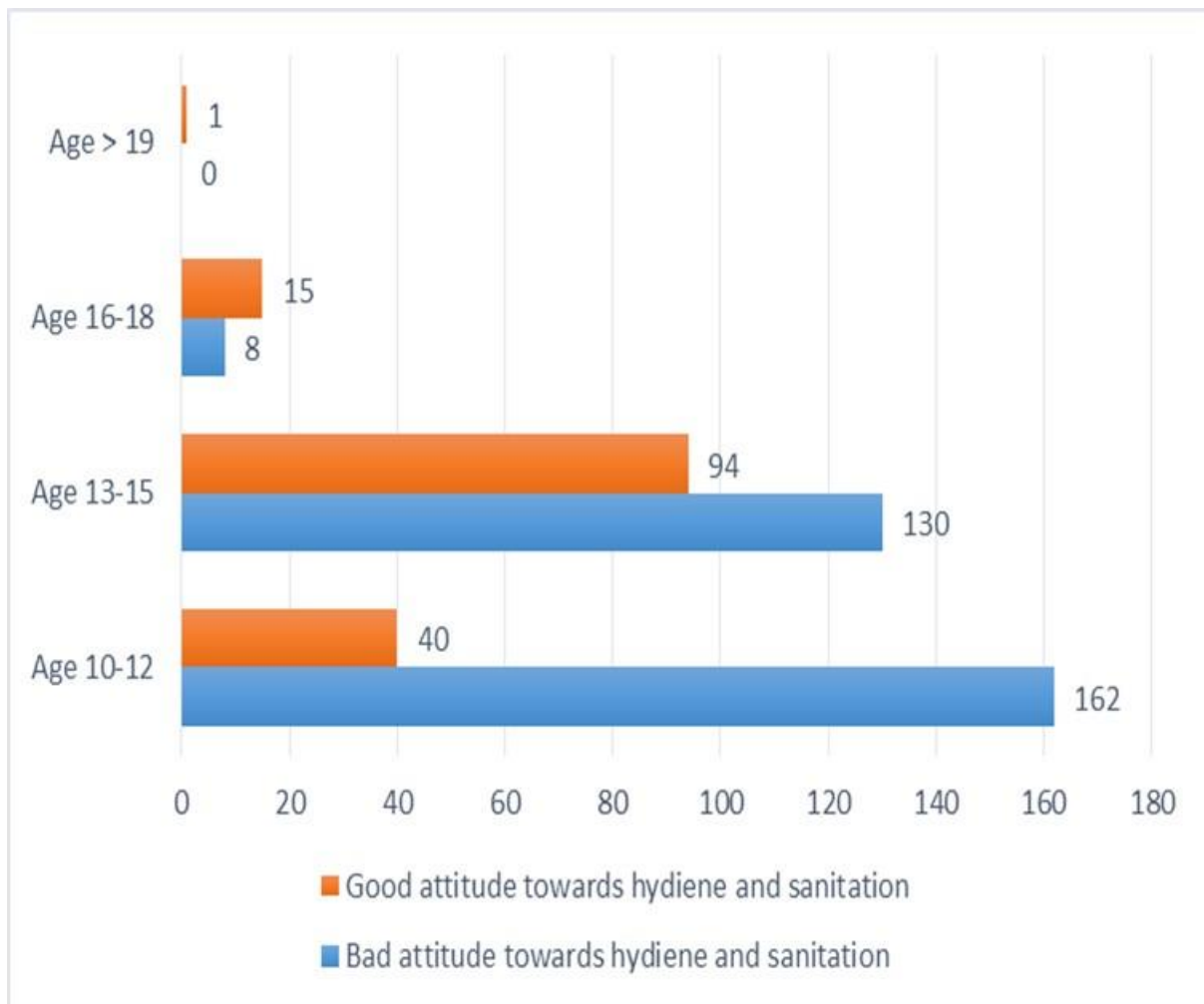


Figure 4.15: Association between learners' age and attitude toward hygiene and sanitation.

Hands are important vehicles that transport infectious illness among children. While many learners had the right attitude towards cleanliness of hands, 22.8% of them did not know or believe in cleanliness of hands after defecation. Furthermore, 18.2% did not know or believe in cleanliness of hands before eating, whether at home or at school. This is worrisome because even if there is water available at schools, the learners with this belief will not made an attempt to wash their hands after visiting the toilet. The implication is that illness can be easily transmitted through hands; the oral-fecal transmission route can easily infect many learners.

The findings showed that there was no statistical significant association between the learners' gender, age and grade and the questions related to attitude towards hand cleanliness before eating at school and at home. The p-value ranged between 0.018 and 0.633 which is greater than 0.005. The data showed that 18.2% of learners without the correct attitudes were in the grades 5 and 6. Many learners had a good attitude towards cleaning of hands after nose-blowing with plain hands, but 23.8% did not share the same sentiment. The results are that those learners (19.3%), who did not have the right attitude towards hand cleaning after nose-blowing with plain hands, were mostly in grades 5 and 6. In terms of learners keeping toilet facilities, 27% did not know or believe that it is their duty to keep the toilet facilities or the school environment clean.

There was a statistical significant association between the learners' gender and the questions related attitude towards keeping the toilet clean, as indicated by the p-value of 0.004. The negative attitude towards keeping the toilet facilities clean might be attributed to the cleaners who are employed at all schools to oversee the cleanliness of the school environment including the toilet facilities. Children might perceive cleanliness of the facilities as the responsibility of the cleaners only. In addition, teachers raised challenges of having to show learners how to use the toilets, and how to sit. The teachers reported that some learners still mess on the floor or all over the toilet seats.

“We have taught the children that they cannot just relieve themselves wherever but they should use toilets. Even if the toilets are known, we teach them [learners] how to use toilets, how to sit because if they stand or not properly sit they will make the seat dirty which will be disgusting for the next person.”

“When they go to the toilets they do not do what they are being taught.”

“Even when we tell our learners them how to use the toilets how to sit, you can find they still mess on the floor or with everything.”

“That is why we emphasize on proper usage of the toilet so as not to mess on the floor and to avoid others to step on their waste

The same challenge was observed by the researcher who personally noted how messy some toilet facilities were during observation of facilities. Figure 4.16 is an example of such a scenario.



Figure 4.16: A dirty toilet (source: researcher's own picture).

The study revealed that the majority of the learners (97.8%) reported washing their hands at school, and only 2.2% did not do so. The reasons given for not washing hands were: there is nowhere to wash hands, and there was no soap to wash hands with. The majority of learners (88.7%) did not have a habit of spitting everywhere in the school environment. A few that did (11.3%) gave the following reasons: “ the toilet was too far, there is no toilet for spitting, the toilet was not clean for them to go spit in there, there was nowhere to spit , I do not want to hold too much in my mouth, there is soil on the ground can cover my spit, I will not say why, When you find somewhere dirty and you want to spit, you just do it, i cannot go to the toilet just for spitting, sometimes I see disgusting thing that is why I spit anywhere, Whenever I need to spit even it is not the right place, I will just do it, I spit as long as it is not on the floor, Sometimes there is a lot of mucus in your mouth and you just want to spit right away, Sometimes I am disgusted by things that are not hygienic and just spit, there is no time to go to the toilet.” The majority who spit anywhere were young learners in the age groups of 10-12 years and 13-15 years.

The normal distribution of the score on attitudes in Figure 4.17 shows that the learners’ score is right skewed. This means more learners scored less than the average score of 11 out of 25. The majority of the learners (66.6%) had a poor attitude towards hygiene and sanitation. Out of 300 learners, 78.7% were in grades 5 and 6. This indicated that the younger the learners in low school grades, the poorer their attitudes towards hygiene and sanitation compared to older learners in higher grades, irrespective of their gender, school circuits or location. These findings are presented in Table 4.11.

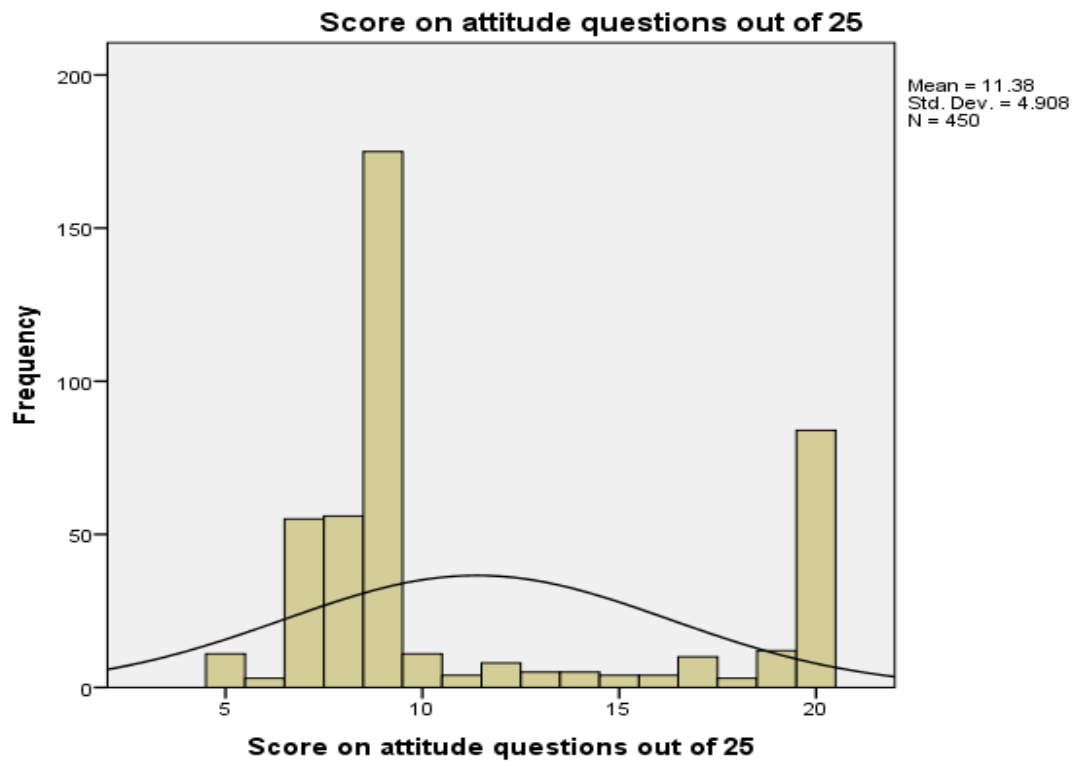


Figure 4.16: Score on attitudes.

Table 4.11: Logistic regression analysis of factors associated with acceptable attitudes toward hygiene and sanitation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age	.301	.085	12.602	1	.000	1.352	1.144	1.596
Grade			7.336	2	.026			
Grade(1)	-.759	.317	5.753	1	.016	.468	.252	.870
Grade(2)	-.633	.267	5.624	1	.018	.531	.315	.896
Location			2.045	2	.360			
Location(1)	.663	.510	1.694	1	.193	1.941	.715	5.269
Location(2)	.333	.486	.470	1	.493	1.395	.538	3.616
Circuit			.961	4	.916			
Circuit(1)	-.145	.432	.112	1	.738	.865	.371	2.020
Circuit(2)	-.398	.411	.937	1	.333	.672	.300	1.504
Circuit(3)	-.168	.334	.253	1	.615	.845	.439	1.628
Circuit(4)	-.167	.334	.251	1	.616	.846	.440	1.628
Gender(1)	-.215	.215	1.003	1	.317	.807	.530	1.228
Constant	-3.949	1.203	10.775	1	.001	.019		

OR: Odd Ratio , CI: Confidence Interval

4.3.4 The learners' practices of hygiene and sanitation

In terms of using toilets at school, 92.2% of learners confirmed that they did, and the remaining 7.8% did not do so. There were various reasons provided for not using toilets at school: “toilet too dirty, toilet seat is not clean and steady, when I come to school I do not feel like using it, I have no idea on how to use the toilet, toilet not open, sometimes toilet is not working, I do not drink at school, so I do not feel like using the toilet, I do not feel like using the toilet, toilet is broken, the air (smell) in the toilet is different and it is very dirty, some learners do not take care of it”. While 88.2% of learners used a toilet at school to micturate or defecate; the findings indicated that 11.8% did so outside a toilet.

The majority of these learners (58.5%) were males. Reasons given for micturating or defecating outside were: toilets are broken or not working, sometimes there are people in all the toilets and I cannot wait but use outside. It is disgusting inside the toilet, the urge is too high, and the toilet is very dirty, sometimes the toilet is closed. Figure 4.18 shows an exterior wall of a toilet that is discoloured, which is a confirmation that some learners were indeed not using toilet facilities, but used the outside of the facilities to urinate. A Kenyan study by Caruso et al (2014) reported the same practice whereby learners were discouraged from using a school latrine if the building was compromised or if they found something disgusting inside a latrine, such as urine, faeces, vomit, worms, flies, a strong smell, or a full pit. The same challenge was highlighted by teachers during FGDs.

“Toilets are not enough in relation to the number of learners.”

“When it comes to toilet facilities, they are few comparing to the number of learners. They are not enough; they need enough toilets in relation to the numbers of learners.”



Figure 4.18: External wall of a toilet used to pass urine (source: researcher's own picture).

In terms of having the correct practice towards hygiene the study found that 94.4% of learners always wash their hands before eating and after toilet use. The majority (83.7%) reported always taking care when using the toilet to avoid making it dirty. The researcher also observed other hygienic practices of the learners. For example, did a learner have clean clothing, clean fingernails, clean face, clean hair, trimmed fingernails, eye discharge and presence of scabies. Approximately a third of the learners were found with dirty clothing. Seventy-nine (79%) learners were found wearing very dirty clothes, while 18.7% had dirty clothes. The data showed that 32% had clean clothing, and 31.8% had very clean clothes.

The general observation was that the learners in schools that were visited early in week (Monday and Tuesday) had the cleanest uniforms compared to the learners from the schools that were visited on a Thursday and Friday. In an attempt to promote hygiene among learners at their schools, most teachers advise their learners to clean their school uniforms at least twice a week: over weekends and on Wednesdays. This might be the reason why some learners have clean clothing. Another explanation for the very dirty clothing might be that learners only clean their uniforms at weekends. There was no significant gender difference in terms of cleanliness of clothing across gender. The female learners' clothes were very clean. The data showed that there was a statistically significant association between the learners' school grade and the cleanliness of their faces, as indicated by the p-value of 0.001. Of the sixteen learners that were found with dirty faces, eleven of them were in grade 5 and 6.

Almost half of the learners (46.7%) were found to have dirty finger nails, and 16.9% had very dirty finger nails. Almost half of the learners (43.3%) with very dirty fingernails were in grade 5. Very few learners (14.9%) were found to have very clean finger nails, but 21.6% did have clean finger nails. The majority of learners who had very clean finger nails were in grade 7. Over half of the learners (59.3%) had clean faces; the majority of these learners (50.6%) were in the age category of 10-12 years, followed by 37.1% with very clean faces. A few learners had dirty faces (3.3%) or very dirty (0.2%) faces. These learners were in the age category of 10-12/13-15 years old. An association was found between cleanliness and learners' age, school circuits and locations with the p-value of 0.005 as shown in Table 4.12.

Table 4.12: Association between cleanliness and school locations

		<i>Urban</i>	<i>Peri Urban</i>	<i>Rural</i>	Pearson Chi-Square Test
					<i>p-value</i>
<i>clean clothing</i>	<i>Very clean</i>	4.2	9.1	18.4	0.000
	<i>Clean</i>	4.9	0.7	26.4	
	<i>Dirty</i>	0.9	0.2	17.6	
	<i>Very dirty</i>	0.0	0.0	17.6	
<i>Clean fingernails</i>	<i>Very clean</i>	2.9	4.7	7.3	0.000
	<i>Clean</i>	3.6	2.2	15.8	
	<i>Dirty</i>	3.3	2.7	40.7	
	<i>Very dirty</i>	0.2	0.4	16.2	
<i>Clean face</i>	<i>Very clean</i>	2.7	9.1	25.3	0.000
	<i>Clean</i>	7.1	0.7	51.6	
	<i>Dirty</i>	0.2	0.2	2.9	
	<i>Very dirty</i>	0.0	0.0	0.2	
<i>Clean hairs</i>	<i>Very clean</i>	2.4	7.3	20.0	0.000
	<i>Clean</i>	6.4	1.6	41.3	
	<i>Dirty</i>	0.9	1.1	16.9	
	<i>Very dirty</i>	0.2	0.0	1.8	

**P* value determined by Pearson chi-square

Table 4.13: Association between learners' cleanliness and school circuits

		Eenhana	Endola	Ondobe	Ongha	Ohangwena	Pearson Chi-Square Test p-value
<i>Clean clothing</i>	<i>Very clean</i>	8.0	13.1	2.4	4.4	3.8	0.000
	<i>Clean</i>	8.7	4.7	6.4	7.3	4.9	
	<i>Dirty</i>	2.7	1.8	4.2	3.1	6.9	
	<i>Very dirty</i>	0.9	0.4	6.9	4.9	4.4	
<i>Clean fingernails</i>	<i>Very clean</i>	4.7	4.9	1.1	1.3	2.9	0.004
	<i>Clean</i>	3.8	4.7	5.3	4.0	3.8	
	<i>Dirty</i>	9.8	7.8	10.0	9.8	9.3	
	<i>Very dirty</i>	2.0	2.7	3.6	4.7	4.0	
<i>Clean face</i>	<i>Very clean</i>	6.0	15.8	6.7	4.7	4.0	0.000
	<i>Clean</i>	13.8	3.8	11.6	14.4	15.8	
	<i>Dirty</i>	0.4	0.4	1.6	0.7	0.2	
	<i>Very dirty</i>	0.0	0.0	0.2	0.0	0.0	
<i>Clean hairs</i>	<i>Very clean</i>	5.1	12.0	6.0	2.4	4.2	0.000
	<i>Clean</i>	10.4	5.1	8.7	13.1	12.0	
	<i>Dirty</i>	4.0	2.7	4.7	4.0	3.6	
	<i>Very dirty</i>	6.2	8.9	9.6	8.4	10.2	

*P value determined by Pearson chi-square

Table 4.13 above shows the statistical significant association between the learners' practice of cleanliness and school circuits, as indicated by the p-value of less than 0.005. Approximately half of the learners (49.3%) had very clean hair, and half of them were females. Almost a third of the learners (29.8%) had clean hair, 18.9% had dirty hair, and 2.0% had very dirty hair. Younger learners in the age groups of 10-12 and 13-15 years, respectively, were found to have dirty hair (18.2%) and 2.0% with very dirty hairs. There was a statistical significant association between learners' school grade and clean hair, shown by a p-value of 0.005. Seventy-four learners (16.5%) with dirty hair were in grades 5 and 6. Thus, the lower the grade, the more dirty the learners' hair. The graph in Figure 4.19 shows the association between learners' grade and level of hair cleanliness.

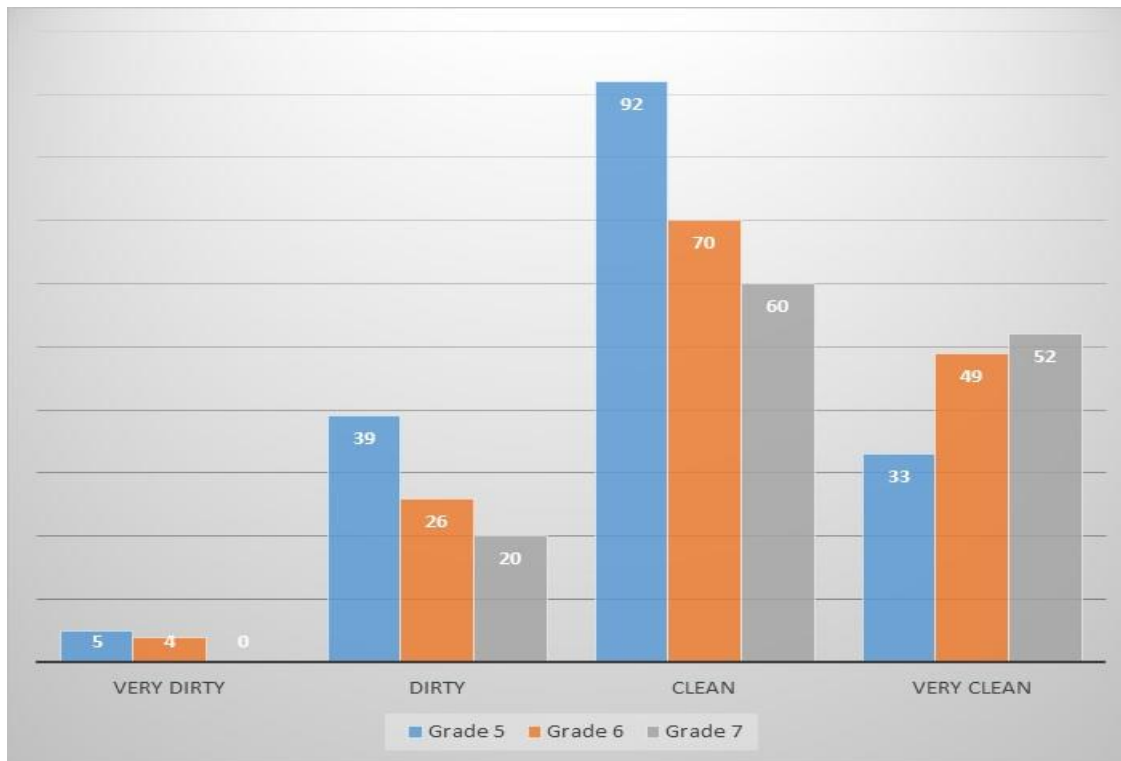


Figure 4.19: Association between learners' grade and level of hair cleanliness.

The majority of learners (56.4%) had trimmed finger nails, and the remainder (43.3%) did not. Over half of the learners (55.9%) with trimmed finger nails were females. The findings in Table 4.14 below indicates that there is a hygiene and sanitation problem as shown by the association of cleanliness and location within the three geographic locations (urban, peri-urban and rural), as confirmed by the p-value of less than 0.005. Very few learners (0.9%) had eye discharges. There were three females with this eye condition. The majority were grade 5 learners. The presence of scabies was observed among two learners in the age groups of 10-12 and 13-15 years. Ringworms were observed in 11.3% of learners.

4.3.5 General questions on hygiene and sanitation promotion in school

A vast majority of learners (83.7%) confirmed that they had been taught about hygiene and sanitation, and 16.3% indicated the converse. The frequencies of lessons ranged from “sometimes” with 29.3% being the highest, to “once in a year” being the lowest with 2.4% learners. Close to half of the learners (41.6%) were never taught how to wash hands at school, whereas 58.4% confirmed been taught handwashing. Those who had not been taught this (38.5%) at school were young learners in the age groups of 10-12 and 13-15 years old.

The majority of learners confirmed that they had been taught about hygiene and sanitation, but a vast majority (99.3%) were never shown or demonstrated the correct way of washing hands. The data in Table 4.14 indicated that there was an association between the three geographic locations (urban, peri-urban and rural) when it comes to being taught and shown on how to wash hands correctly. The association is confirmed by the p-value of 0.001 and 0.005, respectively. The data confirmed some problems with the availability of educational materials on hygiene (p-value is 0.000). The data showed that 27.1% of learners had not received educational materials on personal hygiene and sanitation promotion from their respective schools.

The majority (93.4%) who indicated not having received educational materials were young learners in the age groups of 10-12 and 13-15 years. More than two thirds (72.9%) learners indicated that they had received educational materials on personal hygiene and sanitation promotion. Such material ranged from posters, soap, books, and toilet paper. However, observation of learners' sanitation facilities show the contrary. The majority of learners (70.2%) indicated that their schools were doing enough about hygiene and sanitation. Those who did not hold this opinion (29.8%) indicated their desire is for their schools to build more toilet facilities that are flushable. There was a significant association between circuits and learners' views on hygiene and sanitation: some of the above practices were influenced by the location of facilities in the schools.

Table 4.14: Association between circuits and learners' views on hygiene and sanitation

		<i>Eenhana</i>	<i>Endola</i>	<i>Ondobe</i>	<i>Ongha</i>	<i>Ohangwena</i>	Pearson Chi-Square Test
							<i>p-value</i>
<i>Do you spit on ground?</i>	Yes	1.8	0.9	1.6	1.8	5.3	0.000
	No	18.4	19.1	18.4	17.8	14.7	
<i>Do you always take care when using the toilet to avoid making it dirty</i>	Yes	18.0	16.5	18.5	12.0	18.7	0.000
	No	2.2	3.3	1.6	7.8	1.3	
<i>Are you being taught how to wash hands to prevent germs?</i>	Yes	12.9	15.8	10.7	7.3	11.6	0.000
	No	7.3	4.2	9.3	12.4	8.4	
<i>Do you receive educational materials on Personal Hygiene and Sanitation promotion from school?</i>	Yes	14.4	16.0	16.2	10.4	15.8	0.000
	No	5.8	4.0	3.8	9.3	4.2	
<i>Do you think the school is doing enough about hygiene and sanitation?</i>	Yes	17.6	12.7	16.0	11.8	12.2	0.000
	No	2.7	7.3	4.0	8.0	7.8	

*P value determined by Pearson chi-square test

Several suggestions were made by the learners as to what the schools need to do.

- Schools to provide more water taps, and posters about hygiene
- Doctors and nurses to teach learners about hygiene and sanitation
- School to teach learners how to take care of their bodies, and to provide more educational materials on personal hygiene and sanitation
- Have a person teaching people how to wash their hands and how to use the toilet, teach them how to clean their environment, and how to protect each from HIV
- Have a subject on cleanliness, and provide soap for them to wash their hands
- To be taught hygiene every day
- Schools to hand out leaflets on hygiene
- Teachers to teach very seriously so that learners can pass well, the school should create a good image to learners, and teachers need to pull their socks up to teach them enough about hygiene and sanitation
- Teachers need to teach learners how to use toilet, specifically the small children in kindergarten and pre-primary
- Schools must buy things that clean toilets well (cleaning products) and build toilets specifically for children.

4.4 DISCUSSION OF NARRATIVE RESULTS FROM OBJECTIVE 3: EXPLORATION AND DESCRIPTION OF TEACHERS' PERCEPTIONS ON THE EXTENT OF HYGIENE PROMOTION IN THE SCHOOLS

The qualitative results obtained from the teachers in this study are presented below.

The teachers were selected by means of purposive sampling, based on the inclusion criteria. Informed consent was obtained prior to data collection. Five primary schools (Omungwelume, Endola, Efidu, Omutaku, and Kapombo) were the study sites of the five FGDs. In addition to field notes, a tape recorder was used to record all FGDs, for verbatim transcribing. There were six to 12 teachers in the FGDs. Due to lack of office space at the schools, the FGDs were held in class rooms, usually in the afternoons when learners were not present with the exception of one that was held in the teachers' office. Observation data were also collected. Data collection was ceased when the researcher had achieved data saturation of the teachers' perception of hygiene promotion in primary schools. A structured question was asked to generate qualitative findings.

- *What are your perceptions about hygiene promotion in your school?*

Probing questions were used to address related issues or that may have had an influence on hygiene promotion. Examples of probing questions were: Is there a hygiene education plan in the school on hygiene behaviour? If yes, is the hygiene education actually happening at school? When does it happen (frequency)? Is there a focal person who is leading hygiene activities at school? In your opinion, do you think what is done is enough? Is there any arrangement on handling menstrual waste disposal in girls' toilets?

What are the challenges towards effective promotion of hygiene and sanitation among school learners in your school? What do you think can be done to improve the situation? Barbie, (as cited in de Vos, Strydom, Fouche, & Delpont, 2013) referred to qualitative analysis as the "non-numerical investigation and interpretation of observations, for the purpose of discovering fundamental meanings and forms of associations". The process of qualitative data analysis in this study followed eight steps as outlined by de Vos et al (2013), and involved preparing data, organising data, reducing data, visualising, representing, and displaying data.

Data analysis resulted in condensing data that were too big to handle. The process resulted in the identification of central concepts from main themes and sub-themes. These themes and sub-themes are used to discuss the findings related to the teachers' perceptions on hygiene promotion. Two main themes, and 11 sub-themes, were identified, and are presented in Table 4.15.

Table 4.15: Main themes and sub-themes from data analysis

MAIN THEMES	THEMES AND SUB-THEMES
<p>4.4.1. Different perceptions of teachers on hygiene promotion and barriers that influence hygiene promotion.</p>	<p>4.1.1.1. Theme: Positive and negative perceptions of teachers on hygiene promotion.</p> <ul style="list-style-type: none"> • Sub-theme 1. Positive perceptions of teachers on hygiene promotion. • Sub-theme 2 Negative perceptions of teachers on hygiene promotion. <p>4.1.1.2. Theme: Barriers that influence hygiene promotion</p>
	<p>4.4.1.2.1. Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities</p>
	<p>4.4.1.2.2. Unhygienic personal conditions of some learners</p>
	<p>4.4.1.2.3. Different cultural background of learners</p>
	<p>4.4.1.2.4. Lack of parental involvement in hygiene promotion</p>
	<p>4.4.1.2.5. Dilapidated toilet facilities that are not safe to use</p>
	<p>4.4.1.2.6. Old and unhygienic conditions of school buildings</p>
<p>4.4.2. Teachers perceive shortage of resources necessary for hygiene promotion.</p>	<p>4.4.2.1. Fewer toilet facilities in relation to the number of learners</p>
	<p>4.4.2.2. Lack of flushing toilet facilities</p>
	<p>4.4.2.3. Insufficient school budget</p>
	<p>4.4.2.4. Inadequate water supply at schools</p>
	<p>4.4.2.5. Shortage of supplies such as toilet papers, soaps, sanitary pads, cups.</p>

Detailed discussions of the themes and sub-themes are presented.

4.4.1 Main theme: Different perceptions of teachers on hygiene promotion and barriers that influence hygiene promotion

According to Merriam-Webster (2016, October 12), perception is referred to as the ability to interpret an awareness or understanding of elements in one's environment through physical sensation.

Theme 1.1: Positive and negative perceptions of teachers on hygiene promotion

Both negative and positive perceptions of teachers on hygiene promotion are described. The phrase 'positive perceptions' used in this study refers to the enthusiastic impression in support of hygiene promotion among primary schools by teachers, who participated in the study. Teachers were positive regarding the importance of adequate hygiene and sanitation practices in schools, especially in relation to disease prevention. During the FGDs at the five schools, teachers shared enthusiastically different strategies that they were implementing in an attempt to promote sanitation and hygiene, either in school environments or for their learners. Teachers believed that they have a greater responsibility to promote hygiene and adequate sanitation, which they do through sharing hygiene-related information with their learners on different platforms at school, or by implementing various strategies to encourage and motivate learners to be hygienic. The following positive perceptions were expressed by teachers, which indicate greater responsibilities assumed by teachers in strong support of hygiene promotion.

“The young ones at the beginning of the school are taken by their teachers to the toilets and show them how to sit and use the toilet. As time goes we keep repeating the same at morning devotions and in classes also.”

“We have taught the children that they cannot just relieve themselves wherever but they should use toilets. Even if the toilets are known, we teach them [learners] how to use toilets, how to

sit because if they stand or not properly sit they will make the seat dirty which will be disgusting for the next person.”

“That is why we emphasize on proper usage of the toilet so as not to mess on the floor and to avoid others to step on their waste.”

“We do order for supplies such as soaps or we go buy as a school so that the cleaners can use them to clean properly. We also take care about the hygiene and safety of our cleaners, if they asks things like masks or gloves, they let us know and we buy for them. Sometimes we just decide to wash children’s clothes at school because they are very much dirty, or the child self.”

“[In order] to make sure that it is happening, we bought buckets, we put water and soap in.”

“We place them [toilet papers] in classrooms, when a child is going to the toilet; they take from the roll in the classroom to go use.”

“Some teachers take the initiative of cleaning these children or making these children washes their clothes at school.”

“Every teacher is free to announce according to their observation or just as an encouragement, from classroom hygiene to toilet use (noise in background).”

“It is the teacher’s responsibility to make sure there is water in the bucket and that children are really washing their hands.

The teachers take a container with soap and use it to always put in water. Unless the soap is totally finished at school, otherwise the water should always be soapy.”

“Let me add also that the teachers that are teaching life science and social science are also teaching these girl learners about periods and emphasize on hygiene.”

“Yes, we have [sanitary] pads at school. We tell the big ones that they should approach the teachers if they are in need.”

“Every month, we have a cleaning campaign when we knock off at one and commence the cleaning of the [school environment and the surrounding.”

“Children are made aware about the cleanliness of the environment. They are told that if they come across any garbage, papers or rubbish, in the school environment they should pick them and throw them in the in dust bins.”

“When it comes to classrooms, we have names of school learners that are scheduled to clean their classes every day from Monday to Friday.”

“When it comes to personal hygiene, they are told to wash their bodies very well, but we have noted that their heads [hair] are very dirty.”

“We use to cut their hairs at school if they are not neat enough because they are not taken very care of at home.”

“We also informed them to always wash their uniforms during the weekend and if gets dirty in the week to wash them on Wednesdays as well.”

Findings, that also implied positive perception of teachers regarding hygiene promotion, were the role they played in ascertaining that there were buckets with soapy water for learners to wash their hands before and after eating, or after toilet usage.

“The buckets have taps so that when they are washing their hands the dirty water from their hands are going down and not back in the bucket (noise in background).”

“We have buckets with water in the class, where children are reminded to wash their hands before they eat, or after playing so that they do not touch their books with dirty hands.”

“The buckets had taps where children can take their containers and drink from or to wash hands.”

Data collected revealed that teachers implemented various strategies, in their schools, to motivate learners to keep themselves, and their school environment, in a hygienic state, or to award the effort of learners who displayed a positive attitude towards hygiene. The statements below illustrate such strategies of the teachers.

“Another way we are promoting hygiene is through announcements every Monday and Friday during morning devotions.”

“We also are running some cleaning campaigns at our school, during special events or special days.”

“We also promote hygiene and cleanliness by conducting the neatest learner on yearly basis.”

“We award these learners in front of their parents and fellow learners because the idea is to promote hygiene and to motivate others to do the same.”

“Yes we do award them by either individual or group of learners who cleaned or the class as a whole.”

“We emphasize that each child should have own clean cup and bottle of water that can be used to collect water at the water point.”

“Children are then encouraged to pass through to where the buckets are located , to wash their hands when coming from the toilets so that the dirtiness on their hands wherever they have touched when they were in there will be removed.”

“The teachers check the classes and identify the cleanest class at school.”

Subcategory 1.1.2 Negative perceptions of teachers on hygiene promotion

In this study, negative perceptions refer to a state, in terms of a teacher not being in favour of assuming responsibility to promote hygiene in school. Very few negative perceptions were expressed. An example of one expression: *We really have a lot of work to do as teachers in addition to promote hygiene and oversee the cleanliness of the school. I feel that the Government should extend their hands by recruiting people specifically for hygiene promotion in schools and in the community to educate parents to understand the importance of hygiene.*

4.1.1.2 Theme: Barriers/ challenges that influence hygiene promotion

Although teachers had positive perceptions and were employing a variety of strategies to promote hygiene, in the process they encountered barriers that they think impede satisfactory hygiene promotion. In the barriers/challenges subcategory the following themes emerged: lack of knowledge of pre-primary school learners regarding proper use of toilet facilities, unhygienic personal conditions of some learner, different cultural background of learners, lack of parental involvement in hygiene promotion, dilapidated toilet facilities that are not safe to use, and old and unhygienic conditions of school buildings.

The teachers in schools in Western Kenya were in accord that challenges include dirty latrines, lack of resources to clean properly, an inadequate number of latrines to serve the learners' population, and some learners do not know how to use the latrines appropriately (Caruso et al, 2014). The statements of teachers, regarding the barriers, are presented below.

4.1.1.2.1. Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities

Teachers perceived lack of knowledge among young learners, especially those ones in pre-primary classes, as a barrier to proper use toilet facilities. Being new in the school environment may on its own serve as a barrier to use any facility in the environment, including sanitation facilities. The children may not yet have learned hygiene at home or sanitation facilities at home may be different from the one in school. Lack of knowledge was evidence from the teachers' quotes below:

“Those pre-primary learners find it difficult to use those toilets.”

“Sometimes they use the space between the toilets or they go to the fence. Although we are trying to remind them (children) many a times to do the right things, it is just a problem.”

“At the beginning of the school, we struggle because they use to make use of the outside of the toilet and not inside the toilet itself.”

“Even when we tell our learners how to use the toilets, how to sit, you can find that they still mess on the floor or with everything.”

4.1.1.2.2. Unhygienic personal conditions of some learners

Poor hygiene practice among school children is believed to have resulted from the lack of awareness of the health benefits of personal hygiene. Personal hygiene of some learners in school was found to be poor. This was evidenced by the researcher in her observation of learners' clothes, fingernails, eye discharge and presence of scabies, hair and scalp were observed. Approximately 36.3% of learners were found with dirty clothing.

“Sometimes these children come to school with very dirty hair, body or clothes.”

“Another problem is some children are coming from home very dirty.”

“Some parents are not taking care of their children. These children smell badly (odour) very dirty hair, clothes and hands.”

4.1.1.2.3. Different cultural background of learners

Hygiene in homes is an important aspect of disease prevention. If the norm and culture at home is not that of promoting hygiene, the same cannot be practiced at school without some adjustment. Only when both parties understand the benefits derived from hygiene practices that will result in compliance.

“For instance, a learner who continuously comes with dirty hair or dirty T-shirt, you may want to take that learner to wash those clothes but it might be a problem when it is being heard by parents. You might be attacked. Or, maybe you want to cut the hair so that the learner look healthy, this can be a problem to the parent.”

4.1.1.2.4. Lack of parental involvement in hygiene promotion

According to Sarkar (2013), many illnesses are preventable by promoting hygienic practices among school children through proper health education by their parents and teachers. However, the same cannot be realised if some parents are not involved in hygiene promotion. Hence teachers felt that some parents are not carrying their weight as stated below:

“Us we are doing at school but when learners go home they go back to their normal way of doing things at home.”

“...especially parents to help us because it will be useless for us to promote hygiene here at school while nothing is happening at home.”

“I only think that if parents were also were informed about hygiene and sanitation, it will be good for them to also promote at home because one can see that promotion is not happening at home.”

Teachers felt that hygiene promotion should be a complementary role for both parents and teachers. Hence children need encouragement from home. Teachers have suggested program for sensitising parents and community members at large on issues related to hygiene.

“If there were even programs on radio where parents are really made to understand their role in taking care of their children’s hygiene, it will help a lot.”

“Parents need to be taught, care starts at home if parents get to understand that cleanliness and hygiene is needed and important, then we think children will be more receptive if it comes from home also in addition to school.”

4.1.1.2.5. Dilapidated toilet facilities that are not safe to use

Teachers felt that some of the sanitation facilities are in bad state and not safe to use as they may pose a risk of infections to teachers and learners alike.

“One can say they (toilets) need to be demolished so that new ones can be build.”

“May be some children are afraid or think they are falling inside the pit. That is why you may just find some children have urinated or defecate on the floor.”

“Toilets are overflowing with all the dirt during rainy season. Some holes were not deep enough, some are old.”

“Here at our school, the toilets especially those that are used by children are very old. They cannot hold the smell anymore.”

4.1.1.2.6. Old and unhygienic conditions of school buildings

Other than the researcher’s observation of the facilities, teachers in the FGDs have confirmed the status of the school buildings as follow: *“Schools are very old, classes not in good condition, there are bats in roofs and can be very smelly.”*

“We have three classes with bats [infestation]. Our classes are very old and they are built with sand those days with hollows in between.”

4.4.2 Main theme: Teachers perceive shortage of resources necessary for hygiene promotion

The main theme included too few toilet facilities in relation to the number of learners, lack of flushing toilet facilities, insufficient school budget, inadequate water supply at schools and shortage of supplies such as toilet papers, soaps, sanitary pads, and cups.

4.4.2.1 Fewer toilet facilities in relation to the number of learners

A study by Oswald et al, as cited by Vivas et al (2010) , showed that lack of resources, namely soap and water, as well as inadequate sanitation facilities, may be two main reasons why children do not wash their hands. The teachers stated the following.

“When it comes to toilet facilities, they are few comparing to the number of learners. They are not enough; they need enough toilets in relation to learners.”

“Sometimes all the toilets are occupied and it might be difficult for some learners to wait, this may force them to use the outside area or the bushes which is not hygienic anymore.”

In addition to teachers’ experience, the same challenges were confirmed by learners themselves. Some of the reasons given for not using the toilets were *“sometimes there are people in all the toilets and I cannot wait but use outside”*.

4.4.2.2 Lack of flushing toilet facilities

Only 20% of schools had flushing toilets, the rest (80%) have either ventilated improved pit latrines (VIP) or pit latrines with a slab. None of the schools were found to be using either bucket toilets or composting toilet facilities. Lack of flushing toilets make it impossible for learners and teachers like to wash their hands without the availability of water in the toilets.

“Our main wish is to have flushing toilets.”

“We really want flushing toilets but (eish...laughter) we are in a dire situation.”

“The government should build for us flushing toilets since we have water available, those are hygienic”.

4.4.2.3 Insufficient school budget

One of the barriers to effective hygiene promotion was lack of resources which was attributed to limited school budget. Availability of supplies necessary for hygiene practice, such as soaps, toilet papers, etc, is implicated by the limited school budget.

In almost all toilet facilities for learners in 10 schools observed by the researchers, none of them hand soaps, toilet papers or hygiene promotion posters.

“.....because we do not get money enough for all our needs.”

“Yes, about toilet papers, he is right. Sometimes money at school is used for other needs and toilets may wait.”

4.4.2.4 Inadequate water supply at schools

Although the results indicated that all of the schools have access to water supply, there was only a single water tap available in all the rural schools and the peri-urban one. The tap was positioned at a central point in the school yard. Only two schools had water in the sanitation facilities. Not all children have cup or containers of their own, which resulted in children drinking directly from the tap with their motuh, which is unhygienic. The teachers confirmed the challenge below:

“(Yeah), about tap water, we only have one water point.”

“Sometimes you will find children drinking directly from tap, placing the tap in their mouth, the next child is doing the same or using a cup. This is very much unhygienic.”

4.4.2.5 Shortage of supplies such as toilet papers, soaps, sanitary pads, and cups

Teachers indicated that hygiene promotion was hampered by lack of suppliers such as toilet papers and soaps. The challenge was confirmed by the researcher’s observation of learners’ sanitation facilities. Only the teachers’ toilet facilities had the above-mentioned supplies. The shortage is also implicated by limited budget to schools, according to teachers. During the FGDs some teachers stated that in schools that do not place toilet papers in toilets, each teacher collects toilet papers for the learners in her/his own class. The reason for this practice is that some learners used to take out all the toilet paper in the toilets.

This is not an ideal resolution to the problem as it may compromise some learners who may not feel comfortable being seen by their peers or the teachers taking toilet paper. This may lead to some learners’ not using toilet paper, or resort to using other materials to clean themselves, which may lead to toilet blockages, especially the flushable ones. Only one school confirmed to not experiencing a problem with toilet papers inside the toilets.

“Because we just receive [toilet papers] once from government store as was said, sometimes when there is nothing while waiting, there a problem comes in because there is nothing to use.”

“The challenge is that there are only two cups in class one for girls, one for boys to drink with and they are not being washed immediately after use.”

“Although we are encouraging every child to have [his/her] own cup and bottle, not all have.

“We do not have toilets (papers) and sanitary pads, we have a problem getting them.”

“I forgot to mention that challenge, when they got finished, then it is hard to buy toilets for learners.”

“The government should give us enough suppliers such as enough toilet papers, towels for drying hands.”

Table 4.16: Summary of the findings, conclusions and central concepts

QUANTITATIVE FINDINGS	QUALITATIVE FINDINGS	CONCLUSIONS	CENTRAL CONCEPTS
<p>Sanitation facilities</p> <ul style="list-style-type: none"> • Old and dilapidated toilet facilities. • Lack of privacy for some toilet facilities without doors. • Unhygienic (dirty, messy, smelly, disgusting) toilet facilities • Handwashing facilities (buckets) very dirty. • Fewer toilet facilities in relation to the number of learners. • No flushing toilets • No build-in handwashing facilities in learners' toilets despite water availability • Handwashing facilities (buckets with water) located far away from toilet facilities • Lack of supplies (toilet papers, soaps, paper towels) for effective toilet use. 	<p>Teachers Negative perceptions</p> <ul style="list-style-type: none"> • Old and dilapidated toilet facilities • Old and dilapidated school buildings toilet facilities • Unhygienic conditions of toilets • Fewer toilet facilities in relation to the number of learners • Lack of flushing toilet facilities. • Inadequate water supply. • Shortage of supplies such as toilet papers, soaps, sanitary pads, cups. 	<p>Old sanitation facilities and school buildings</p> <p>Unhygienic and unsafe facilities</p> <p>Inadequate toilet facilities</p> <p>Shortage of resources</p>	<p>Environment Management</p> <p>Environment Management</p>

<ul style="list-style-type: none"> • Lack of materials (e.g. posters, leaflets, etc.) to encouraging or reminding learners to wash hands • Lack of facility specially designated for learners with disabilities • Unsafe disposal of wastes at some dumping sites, attracting learners to have fun with them. 	<ul style="list-style-type: none"> • Insufficient school budget. 	<p>Limited budget</p>	<p>Management</p>
<p>Learners' KAP</p> <p>Poor knowledge :</p> <ul style="list-style-type: none"> • The relationship between human faeces and germs (37%) • If that hands have to be cleaned before eating or after using a toilet whether they look clean or not (53%). • Whether that washing hands with water only after visiting a toilet does not protect illness (55%). • Whether kaka or defecation in the open or bush can lead to the spread of illness (53%) • Younger learners in lower school grades, has poorer knowledge towards hygiene and sanitation than older learner 	<ul style="list-style-type: none"> • Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities • Different cultural background of learners. • Lack of parental involvement in hygiene promotion 	<p>Lack of knowledge on hygiene and sanitation</p> <p>Poor collaboration and coordination of hygiene promotion activities between teachers, parents and learners</p>	<p>Environment</p> <p>Collaboration</p>

<p>Bad attitudes on:</p> <ul style="list-style-type: none"> • Cleanliness of hands after defecation (22.8%). • Cleanliness of hands before eating, whether at home or at school (18.2%). • cleaning of hands after nose-blowing with plain hands 23.8% • Not learners' duty to keep the toilet facilities or the school environment clean. 27% • Spitting everywhere in the school environment. A few that did (11.3%) • Younger learners in lower school grades, has poorer attitudes towards hygiene and sanitation than older learner <p>Bad practice:</p> <ul style="list-style-type: none"> • 11.8% use outside of a toilet. • Learners found with dirty clothing (36.4%) • Learners found with dirty finger nails (46.7%) • Learners found with dirty hair 20.9% • Ringworms were observed in 11.3% of learners. • Younger learners in lower school grades, has poorer practice towards hygiene and sanitation than older learner 	<ul style="list-style-type: none"> • Lack of parental involvement in hygiene promotion • Unhygienic personal conditions of some learners • Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities <ul style="list-style-type: none"> • Lack of parental involvement in hygiene promotion • Unhygienic personal conditions of some learners 	<p>Bad attitudes towards hygiene and sanitation</p> <p>Poor collaboration and coordination of hygiene promotion activities between teachers, parents and learners</p> <p>Bad practices towards personal hygiene</p>	<p>Environment</p> <p>Collaboration</p>
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4.5 SUMMARY

The findings from the study indicated that a combination of challenges in the school environment, as well as in the community, negatively impact the efficient management and promotion of hygiene and sanitation practices among primary schools in the Ohangwena region. The findings indicated that lower and higher level grade learners are likely to be significantly different with regards to their views and perceptions on hygiene and sanitation.

This is a logical conclusion because, as learners become older, they become more aware and take precautions about hygiene and sanitation issues. The findings show that there is an association between knowledge on hygiene and sanitation and the variables of age, grade, location, and gender, as indicated by the logistic regression analysis table. The ramifications of inadequate infrastructures to meet learners' needs are that, learners do not have opportunities to practice the sanitation-related behaviors they are taught, and they are presented with impossible choice challenges that are harmful to their dignity and well-being. The standards, as outlined by UNICEF and the Ministry of Education, should be evaluated and implemented to make facilities more acceptable for use.

The study revealed that there is poor collaboration between teachers, parents and learners, which needs to be strengthened. Knowledge was found to be unacceptable, and there was a bad attitude towards personal, facility or environmental hygiene. To address this, positivity and ownership need to be instilled in learners to adopt correct practice and attitudes towards hygiene and sanitation. Learners, especially young ones, need to be supported all the way so that they can become active change agents at school and at home.

The next chapter covers conceptual framework for the study and definitions of the concepts and statements.

CHAPTER 5

CONCEPTUAL FRAMEWORK FOR THE STUDY AND DEFINITIONS OF THE CONCEPTS AND STATEMENTS

5.1 INTRODUCTION

The findings from concept analysis were presented in Chapter 4. The purpose of this chapter is to identify, define and conceptualise the main concepts. Chin and Kramer (2008) described a conceptual framework as a “crucial process for generating a laborious way of constructing ideas while purposefully and analytically viewing the phenomena.” Walker and Avant (2010) underscored the significance of clear definitions of concepts in the development of a theory. Definitions of the main concepts are crucial in the development of a model to facilitate the management of sanitation and hygiene practices.

Dickoff et al (1968), as cited in Chinn and Kramer (2011), defined a conceptual framework as an organised set of ideas and theories that assists investigators to identify research problems accurately. The theory generation design, as well as the practice oriented theory, were used in the development of this model. The conceptual framework guided the development of the model to facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region.

5.2 CONCEPTS DEVELOPMENT

The fieldwork was succeeded by a thorough examination, clarification and analysis of the concepts. The process of concept analysis and conceptualisation is important in the development of the model. The main concepts deduced from the research findings were management, collaboration, and environment, as indicated in Table 4.16. The researcher used Wilson’s (1989) steps modified by Walker and Avant (2010) to undertake a concept analysis of management, collaboration and environment.

The steps used are as follows:

- Identification of central concepts
- Determine the aims or purposes of the concept analysis [meaning]
- Identify uses of the concept
- Determine the defining attributes
- Construct model and borderline cases
- Identify antecedents and consequences
- Define empirical referents.

5.2.1 Identification of central concepts

Chinn and Kramer (2008) defined a concept as a “complex mental formulation of experience”. Concepts are derived from people’s experiences or perceptions of the world around them. When developing a theory, it is crucial to identify the concepts because they are central components that will convey the focus and meaning of that theory. In this study the concepts were identified from the research findings after data analysis as indicated in Table 4.16 in Chapter 4. Challenges and barriers, perceived by teachers in a school context (*environment*), had an influence on promotion of hygiene. Additionally, conditions of sanitation facilities were found to have an influence on learners’ attitudes and practices of hygiene at school.

The themes that emerged, from the perceptions of teachers, exposed poor or limited *collaboration* in the area of sanitation and hygiene between the teachers and different stakeholders. Perceptions, such as lack of parental involvement in hygiene promotion, unhygienic personal conditions of some learners, and different cultural background of learners call for *collaboration* between parents, learners, teachers and other stakeholders.

In addition, teachers perceive hygiene promotion as an additional role that adds a burden to their primary roles of teaching, hence the suggestion that the government should recruit additional staff for hygiene promotion purposes. Other challenges and barriers experienced, namely lack of supplies, such as cleaning materials, posters, inadequate toilets, facilities, dumping sites as well as other resources inadequate knowledge of learners, lack or shortage of resources, and state of school building and sanitation facilities, all affect a school *environment*.

Therefore, *management* of resources and facilities, by all involved, is a necessity for hygiene promotion in a school *environment*. It became evident from the KAP results that the learners need some guidance that will direct the *management* of sanitation and hygiene practices in their schools. In order to address the barriers and challenges identified in the school and community environments, teachers should *collaborate* with learners, parents, and other stakeholders, who can assist with funding, supply or advocacy. Based on the findings from the learners, the teachers' experiences, as well as from the researcher's interpretation of the observations made in the school *environments*, the process enabled the researcher to identify the main concepts. The main concepts deducted from the findings of this study are **management, collaboration and environment**.

5.2.2 Determine the aims or purposes of the concept analysis

Walker and Avant (2010) emphasised the importance of deciding the purpose of the analysis to help a researcher focus on the intended use of the concept. The purpose of analysis concepts in this study, was to identify defining attributes, to clarify vague concepts, to propose theoretical definitions, as well as to explain the usage of the identified concepts in order to achieve clarity and understanding of the concepts. Additionally, this was done to recommend a specific operational definition of concepts. By clarifying the meaning of the concepts simplified the process of model development for the researcher.

5.2.3 Identification of the uses of concepts

Identifying uses of concepts helped the researcher to validate the decisive choices of the defining attributes (Walker & Avant, 2010). Existing theories, professional, and academic literature were used to identify as many uses of the concepts as possible and to extend the definitions beyond the limits of common linguistic usage of the concepts “**management, collaboration and environment**” (Chinn & Kramer 1999; Walker & Avant, 2010). Additionally, sources, such as dictionaries were used to define and provide synonyms for the concepts.

5.2.4 Definitions of the central concepts

After the identification of the central concepts of “**collaboration, management and environment**”, a detailed conceptualisation was carried out. In the process of examining the central concepts, the researcher first explored in detail the denotative definitions of the terms “collaboration, environment and management”, followed by subject definitions. According to Chinn and Kramer (2008), definitions can be made through a list of definitions or in narrative form. Theoretical definitions derived mostly from dictionaries, were the means by which the researcher introduced essential attributes, antecedents, and consequences of the identified concepts. Below are the detailed definitions of concepts.

5.2.4.1 The concept “**management**”

The analysis of the concept of management was done by means of dictionary definition, subject definition, reduction of the identified criteria of the concept, reduction process of the criteria identified and, thereafter, a definition of the term “management” was made.

Dictionary definition of “**management**”

Business Dictionary (2016) defines management as “the **organization and coordination** of the activities of a business in order to achieve defined objectives”.

Management refers to the act or manner of **managing, handling, direction, or control** (Dictionary.com Unabridged, 2014).

According to Merriam-Webster (2016), management refers to

- “The act or art of **managing**, the **conducting** or **supervising** of something”.
- The act or skill of **controlling** and **making decisions** about a team, business, sort, etc.

Macmillan English Dictionary (2007) defines management as the people who **control** and or **operate** a business or organization.

The World Book Dictionary (2003) refers to management as:

- **Administrative** skill, **skillful dealing** or use
- To **guide** or **handle** with skill or **authority; control, direct**
- To **manage** resources

Subject definition

Koontz, as cited by Akrani (2011), defined management as the art of **getting things done** through, and with people in formally organised groups.

Koontz and O'Donnel, cited in Bansal (n.d.), defined management as “the **creation and maintenance of an internal environment** in an enterprise where individuals, working in groups, can perform efficiently and effectively toward the attainment of group goals”

The definition was affirmed by Clarkson (2009) who described management as one person working with and through others by organising specific activities to accomplish particular tasks. Furthermore, Clarkson (2009) listed **resilience, manipulation, problem solving** and **creativity**, as other key attributes for management.

According to Fayol, cited by Akrani (2011), to manage is “to **forecast** and **to plan**, to **organise**, to **command**, to **co-ordinate** and to **control**.”

Below are the features or characteristics of management as identified by Akrani (2011).

- **Continuous** and never ending process.
- Getting things done through people.
- **Result oriented** science and art.
- **Multidisciplinary** in nature.
- A group and not an individual activity.
- Follows established principles or rules.
- Aided but not replaced by computers.
- **Situational** in nature.
- Need not be an ownership.
- Both an art and science.
- Management is all pervasive.
- Management is intangible.
- Uses a professional approach in work.
- **Dynamic** in nature.

In addition to the characteristics above, Thenmozhi (2008) identified the five functions of management as being: **directing, organising, planning, controlling, and co-ordinating.**

The management process incorporates **organising**, which pertains to determining what needs to be done, how it will be done, and who will do it (Clarkson, 2009).

In order to understand management better, management principles need to be understood first. According to Carpenter, Bauer and Berrin (2012) management principles refer to the means by which a person actually manage, that is, get things done through others

According to Thenmozhi (2008), the role played by the manager which includes but not limited to achieve objectives through and with people, identify and utilise resources optimally.

A manager should be able to **plan, analyse, interpret, collaborate, educate, problem solver, communicator, build teams and change agent**. In this context, the teachers, in their joint effort with learners and other stakeholders, will manage resources necessary for hygiene promotion in the school context.

5.2.4.2 The concept “collaboration”

The second central concept identified from the findings was “collaboration”. The dictionary and subject definitions below enabled the researcher to clarify the attributes and use of the concept in this study.

Dictionary definition of “collaboration”

According to Merriam-Webster (2016) the concept collaboration refers to:

- to **work jointly** with others or **together** especially in an intellectual endeavor
- to **cooperate** with an agency or instrumentality with which one is not immediately connected.

The Cambridge Dictionaries (2016) define collaboration as:

- “The situation of two or more people **working together** to create or achieve the same thing”.

The Business Dictionary (2016) defines collaboration in business terms as:

- General: **cooperative arrangement** in which two or more parties (which may or may not have any previous relationship) **work jointly** towards a common goal.
- Knowledge management (KM): Effective method of **transferring** 'know how' among individuals, therefore critical to creating and sustaining a competitive advantage. Collaboration is a key tenet of KM.
- Negotiations: Conflict resolution strategy that uses both assertiveness and cooperation to seek solutions advantageous to all parties.

- It succeeds usually where the participants' goals are compatible, and the **interaction** among them is important in attaining those goals

English living oxford dictionary (2016) defines the term as:

- The action of **working with someone** to produce something
- Something produced in collaboration with someone

Collins English Dictionary (2014) defines the term as:

- the act of **working with another** or others on a **joint** project
- something created by **working jointly** with another or others
- the act of **cooperating** as a traitor, especially with an enemy occupying one's own country.

Thesaurus Dictionary (2016) defines collaboration as:

- act of **working jointly**; "they worked either in collaboration or independently"
- **coaction**
- **cooperation - joint operation** or action; "their cooperation with us was essential for the success of our mission"
- Collaborationism.

The Cambridge Dictionaries (2016) define collaboration as the “act of **working together** with other people or organizations to create or achieve something”. Findings such as unhygienic personal conditions of some learners, different cultural background of learners, and lack of parental involvement in hygiene promotion, may indicate poor collaboration in that regard. The findings clearly showed lack of collaboration between the teachers and the community, or specifically parents.

Collaboration is a **joint effort** of multiple individuals or work groups to accomplish a task or project (WhatIs.com, 2016). In this study, the agents should collaborate with recipients and other stakeholders on objectives that will lead to the realisation of the study purpose.

Thesaurus dictionary (2016) lists about 415 collaboration synonyms. The following are some of them: **association, collusion, combination, union, partnership, joint effort, working together, fraternization, association, cooperation, alliance, concur, ally, participate, team work, gang up, interact, affiliate, agree, coordinate.**

Brito (2013) defines collaboration as a “working practice whereby teams and individuals **work together** for a common purpose to achieve positive outcomes”.

Subject definition of “collaboration”

According to Benbow and Jordan (2009), collaboration can mean “**work jointly** on an activity or a project. Green and Tones (2010) indicated that successful collaboration is facilitated by formal commitments and structural arrangements for meetings and joint working. Collaboration involves finding the right people (skills, personalities, knowledge, work-styles, and chemistry), ensuring they **share commitment** to the collaboration task at hand, and providing them with an environment, tools, knowledge, training, process and facilitation to ensure they **work together** successfully (Ditkoff & Moore, 2005).

Ontario Community Health Coalition [OHCC] (n.d) identified eleven factors that contribute to successful partnerships and collaborations: people, vision, trust, time, planning, communication, learning, decision-making, leadership, technology and flexibility.

Sharing resources, such as time, knowledge and materials, can enhance a sense of ownership among collaborators (Friend & Cook, 2007). It is worth noting that all collaborators are responsible for the outcomes, irrespective of the nature of the outcome, whether the end results are positive or negative; it should be seen as everybody’s outcome.

It is therefore worth noting that the achievement of the study goal will only be possible through collaborative efforts of the agents and stakeholders alike if maximisation of the results is to be attained. Hudson (1998), as cited in Carnwell and Carson (2004), identified eight characteristics of collaboration namely: non-hierarchical relationship, sharing of expertise, willingness to work together towards an agreed purpose, trust and respect in collaborators, partnership, inter-dependency, highly connected network and low expectation of reciprocation. OHCC (n.d.) identified eleven factors that contribute to successful partnerships and collaborations. These are presented in Table 5.1.

Table 5.1: Factors contributing to successful partnerships and collaborations

Factor	Description
1. People	It is not organizations that work together , but people. Hence individual characteristics such as their level of commitment to the collaborative will be a factor in whether the collaborative is successful or not
2. Vision	Create a shared vision and common goals that incorporate all of the members' perspectives and interests, and identifies mutual needs that cannot be met by one organization/person alone.
3. Trust	Trust is built through mutual respect for each person's experience, knowledge and contribution.
4. Time	Getting to know each other in order to develop a solid partnership takes time , as does planning and implementation.
5. Planning	Working together effectively requires a great deal of planning . All aspects of the collaborative, including purpose, function, decision-making process, the risks and benefits to each member and anticipated results needs to be considered, agreed upon and committed to.
6. Communication	There needs to be a transparent flow of information among members, and mechanisms for ensuring that all members are kept up-to-date on matters relating to collaboration and have clear means of voicing concerns and suggestions.

7.Learning together	Partnerships involve learning about each other, issues or needs that are being addressed, and how to work together effectively.
8.Decision-making	How decisions are made should be agreed upon right at the start of the partnership and adhered to throughout. Partners should also agree on a problem resolution process. Agreements regarding the investment of people, time and resources need to be negotiated and clearly understood by all partners.
9.Ledership	Shared leadership can renew energy and increase commitment.
10.Technology	An assessment of current systems including electronic communication and technical capacities of each member is required before effective information and communications systems can be established.
11.Flexibility	As circumstances change, one or more members may not be able to contribute to the extent

People cannot be forced to use a particular style in their interactions with others, hence collaboration should be **voluntary**. Each participant's input is equally valued, and each person has equal power in decision-making. Collaboration is based on mutual goals, it is important for all involved to have a good understanding of the goal of their collaboration in order to make it work in their favour. Professionals do not have to share all goals in order to collaborate, just one that is specific and important enough to maintain their shared attention.

Collaborators (agents, recipients, stakeholders) should adopt the responsibility of active engagement in activities, and in the decision-making it entails. Individuals who collaborate share resources, environment, and support one another. Issues related to communication and interpersonal relationships are also dealt with to ensure efficient collaboration.

The consequences of collaboration can be explained in terms of benefits as well as barriers. OHCC (n.d.) identified the following benefits that collaborating with others can bring.

Synergy: The interaction created from working collaboratively with others will result in bigger accomplishments than each group or individual. An example, if an individual works separately, it will fragment the efforts and the resources, which may possibly lead to less achievement.

Community awareness: Increased participation leads to increased public awareness.

Involving all stakeholders in the whole process can lead to messages being transmitted to more people who might influence the outcomes positively.

Share resources: The sharing of resources and expertise can make overwhelming responsibilities more manageable.

Overcome obstacles: Obstacles faced by some stakeholders may be overcome by another stakeholder.

Effective representation: A partnership, coalition, or network, has more power to influence policy than a single body because a larger and broader section of the community is represented.

Avoid duplication: Working collectively can help ensure efforts and services are not being unnecessarily repeated, and that resources are distributed appropriately.

Access to citizens: Sometimes one partner will have a high degree of organisational capacity for planning and implementing programmes, but has not developed a trusting relationship with the community it wishes to serve. Therefore partnering with others can help them benefit from others who serve as a bridge into the community.

5.2.4.3 The concept “environment”

Like other concepts, the “environment” concept was analysed through dictionary and subject definitions. Thereafter, in reduction of the defining attributes, the reduction process of the criteria identified, as well as the definition of the term “environment”, was done.

Dictionary definition of “environment”

English Oxford Living Dictionaries (2016) defines an environment as a **setting** or **conditions** in which a particular activity is carried on. It also refers to the **physical surroundings** or **conditions** in which a person, animal, or plant lives or operates.

According to Business Dictionary (2016) environment refers to all **surroundings** of a living organism, including **natural forces and other living things**, which provide **conditions for development and growth** as well as of danger and damage. Environment is the social, cultural and physical context in which the life evolution unfolds.

Merriam-Webster (2016) refers to the concept of environment as:

- the **circumstances, objects, or conditions** by which one is **surrounded**
- the complex of **physical, chemical, and biotic factors** (as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival: the aggregate of **social and cultural conditions** that influence the life of an individual or community
- the **conditions** that **surround** someone or something
- the **conditions** and **influences** that affect the growth, health, progress, etc., of someone or something.

The synonyms provided include: **ambient, atmosphere, climate, clime, context, contexture, environs, medium, milieu, setting, surround, terrain, surroundings.**

Features of collaboration include: voluntary, parity, mutual goals, shared responsibility, shared resources and shared responsibility for outcomes (Friend & Cook, 2007).

Subject definition of “environment”

According to Green and Tones (2010), emphasis on the interpretation of the environment is placed in the “**physical aspects**” of the environment. The emphasis is on the **influence** that the environmental factors have on health. In this study, the influence examples could be: lack of sanitation facilities, lack of safe drinking water, and poor access to health facilities that have an influence on the learners’ health.

Environment means **everything that surround a living being**, especially the **circumstances** of the lives of people or society in their living conditions. Environment comprises of set of **natural, social and cultural values** existing in a place and at a particular time, that influence the life of human beings. That is, it is not only the space in which life develops, but it also includes living beings, objects, water, soil, air and the relations between them as well as intangibles like culture (Didactic Encyclopedia, 2013).

According to the school context model of Bascia (2014), the school, as an **internal environment**, does not exist in vacuum but rather is nested within the **external environment**, which includes parents, the community in which they are situated, the economic conditions present in those communities and the values espoused by that community, curriculum standards, achievement expectations, programmatic requirements, other policy directives, and other social agencies that serve children. The school environment, as a caring community for its members, should ensure **diversity, social and emotional safety** of its members.

Amukugo, Jooste and Van Dyk (2015) identified the following criteria for a conducive environment.

- **Motivation (commitment, recognition, praise and reward)**
- Facilitator should demonstrate **patience** with stakeholders
- Promote continuous **support** in terms of **time, resources and impact**

- **Recognition and respect**
- **Adequate resources**
- **Networking.**

5.2.5. Determine the defining attributes

According to Walker and Avant (2010) determining defining attributes helps a researcher to identify attributes or characteristics that are frequently associated with the concept, with the aim to enhance a researcher’s insight into the concept under analysis. The researcher identified a collection of attributes that are most frequently associated with “management, collaboration and environment”.

5.2.5.1 Defining attributes for “management”

Due to their positions, teachers (agents), serving as managers, are expected to possess some skills and characteristics that will enable them to carry out specific tasks such as planning, organizing, directing, coordinating, reporting and budgeting. Table 5.2 below illustrates the defining attributes of the concept “management” as deduced from the definitions above.

Table 5.2: Defining attributes of “management”

Management	
Defining Attributes	<ul style="list-style-type: none"> • planning, organizing, directing, coordinating • managing, handling, direction, or control • conducting or supervising • controlling and making decisions • operate • forecast and to plan • to manage resources • administrative skill, skillful dealing or use • guide or handle with skill or authority; control, direct • getting things done • plan, analyze, interpret, collaborate, educate, problem solver, communicator, build teams and change agent

-
- continuous
 - result oriented
 - multidisciplinary
 - creation and maintenance of an internal environment
 - transparency
 - flexibility
 - authentic
 - agreements
 - voluntary
 - manipulation
 - problem solving and creativity
 - organization and coordination
 - leadership and supervision abilities
-

5.2.5.2 Defining attributes for “collaboration”

Henneken, cited in Carnwell and Carson (2004), argued that the defining attributes of collaboration include two or more people who are involved in a **joint venture**, typically one of an **intellectual** nature in which participants freely **partake in planning and decision-making**.

Marawa (2014) identified nine attributes of highly effective collaborators. They are as follows:

- **transparency**
- say what you are going to do and follow through
- allow for a little give and take (**flexibility**)
- listen to **understand** not to respond
- stick to your guns
- know which battles to fight
- be **authentic**
- be kind
- step up.

Table 5.3 presents a list of defining attributes of “collaboration” concept.

Table 5.3: Defining attributes of “collaboration”

	Collaboration
Defining attributes	<ul style="list-style-type: none">• work jointly or together• working together• cooperate or cooperative arrangement• cooperative arrangement• working with someone• coaction• shared vision• mutual respect• sharing resources• cooperation - joint operation• trust and respect in collaborators• joint effort or venture• team work• skills and strength• intellectual and cooperative endeavor• knowledge and expertise• shared planning and decision- making• willingness to work together• partnership• share commitment• shared leadership• interdependency• low expectation and reciprocity• highly connected network• non-hierarchical organization with individual autonomy• confidence• team orientation• effective group dynamic

5.2.5.3 Defining attributes for “environment”

“The environment can be influenced by the inhabitants to create a positive setting of indications and facilitators for health-enhancing behaviors” (Pender, 2011). The environment is a set of circumstances that surround the outer form of a living being. Table 5.4 illustrates the attributes, as deduced from the dictionary and subject definitions of the concept of “environment,” and also as adapted from Carnwell and Carson (2004).

Table 5.4: Defining attributes for the concept “environment”

	<ul style="list-style-type: none">• Environment
<ul style="list-style-type: none">• Defining Attributes	<ul style="list-style-type: none">• setting or conditions• physical surroundings or conditions• conditions for <u>development</u> and growth• <u>social, cultural and physical context</u>• circumstances, objects or conditions by which one is surrounded• physical, chemical and biotic factors• physical aspects• everything that surround a living being• external and internal environment• social and emotional safety• diversity• interaction• relationship and communication between agencies• complementary and interrelated elements• motivation (commitment, recognition, praise and reward)• patience with stakeholders• promote continuous support in terms of time, resources and impact• recognition and respect• adequate resources• networking

5.3 STATEMENT DEVELOPMENT

Walker and Avant (2010) emphasised that the aim of a relational statement is to affirm the existence of the relationship between two or more concepts. The researcher deduced the relationship statement from the defined attributes of the concepts. The statements are presented in Chapter 6.

5.3.1 Defining attributes for the statement “Management of a collaborative environment”.

Chinn and Kramer (2008) emphasised the importance of further reduction of essential criteria of the main concept in order to clearly reflect the intended meaning of the concept. Table 5.5 displays the reduced essential, and related criteria, for the statement ”management of a collaborative environment” from the definitions, and as adopted from Amukugo, Jooste and Van Dyk (2015).

Table 5.5: Defining attributes for the statement “management of a collaborative environment”

Essential criteria	Related Criteria
Management	<ul style="list-style-type: none"> ▪ Planning: resources, manipulate stakeholders, goal achievement, building teams, flexibility, creative ▪ Organising: activities, resources, strategies, educate, problem solver, communicator, ▪ Directing: decision making, problem solving, collaboration, supervision, leadership communication skills ▪ Control: coordination, analysis, communication, transparency, teams, flexibility, creative
Collaboration	<ul style="list-style-type: none"> ▪ Satisfactory interpersonal relationship between the stakeholders based on mutual cooperation, trust, respect and confidentiality (communication) ▪ Active participation and involvement in all activities ▪ Collective agreement and sharing of resources to accomplish objectives together ▪ create shared vision ▪ Joint decision-making ▪ Sharing of responsibility ▪ Networking ▪ Collaboration between stakeholders
Environment	<ul style="list-style-type: none"> ▪ Conducive internal and external environment ▪ Stakeholders feel safe ▪ Motivation (commitment, recognition, praise and reward). ▪ Promote continuous support in terms resources, resources and impact. ▪ Recognition and mutual respect ▪ Adequate resources ▪ Continuous networking ▪ Diversity, motivation, networking ▪ Interactive ▪ Supportive ▪ Trust

5.3.1.1 Definition of related concepts “Management of a collaborative environment”

Definitions of the related concepts management, collaboration and environment are presented in relation to their application in this study.

Collaboration

Collaboration is an interactive, cooperative arrangement formed between the teachers (agents) and (recipients) stakeholders whereby they can work together to address the dynamics and challenges that hinder effective promotion of hygiene in primary schools. The collaboration process involves shared leadership, planning and decision-making and sharing resources. Through this partnership, collaborators share their intellect, knowledge, expertise, skills, strength and commitment towards a shared vision by freely participating in decision-making. A willingness to work together creates interdependence and trust that is built through mutual respect for each person's experience, knowledge and contribution.

Management

Management as a process carried out by teachers, in their capacities as agents, would involve planning, organizing, directing, coordinating activities and resources that are necessary for the facilitation of sanitation and hygiene practices among primary schools. As managers, teachers are expected to have leadership, supervision and administrative skills that will enable them to collaborate, make decisions, solve problems, and to creatively manipulate stakeholders towards the achievement of the goal. As change agents, teachers should employ effective communication skills, and always ensure that they are transparent, flexible, and authentic as they continuously strive to get things done.

Environment refers to the external (community) and internal (school) settings or conditions which house the agents and stakeholders responsible for promoting sanitation and hygiene practices in schools. A conducive environment should accommodate diversity and address interrelated elements such as social, cultural, biological and physical factors that have an influence on the practice of sanitation and hygiene.

Feeling physically, socially and emotionally safe, and respected in the school environments, should enhance motivation and commitment. The environment should promote continuous networking, interaction among stakeholders, and support in terms of resources.

5.3.1.2 Definition of “management of the collaborative environment”

In the context of this study, management of the collaborative environment is a dynamic process whereby teachers facilitate the management of sanitation and hygiene practices by coordinating activities and jointly make decisions with stakeholders in a safe and supportive environment.

5.4 CONSTRUCTION OF A MODEL AND BORDERLINE CASES

A model case is an example of the use of the concepts that demonstrate all the defining attributes of the concept (Walker & Avant, 2010). The model case developed below indicates the application of the defining attributes for management, collaboration and environment.

5.4.1 Construction of a model case

A seven- year-old female learner has started her first grade at a primary school. She does not have a toilet facility at home, and the family use the bush or field to relieve themselves. However, there is a dedicated private place inside the house for peeing only. Using the school toilet facilities was challenging for the young learner. The types of toilet facilities available at school were mostly pit latrines. The toilet facilities were not adequate in relation to the number of learners at the school, and some did not have doors. For those with doors, it was scary since the inside becomes very dark upon closing the door. Learners mostly use these facilities during school breaks. Immediately when the bell rings signalling a break, most learners run to the toilets. The situation was challenging because many learners queue for the toilets.

If a learner inside a toilet takes longer than expected, others will start calling him/her to get out. The situation provides no privacy and is very much uncomfortable. When it was her turn to go in, the young learner was scared since it was her first time to see and use a pit latrine. It was dark inside, and the other sounds seemed so close as if they were coming in. She could not sit, and was afraid to fall into the pit. She immediately peed on the floor. She could not relieve herself further.

Upon observing there was nothing to clean her anal area with, and the thought that others would know what she did in there was disturbing. She quickly got out. Because of the pressing need to relieve herself, she quickly ran to the nearby bushes, outside the school's fence. There she relieved herself and found small sticks that she used to clean herself with. Without washing her hands she came back into class room. Since she was thirsty she took a cup to drink water that was in a bucket in the class room. The cup was the only one and was shared with all learners in her class. The process of relieving herself in the bushes became a routine. Many a time, she came to school with very dirty clothing, dirty, uncombed hair. Her personal hygiene was extremely poor as evidenced by long dirty nails, and discharge from eyes.

The concerned teacher **shared** her discovery with other teachers who, in turn, started observing the hygiene of learners in their classes. Other teachers also found poor personal hygiene among learners in their classes, especially those in lower school grades. Upon further investigation, they realised that some learners were using bushes instead of the toilets at the school. They became aware of reasons why the learners were not using toilets. For example, the toilets were dirty, smelly facilities, and lacked toilet paper, and due to the number of learners using the toilets they were usually occupied toilets hence the learners could not wait for the a toilet. For this reason, some learners urinated behind toilet facilities or in the bushes.

Upon their deliberation to sort out this challenge facing their school, the school principal and some teachers felt that the challenge needed a **combined effort** from all involved. Their argument was that they needed **adequate human resources with varied strength, skills and expertise**, to **share this responsibility** and **decide together** as a team.

In addition, **technical and financial resources** were needed to achieve an improved outcome. This led to their reasoning to **jointly work** with the parents and other important sectors that could be of help to remedy the toilet challenges. Some teachers at first questioned the **stakeholders' willingness to work together**, especially the parents. Teachers that were in favour of **collaboration** argued that it was their responsibility to effectively use **interpersonal skills** in order to **creatively manipulate** the unwilling **team members**. One teacher added: "Us as teachers will **facilitate** the **collaboration** process by **planning, organising, directing, and coordinating** the activities". "But how will we ensure that they will be comfortable and **cooperate with us**, will they not just be dormant members", a concerned teacher asked. "If we **respect** the members, their views, and continuously **support, acknowledge** and **praise** them, I think that will serve as a big **motivation** for them to **actively participate**. In the long run, they might take **ownership** of the process and will see major changes when it comes to sanitation and hygiene in our school", a principal added.

I think that it is a great idea. "For as long as we are **open** in all our dealings, and members feel **safe** and **valued, trust** will be developed in the team" one teacher stated. Based on their discussion, the teachers with one voice agreed to **collaborate** with the relevant stakeholders. After identifying the stakeholders and their roles, teachers **communicated** their **vision** and their intent to **collaborate** on sanitation and hygiene in their schools.

5.4.2 Construction of a borderline case

A young learner was challenged with toilet use at school because she did not have a toilet facility at her home. When using the toilet at school, she could not sit since she was afraid to fall in the pit. Instead, she relieved herself on the floor (**unsafe environment**). The learner could also not wash her hands after toilet use since it was not a habit. Some learners were forced to use the bush because of the disgusting conditions of the toilet.

When other learners reported the incident to their class teacher, the teacher blamed the parents for not teaching their child toilet manners. The teacher indicated that her role was to teach the syllabus, and not to teach learners how to use toilet facilities. The next day the teacher wrote a letter (**interpersonal relationship, communication skills**) to the learner's parents for them to teach their child proper toilet usage. The situation forced the learner to drop out of school. The teacher was not interested in **working together** (collaboration) with the parents to address the challenge experienced by the learner. The teacher failed to provide **support and motivation** to the learner, which resulted in an environment that was unsafe and there was no **respect**. The teacher failed to **educate** the learner and to **solve the problem** of hygiene practice (management). The teacher could not **plan** a strategy to effectively address the problem. The **communication skills** of the teacher were ineffective (management).

5.5 IDENTIFY ANTECEDENTS AND CONSEQUENCES

Concept analysis of “management of a collaborative environment” concept involved the identification of antecedents and consequences. Antecedent concepts are those experiences that occur before other concepts, while consequences are those concepts that follow (Chin & Kramer, 2008). Antecedents and consequences assist in clearing the perspectives in which the concepts are used.

The antecedents and consequences for management, collaboration and environment concepts are illustrated below. Table 5.6 illustrates the antecedents and consequences for the concept “management”

Table 5.6: Antecedents and consequences of management

Management	
Antecedents	<ul style="list-style-type: none"> ▪ Management knowledge ▪ Supportive environment that promotes encouragement, commitment, recognition, praise and reward ▪ Promote continuous process ▪ Communication, leadership, supervision skills ▪ Conceptual, human relation, technical skills ▪ Adequate human, technical and financial resources
Consequences	<ul style="list-style-type: none"> ▪ Efficient management process ▪ More effective use of people ▪ Sustained energy ▪ Team work ▪ Creativity ▪ Harmonized activities ▪ Effective utilization of resources ▪ Development of resources ▪ Stability in the environment ▪ Attainment of the goal

Table 5.7 illustrates the antecedents and consequences for the concept “collaboration”.

Table 5.7: Antecedents and consequences of collaboration

Collaboration	
Antecedents	<ul style="list-style-type: none"> • Understanding and acceptance of role and expertise • Effective communication, respect for and understanding of other’s roles • Willingness to share knowledge, values, responsibility, visions and outcomes. • Trust in collaborators. • Willingness to participate in formal, structured joint working on the extent that they do not rely on reciprocation in order to ensure that each contributes to the shared vision
Consequences	<ul style="list-style-type: none"> • More effective use of people due to cooperation rather than competition • Sustained energy • Sharing effort

	<ul style="list-style-type: none"> • Creativity • Cross-pollination of ideas • Promote win-win attitude • Improved productivity • Improved outcome
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Table 5.8 illustrates the antecedents and consequences for the concept “environment”.

Table 5.8: Antecedents and consequences of environment

	<ul style="list-style-type: none"> • Environment
Antecedents	<ul style="list-style-type: none"> • Support and a non-threatening environment. • Stakeholders feel safe, interested and not apprehensive. • Conducive environment that promotes encouragement, commitment, recognition, praise and reward (motivation). • Openness • Adequate resources for attaining goals • Patience with team members. • Continuous support in terms of time, cost and impact. • Less bureaucracy, clear policies and guidelines • Adequate human, technical and financial resources
Consequences	<ul style="list-style-type: none"> • More effective use of people due to cooperation rather than competition • Sustained energy • Sharing effort • Increased productivity • Stimulate creativity

5.6 DEFINE EMPIRICAL REFERENTS

Walker and Avant (2010) defined empirical referents as “categories of actual phenomena that by their existence prove the occurrence of the concept itself”. Empirical referents are the final step of concept analysis. Walker and Avant (2010) believed that in some cases the empirical referents are similar to the defining attributes. In this study, the researcher opted to remain with the defining attributes for the three concepts as illustrated in Tables 5.2, 5.3 and 5.4.

5.7 DEVELOPMENT OF THE CONCEPTUAL FRAMEWORK

The practice oriented theory by Dickoff et al (1968) was adopted to guide the development of the conceptual framework for this study. The development of conceptual framework utilised the six aspects of activity from a six question survey list.

- The agent (who will perform the activity that facilitate the development of the model?),
- The recipient or (who is receiving the activity from the agent?),
- The context (in what context is the activity being performed?),
- The dynamic (what is the energy source or goal or logic for the activity?).
- The procedure (what is the guiding procedure, technique or protocol of the activity?),
- The terminus (what is the end point of the activity?),

Logical reasoning, guided by the practice orientated theory by Dickoff et al (1968), formed the basis of departure for development of the model to facilitate the management of sanitation and hygiene practices in primary schools. Figure 5.1 below indicates the researcher's reasoning map.

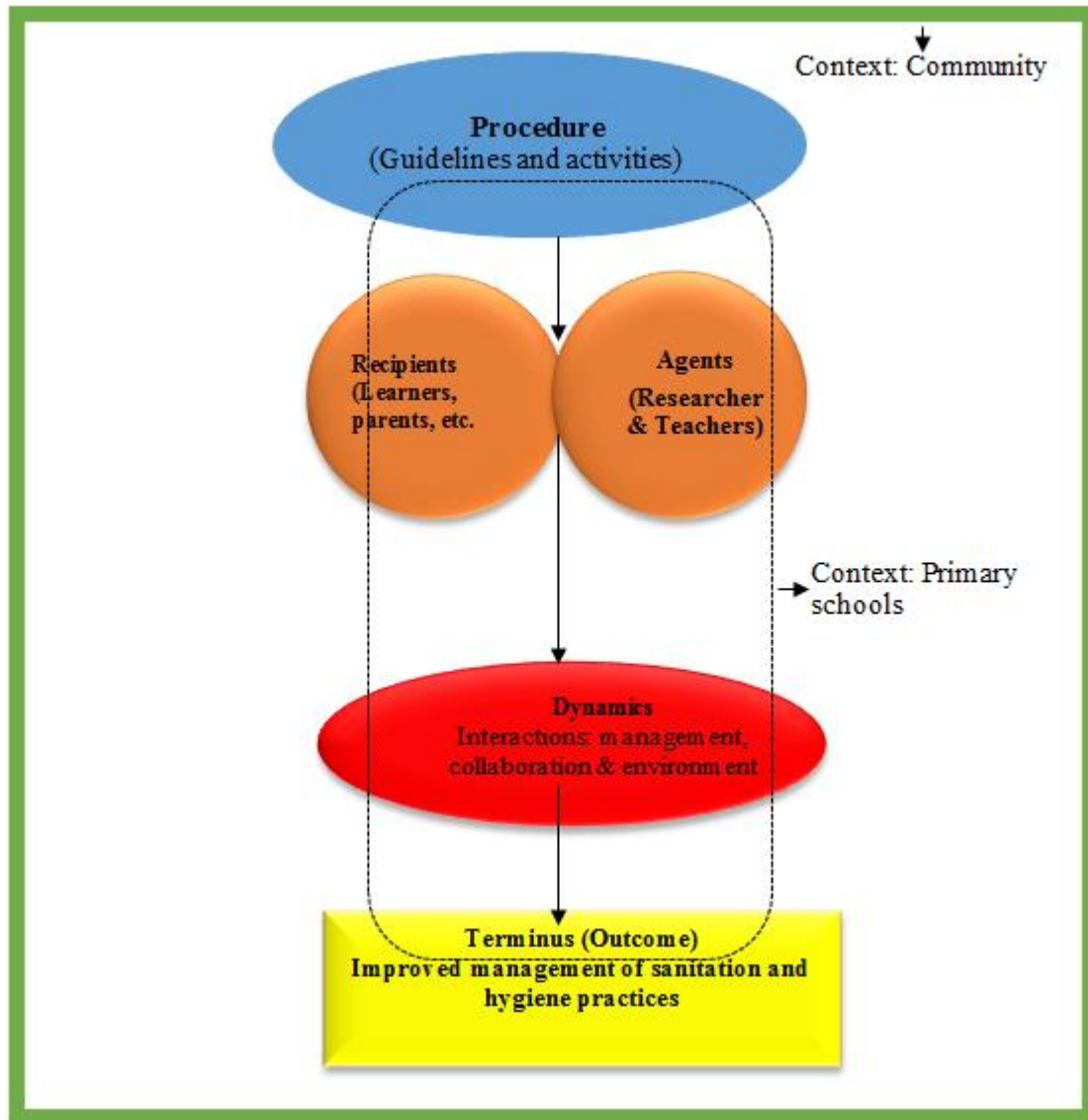


Figure 5.1 The researcher's reasoning map.

Table 5.9 illustrates the detailed features of the survey list as indicated in the researcher's reasoning map in Figure 5.1. Each of these six components is described in detail below.

Table 5.9: Features of the components of the survey list

Component	Description
Agent:	Researcher and teachers
Recipient:	Primary stakeholder: Learners Secondary stakeholders: labourers, cleaners, school board members, parents, community members, Key stakeholders: MoE, MAWF, MoHSS, NGOs,
Context:	Primary schools and the community
Dynamic:	Interactions between the agents and stakeholders around the challenges from the findings Management challenges: <ul style="list-style-type: none"> • Insufficient school budget • Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities • Fewer toilet facilities in relation to the number of learners • Lack of flushing toilet facilities • Shortage of supplies such as toilet papers, soaps, sanitary pads, cups. Collaboration challenges: <ul style="list-style-type: none"> • Lack of parental involvement in hygiene promotion • Unhygienic personal conditions of some learners • Different cultural background of learners • Inadequate water supply at schools • Inadequate knowledge of learners • Bad attitude and poor practices Environment challenges: <ul style="list-style-type: none"> • Different cultural background of learners • Dilapidated toilet facilities that are not safe to use • Old and unhygienic conditions of school buildings • Lack of privacy for some toilet facilities without doors. • Unhygienic (dirty, messy, smelly, disgusting) toilet facilities • Inadequate water supply at schools • Inadequate knowledge of learners • Bad attitude and poor practices • Old and dilapidated toilet facilities.

	<ul style="list-style-type: none"> • Unsafe disposal of wastes at some dumping sites, attracting learners to have fun with them. • Lack of supplies (toilet papers, soaps, paper towels) for effective toilet use. • Lack of materials (e.g. posters, leaflets, etc.) to encouraging or reminding learners to wash hands • Handwashing facilities located far away from toilet facilities that serve as hand washing facilities. • Handwashing facilities (buckets) very dirty.
Procedure	The model “Management of collaborative environment” and the guidelines.
Terminus (outcome)	Effective management of sanitation and hygiene practice in primary schools.

As presented in the map (Figure 5.1) it was important to contextualise the interaction and relationship between the agent and the recipient. Additionally, the procedures or strategies used to address the dynamics, and the context in which activities take place, needs to be compatible. Finally, the desired outcome or terminus, after the implementation of the model, concludes the discussion of the conceptual framework for this study. The components of the survey list that make up the framework are discussed in detail.

5.7.1 The agent

Dickoff et al (1968) defined an agent. The term “agent” refers to the person who performs the activity that will led to the realisation of the goal. In this study, there are two agents: the researcher and the teachers. The researcher is skilful in facilitating the activities necessary for the development, implementation and evaluation of the model to facilitate the management of sanitation and hygiene practices in primary schools.

Therefore, the agent is the focal person who is in charge for all planning, organisation, control and coordination of activities that will lead to the realisation of the purpose of the study: the development of the model.

5.7.1.1 Characteristics and the role of the agent

According to Dickoff et al (1968), an agent should possess internal resources as well as external resources that are essential for the realization of the goal. It is therefore important to understand different personal attributes and qualities that a researcher should possess that will enable successful implementation of the model. A combination of the following internal strengths such as value, capacities, skills, education, experience, knowledge, and techniques are necessary. In addition, external resources such as ability to maintain, protect, support, and develop and flexibility, among others are equally important to have. The characteristics and roles of the agent are discussed in detail below.

Vision: English living oxford dictionary (2016) defines vision as “the mental image of what the future will or could be like”. A researcher should have a clear vision statement on what activities to be executed and should be able to clearly communicate this vision to other people involved in the whole process. In this study, the researcher wished to see the implementation of the model necessary to facilitate the management of sanitation and hygiene practices in primary schools.

Patience and interest: The agent should be patient yet persistence. The agent should not expect immediate change overnight because people may not move at the same pace. Hence patience and persistence are a necessity for the agent to help people all the way through the vision, and not give up until the goal is achieved.

Value: Important values that a researcher needs to possess include: competence, courage, commitment, confidence, motivation and empathy.

Skills: The concept refers to what a researcher needs to be able to do and “how to do” it (Meyer, 2004). Various skills that should be possessed include: communication, listening, leadership, social, observation, analytical and people’s skills.

Collaborative skills are essential to build a goal-focused relationship with recipients and other stakeholders. The success of a process depends to a large extent on the quality of communication skills among all involved. Other skills include planning, assigning of roles, managing resources, support, motivating, encouraging, and ensuring an enabling environment. To be able to facilitate effectively, one has to be a good listener, have a good understanding of the goals and activities towards goal achievement. Knowledge refers to acquired facts through learning, observation and experience. A researcher should be able to clearly explain and show people what needs to be done, and by being a role model. Recipients and stakeholders need to be empowered with adequate knowledge and skills involved in the process of model implementation.

5.7.2 The recipient

Dickoff et al (1968) defined the recipients as the people who are on the receiving end of an activity. In this study, the recipients refer to the stakeholders involved in the realisation of the purpose of the model. Three types of stakeholders (recipients) identified were:

- **Primary stakeholder:** Those who will ultimately be affected by measures, either positively or negatively. Learners in primary schools in the Ohangwena region who would benefit from the implementation of the model.
- **Secondary stakeholders:** Those involved in the implementation of the initiative, such as the parents, school board members, community members, labourers and cleaners at schools.
- **Key stakeholders:** Those with political responsibility, with financial resources, skills and expertise.

- These are the people, or organisations, whose support is essential to the continuation of the initiative, such as MoE, MAWF, MoHSS, constituency councillors, NGOs (such as UNICEF).

For the purpose of the model to be realised, stakeholders should work together as a team to address identified challenges through collaboration. Teachers alone will not address all the dynamics. One of the characteristics of the recipients is will power. George (2008) defined willingness as the power of mankind to make our own choices and to act upon them. Recipients should be willing to be involved and participate in the implementation process of the model. The whole process requires that they should actively participate and become involved in the implementation of the model. The guidelines developed include activities to guide the operation of their practice, especially using sanitation facilities correctly, and to address some challenges highlighted by other learners and teachers: disgusting, messy and dirty seats and floors of the toilets facilities, for example. Knowledge, in relation to health outcomes, is important to the learners, especially in relating to disease development and contagiousness among themselves. The researcher believes that by empowering learners with relevant and adequate knowledge and skills will positively influence the management of sanitation and hygiene practices among them. By adopting correct attitude and practices, some of the challenges experienced by teachers would consequently be addressed, which in return would ensure smooth support and guidance from teachers.

5.7.3 The context

Merriam-Webster (2016) defines context as the interconnected conditions in which something exists or occurs. In this study, the context is the primary schools, in Ohangwena region, that provide sanitation and hygiene facilities to the learners and teachers within those schools.

The specific context is the primary schools, with younger learner classes from pre-primary, or grade 1 to grade 7. The schools offer sanitation and hygiene facilities that enable learners and teachers to practice hygiene. The findings of the study revealed that the nature and status of these sanitation and hygiene facilities, in some instances, compromised the way learners manage their practices. The challenges mentioned implicated learners' attitude and practices of hygiene. To ensure effective management of sanitation and hygiene in primary schools, a school's environment needs to be conducive for learners feel safe, supported, encouraged and motivated. The model in the study was developed for the primary schools. The model has clear steps and concepts to enable effective management of sanitation and hygiene practices.

5.7.4 The dynamics

Dynamics refer to the energy source or motivation for the activity (Dickoff et al., 1968). The dynamics in this study were the learners and teachers' challenges that hampered them in their correct practice of hygiene and sanitation. For the teachers, these challenges served as a hindrance towards effective hygiene promotion, and for the learners they negatively impacted on the way they managed sanitation and hygiene practices at school. As listed in Table 5.9, three types of dynamics were identified: management challenges, collaboration challenges, and environment challenges.

5.7.5 The procedure

Merriam Webster Dictionary (2016) defines a procedure as a series of actions that are done in a certain way or order: an established or accepted way of doing something. The procedure in this study refers to the "management of a collaborative environment" model that has three components based on the dynamics: collaborative process, management process, and maintaining a conducive environment.

The teachers need to initiate the collaboration process between themselves and the stakeholders in order to work together to address the challenges identified.

Teachers should employ their management skills and knowledge to effectively facilitate the implementation of the procedure (model) to address dynamics in the school context, namely the KAP of learners, with respect to the management of sanitation and hygiene practices.

Once the dynamics are addressed the result should be a conducive environment to promote effective management of sanitation and hygiene practices in the school context. The model specifies steps that describe and provide practical guidance in the planning and execution of implementation endeavors and/or implementation strategies.

5.7.6 The terminus

Terminus refers to the end or finishing point (Dickoff et al., 1968). It refers to the desired outcome after the implementation of the model. Teachers, as agents of change, are expected to facilitate the management process, by directing stakeholders towards the goal of the procedure. The outcome expected, after the implementation of the model, is acceptable knowledge, correct attitude and practice towards sanitation and hygiene that should lead to improved management of sanitation and hygiene practice in primary schools.

It is anticipated that future collaboration, between stakeholders such as MoE, MAWF, MoHSS, (NGOs), and community members, should lead to the resolution of structural challenges and barriers experienced by teachers and learners. These include continuous provision of materials and supplies necessary for cleanliness and hygiene, maintenance of toilet facilities and school buildings which would result in a safe hygienic school environment. It is anticipated that the complementary effort of collaboration of all members involved will lead to an improved outcome: the effective management of sanitation and hygiene practice in primary schools.

5.8 MERGING OF STATEMENT AND CONCEPTUAL FRAMEWORK

According to Alejandro, Humberto and Agustin (2005), a reasoning map refers to a structure of concepts for a specific field. The survey list by Dickoff et al (1968), which comprises the agent, recipient, context, terminus, dynamics, and outcome, was used to present the researcher's reasoning map (see Figure 5.1). It served as a guide in the formulation of the framework.

The survey list's components are discussed in relation to the central concepts identified: "management, collaboration and environment". Interdependence of the survey list components and the central concepts, led to the ultimate goal of the study: the development of the model. Interaction and interdependence between the components of the survey list was important for the development of the model. The components guided the development of the model to facilitate the management of sanitation and hygiene practice in primary schools, which was the purpose of this study.

5.9 PROPOSED STRUCTURE FOR THE MODEL DEVELOPMENT

The structure proposed for the development of the model was derived from the findings of the concept analysis of the three objectives of the study, the three central concepts, as well as the six components prescription of activities adopted from Dickoff et al (1968). In other words, the proposed structure will be an extension of the researcher's reasoning map, merged with the central concepts.

The development of the model followed the four steps below.

- Step 1: **Management:** Teachers facilitating the management process.
- Step 2: **Collaboration:** Teachers forming collaboration with stakeholders.
- Step 3: **Environment:** Teachers maintaining a conducive environment.
- Step 4: Improved management of sanitation and hygiene practices (outcome).

5.9.1 Components of the practice oriented theory

Six components of the practice oriented theory were incorporated in the model. Context, agent, recipient, procedure, dynamics, and outcome, are conceptualised in combination with the main concepts for the collaborative environment model. The researcher's mental map is a combination of the main concepts and the elements of the practice oriented theory, and is illustrated in Figure 5.2.

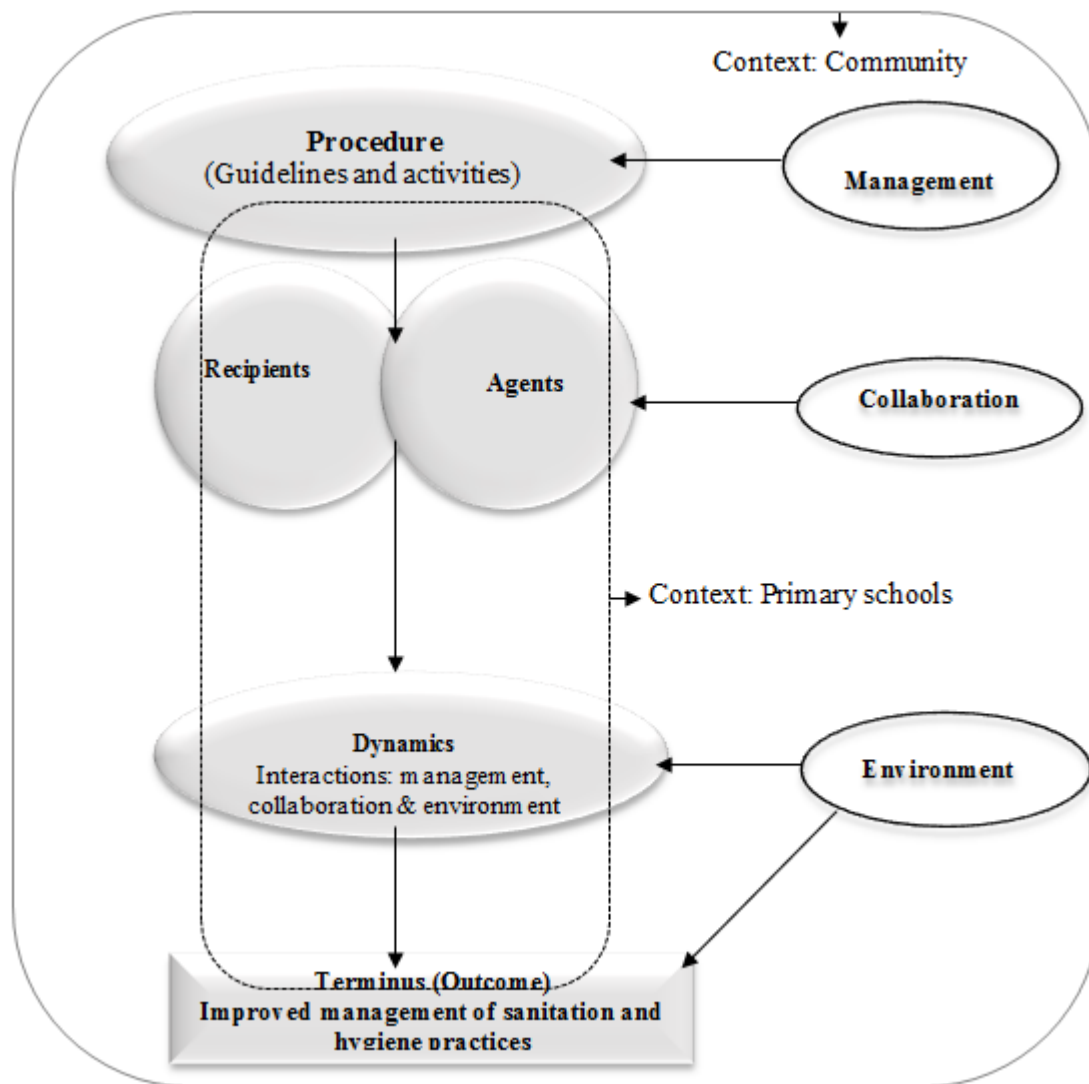


Figure 5.2 Integration of the elements of theory practice in the facilitation process of the procedure.

5.9.2. Step 1: Teachers facilitating the management process

The teachers are to serve as managers to manage the facilitation of the model implementation. The management process will only be successful if the antecedents, indicated in Table 5.6, are present. Due to their influential nature teachers are assigned a major role as agents to lead the management process by utilising the skills indicated in Figure 5.3.

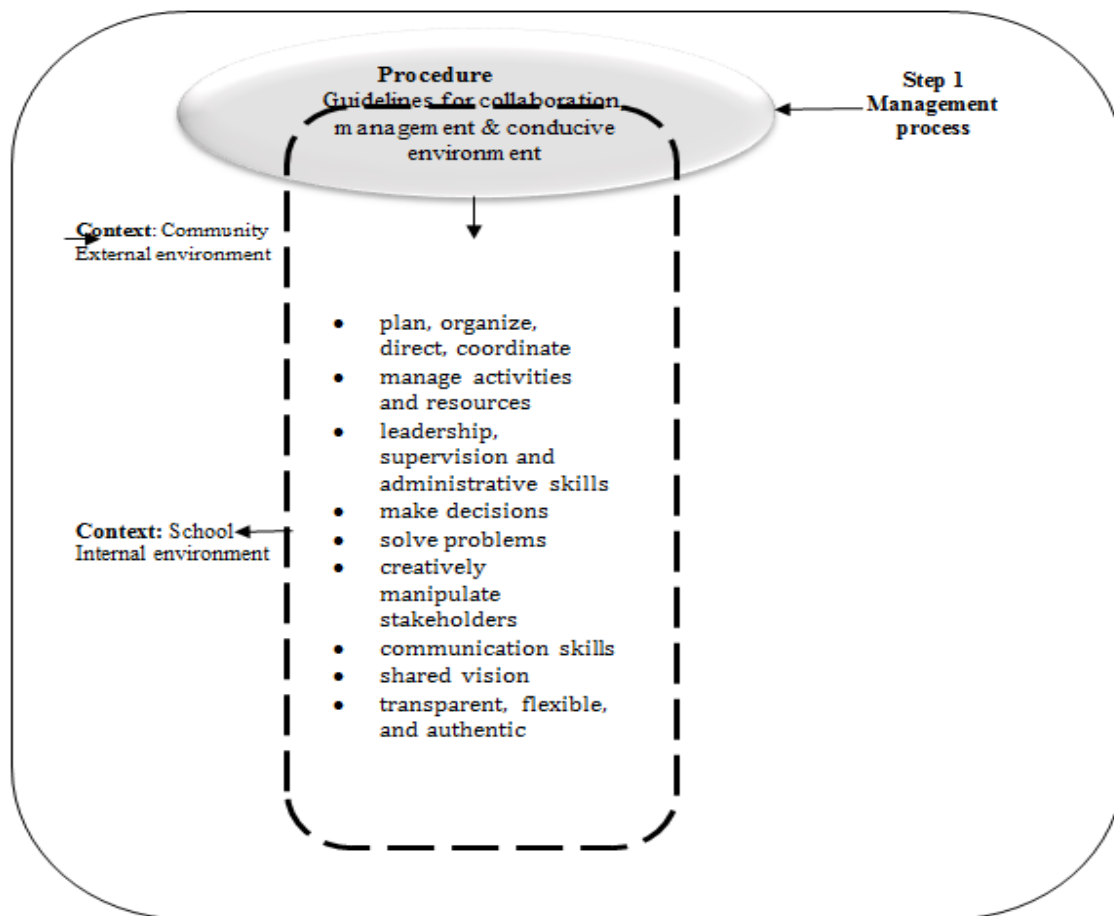


Figure 5.3: Teachers facilitating the management process

5.9.3 Step 2: Teachers forming the collaboration process

The collaboration process, necessary for hygiene promotion and management of sanitation and hygiene practices between the agents (teachers and researcher) and the recipients (stakeholders), has two stages. In the first stage, teachers should facilitate the collaboration process with stakeholders in the school environment. The stakeholders in a school context are the primary stakeholders (the learners) and the secondary stakeholders (cleaners and laborers).

The second stage of collaboration would take place between the teachers, secondary stakeholders, as well as the key stakeholders. Figure 5.4 illustrates the collaboration process between the teachers, as agents, and stakeholders.

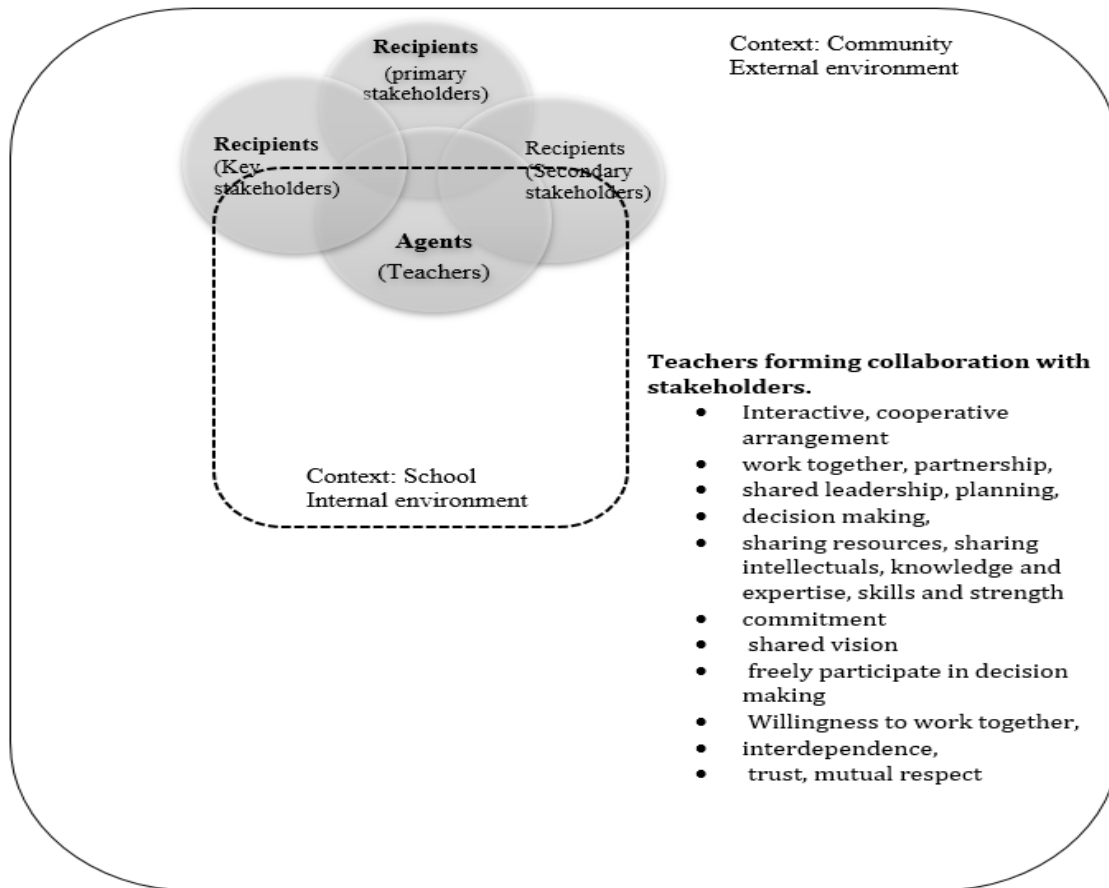


Figure 5.4 The collaboration process between the stakeholders and agents.

5.9.4. Step 3: Teachers maintaining a conducive environment

To ensure a conducive environment for agents and stakeholders, the dynamics in both environments, namely, the respective context of the community and the schools should be addressed. The stakeholders, guided and directed by the agents, implement the procedures through a set of activities to address the dynamics that served as the barriers towards the management of sanitation and hygiene practices.

Figure 5.5, depicts the dynamics from the findings that should be addressed within the environment they mostly affect.

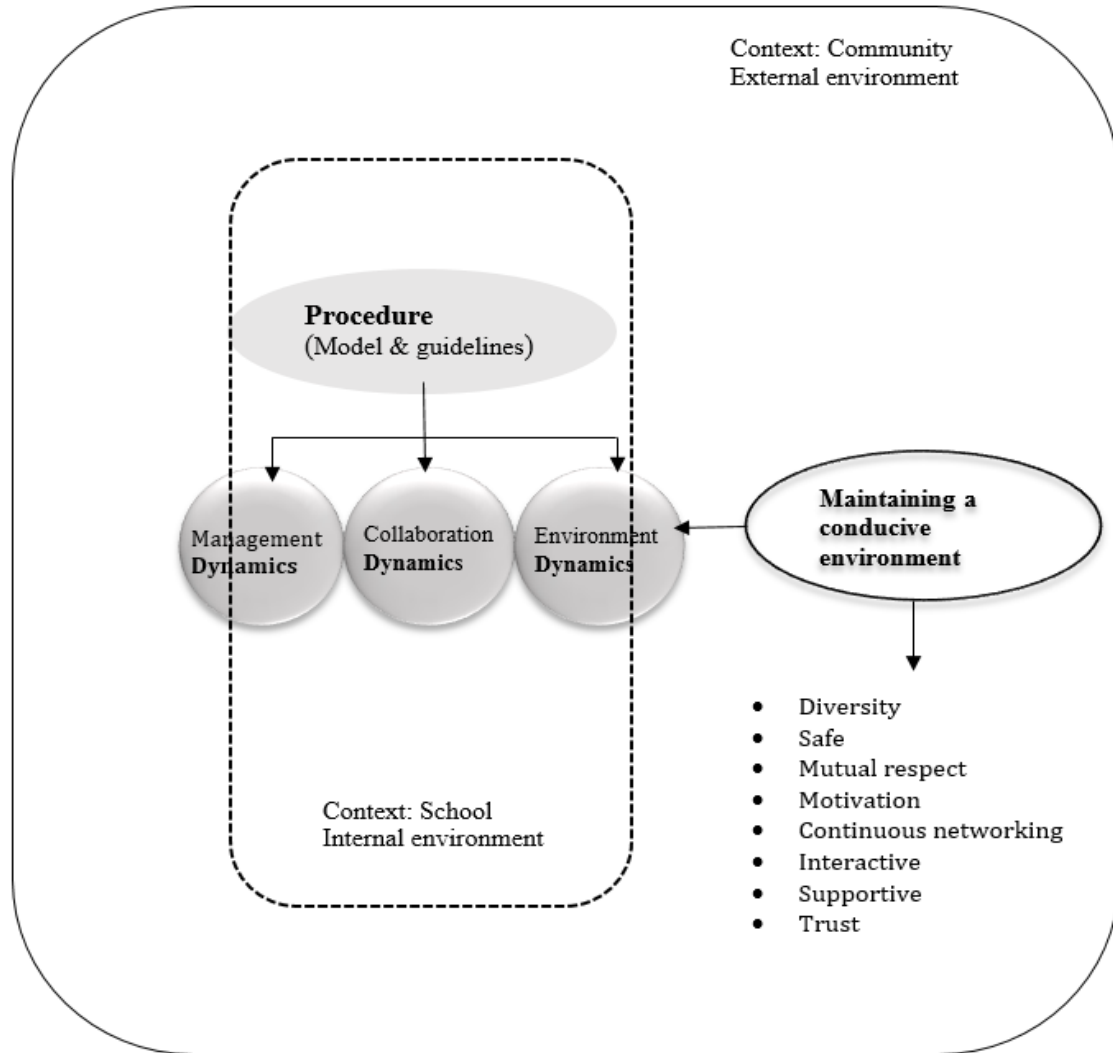


Figure 5.5 Teachers maintaining a conducive environment.

The challenges that should be addressed with stakeholders in the external environment include the following.

- Unhygienic personal conditions of some learners,
- Different cultural background of learners,
- Lack of parental involvement in hygiene promotion,
- Shortage of supplies such as toilet papers, soaps, sanitary pads, and cups.
- Inadequate human and material resources,

- Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities,
- Lack of knowledge on hygiene and sanitation among young learners in lower grades,
- Bad attitude and views of hygiene practices influenced by the circuits of the school.,
- Bad practices towards personal hygiene,
- Lack of knowledge and skills on the part of the stakeholders,
- Old and dilapidated toilet facilities,
- Lack of supplies (toilet paper, soap, paper towels) for effective toilet use.
- Lack of materials (e.g. posters, leaflets, etc.) to encourage or remind learners to wash their hands.

The dynamics in the internal environment include:

- Lack of knowledge and skills,
- Inadequate human and material resources,
- Dilapidated toilet facilities,
- Old and unhygienic conditions of school building,
- Lack of flushing toilet facilities,
- Insufficient school budget,
- Inadequate water supply,
- Lack of a facility specially designated for learners with disabilities,
- No flushing toilets,
- Lack of knowledge of pre-primary school learners regarding proper use of toilet facilities,
- Lack of knowledge on hygiene and sanitation among young learners in lower grades
- Bad attitude and views of hygiene practices influenced by the circuits of the school,
- Bad practices towards personal hygiene,

- lack of knowledge and skills on the part of the stakeholders,
- Handwashing facilities (buckets) very dirty,
- Fewer toilet facilities in relation to the number of learners,
- Lack of privacy for some toilet facilities without doors.
- Handwashing facilities located far away from toilet facilities,
- Unhygienic (dirty, messy, smelly, disgusting) toilet facilities
- Old and dilapidated toilet facilities,
- Unsafe disposal of wastes at some dumping sites, attracting learners to have fun with them,
- Lack of supplies (toilet paper, soap, paper towels) for effective toilet use,
- Lack of materials (e.g. posters, leaflets, etc.) to encourage or remind learners to wash their hands.

Figure 5.6 illustrates the interrelatedness of dynamics in both the community context (external environment) and the school context (internal environment).

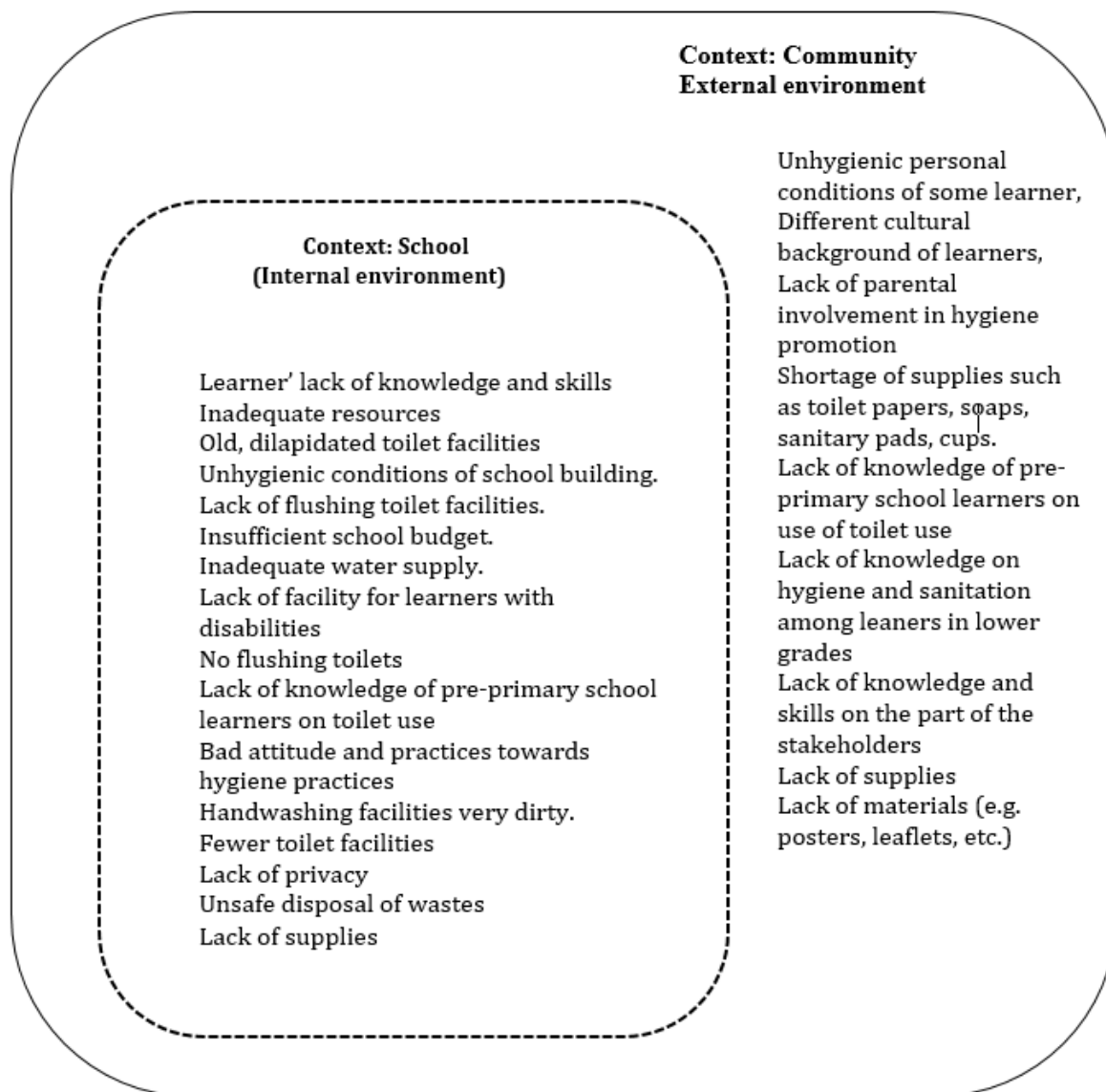


Figure 5.6 The external and internal environments.

5.9.5. Step 4: Effective management of sanitation and hygiene practices (outcome)

The last step applies to the outcome of the model implementation. The collaboration process, which was facilitated between the teachers and stakeholders, enhance understanding of the commitment towards the shared vision by all involved. The process then addresses the dynamics in both environments, and if successfully done, can lead to a conducive environment for all involved.

Thereafter, it is the responsibility of the learners, with the support from agents and other stakeholders, to manage sanitation and hygiene practices effectively. The outcome of the model is depicted in Figure 5.7.

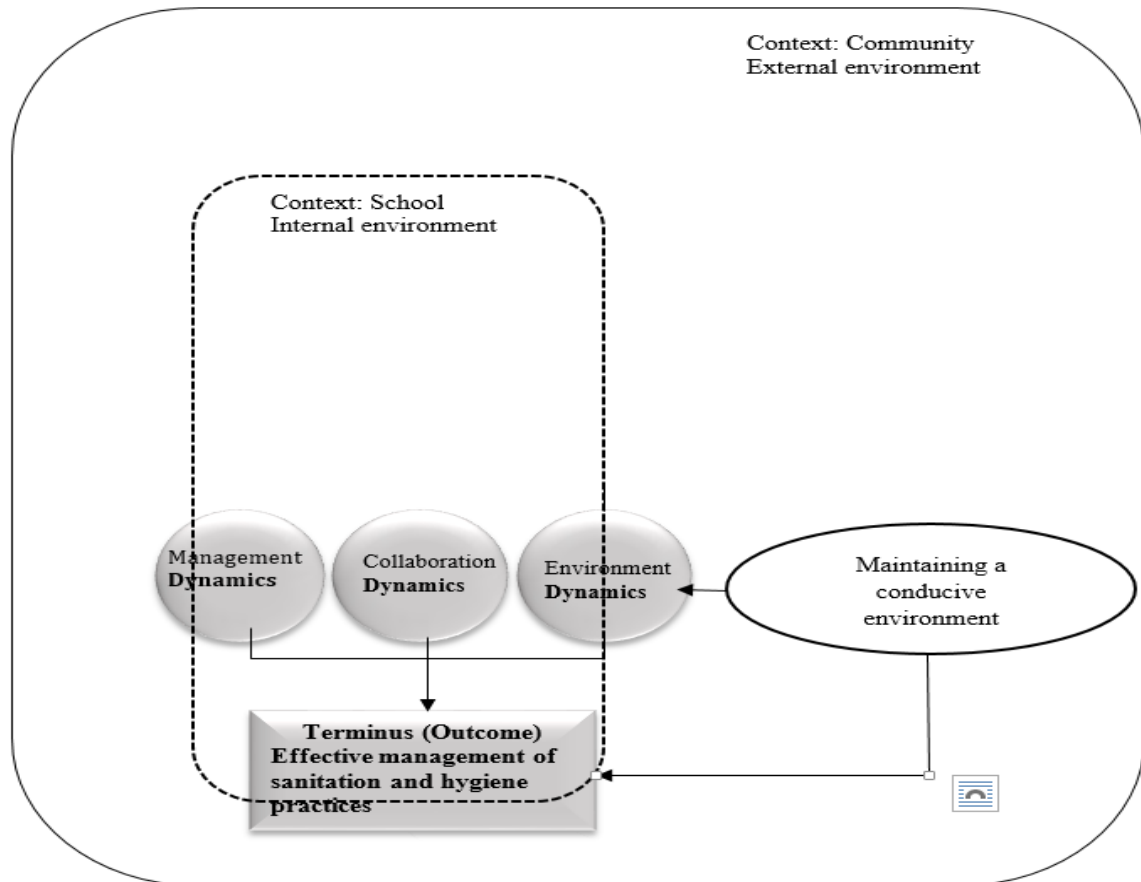


Figure 5.7 Improved management of sanitation and hygiene practices (outcome).

5.9.6. Management of a collaborative environment

A summary of the relationship among the main concepts of management of a collaborative environment, and the skills and activities required in the development of the management of a collaborative environment, is indicated in Figure 5.8.

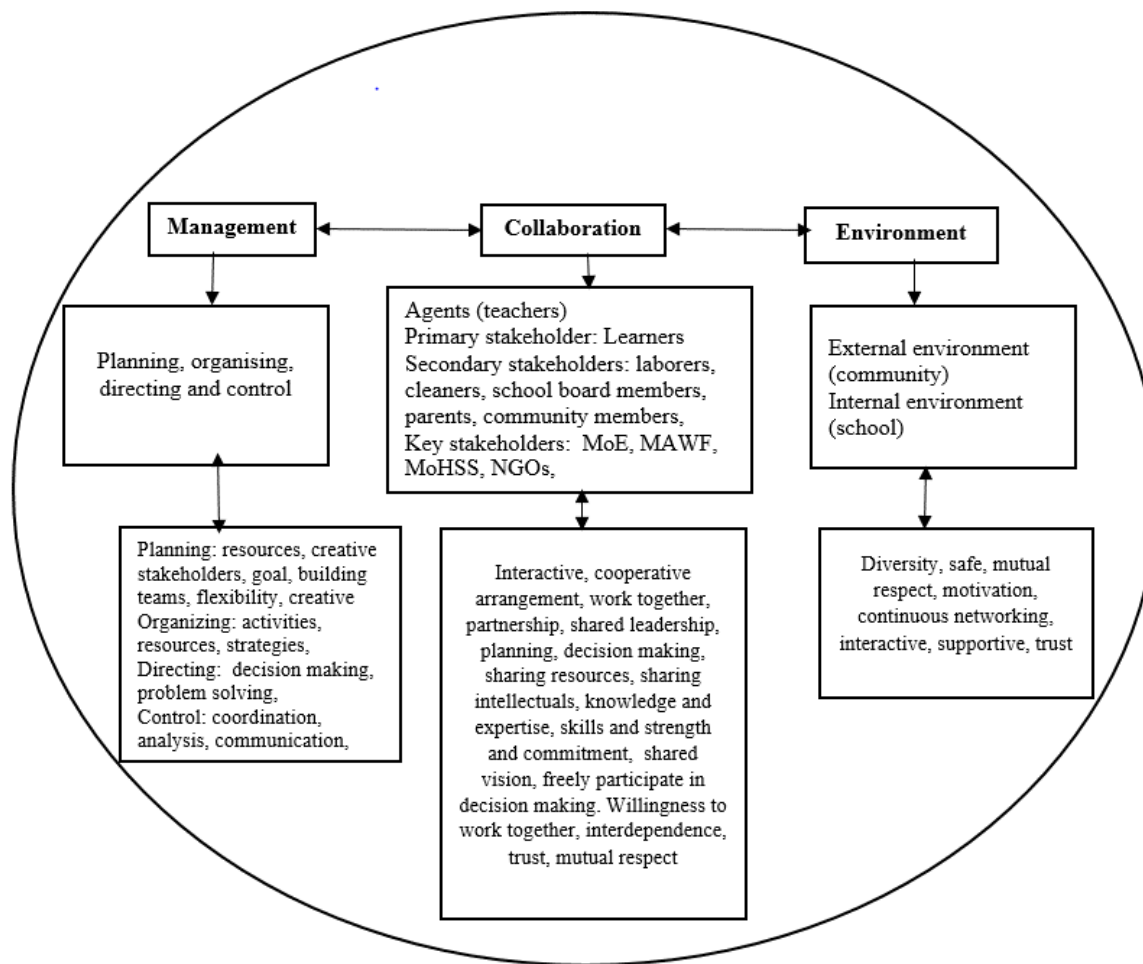


Figure 5.8 Illustrates the relationship among the main concept of management of a collaborative environment.

5.10. SUMMARY

This chapter presented the conceptual framework of the study. Identification, and definition of main were presented. The conceptual framework was guided by Dickoff et al's (1968) survey list of prescription of activities necessary for the implementation of the model to facilitate the management of sanitation and hygiene practices. Identified related and essential attributes served as a guide for a model development. A model case, and a borderline case, were developed identified characteristics of the main concepts. The model is presented in the next chapter.

CHAPTER 6

DESCRIPTION OF A MANAGEMENT OF THE COLLABORATIVE ENVIRONMENT MODEL TO FACILITATE THE MANAGEMENT OF SANITATION AND HYGIENE PRACTICES

6.1 INTRODUCTION

In chapter 5, the proposed “management of the collaborative environment” model was developed. The concepts derived from findings as well as the six components of the practice oriented theory, formed the basis for the model development. Through a concept analysis process the researcher identified four steps that guided the development of the “management of the collaborative environment” model. The aim of this chapter is to describe the structure and process of the model development. The model is evaluated based on the evaluation criteria suggested by Chinn and Kramer (2008).

6.2 OVERVIEW AND DESCRIPTION OF THE MODEL

The overview and description of the model is done according to Chinn and Kramer’s (2008) six proposed descriptive strategies: the purpose, concepts, and definitions of concepts, relationships, structure, and assumptions. Figure 6.1 presents the structure of the model to facilitate the management of sanitation and hygiene in primary schools.

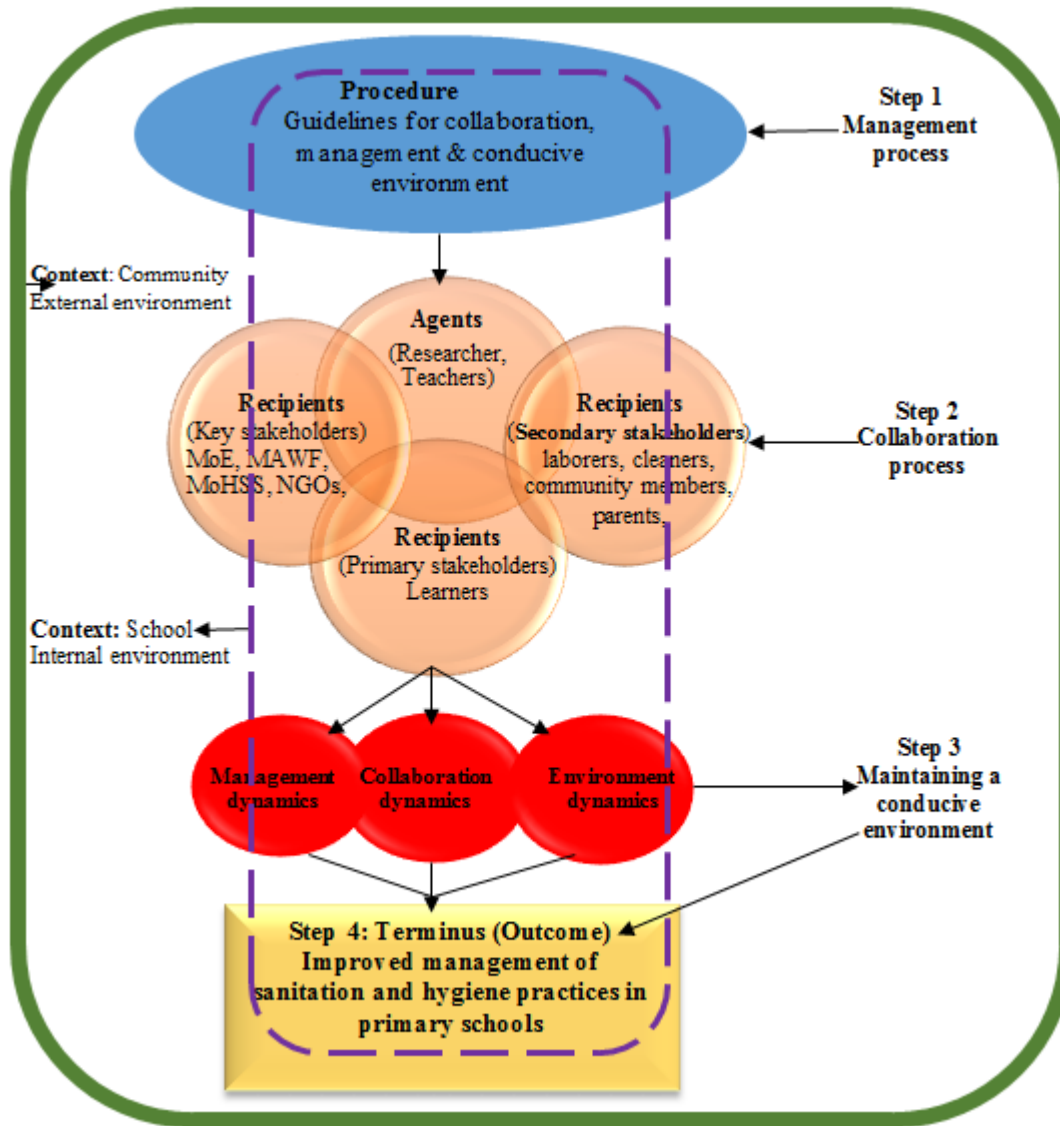


Figure 6.1 A management of the collaborative environment model for facilitating the management of sanitation and hygiene practices in primary schools.

6.2.1 Overview to the model

Figure 6.1 is an illustration of the model and the structures involved in the development of the model. The model developed served as a framework for the management of sanitation and hygiene practices in primary schools.

The findings, from the mixed method study, formed the basis for model development by guiding actions and activities to be carried out in the facilitation of management of sanitation and hygiene practices by the stakeholders involved in the process. The findings of the study, as discussed in Chapter 4, highlighted barriers and challenges perceived by teachers as being a hindrance towards hygiene promotion. As too were the barriers and challenges, experienced by learners that served as hindrance in effective sanitation and hygiene practice. The results showed how unsafe and uncondusive the school environment was, in relation to sanitation and hygiene practice.

From the findings, the researcher concluded that for the primary schools to improve manage their sanitation and hygiene, collaboration, from a number of stakeholders in both community and school environments, is required to collectively address the challenges identified. The position of each stakeholder and their roles are detailed in the model process. In addition, effective practices of sanitation and hygiene require a conducive environment. Hence, a “management of the collaborative environment” model was developed as well as guidelines to guide the management of resources and activities, especially in a school context towards effective hygiene and sanitation practice. Due to the influential nature of their position in society, teachers are assigned a major role, as agents, to lead the facilitation process involved in promotion of sanitation and hygiene practices among schools (Matengu, 2013). The researcher identified four steps of proposed the activities of the teachers and stakeholders that would realise the goal of the study in terms of the model.

- Step 1: Teachers facilitating the management process.
- Step 2: Teachers forming collaboration with stakeholders.
- Step 3: Teachers maintaining a conducive environment.
- Step 4: Effective practices of sanitation and hygiene (outcome).

6.2.2 Description of the model

Each component, within the structure of the model, is described in terms of the way it contributes to the purpose of the model. The structure of the model displays the interaction and the interrelatedness between the main concepts (collaboration, management and environment) and the six survey components (agent, recipient, context, dynamic, procedure, and terminus) by Dickoff et al (1968).

6.2.2.1 The purpose of the model

Chinn and Kramer (2008) suggested that if a model is purposeful, then a purpose, even if it is not stated clearly, should at least be recognizable. The purpose of this model is to provide a theoretical framework for the teachers and stakeholders to facilitate the management of sanitation and hygiene practices within primary schools' context. The proposed activities for each step of the model should guide the teachers, who are the main facilitators, in leading the facilitation process to ensure that the goal of the model is realised.

6.2.2.2 The concepts

Chinn and Kramer (2008) maintained that if a model represents a structuring of ideas, the ideas will be in the form of concepts that are expressed in language. The main concepts that formed the basis of this model were: “collaboration, management and environment”. Other related concepts were: stakeholders, primary schools, learners, procedure, facilitation, and environment. These concepts formed the basis of the model structure.

6.2.2.3 Definitions of the concepts

It is important that a concept is defined so that a reader can determine what it is and what is not intended by the concept (Walker & Avant, 2010).

Though most definitions have both specific and general features, Chinn and Kramer (2008) argued that general meanings are preferred in broad scope or theory that is not likely to be empirically tested. The concept a “collaborative management of the environment” and related concepts are defined below.

Collaboration is an interactive, cooperative arrangement formed between the teachers (agents) and (recipients) stakeholders whereby they can work together to address the dynamics that hinder effective promotion of hygiene in schools. The collaboration process involves shared leadership, planning, decision-making and sharing resources. Through this partnership, collaborators share their intellect, knowledge, expertise, strength and commitment towards a shared vision by freely participating in decision-making. Willingness to work together creates interdependence and trust that is built through mutual respect for each person’s contribution.

A **management of the collaborative environment** is an interactive, transparent, dynamic process of resource management whereby teachers and stakeholders, by virtue of their diversified knowledge and skills, collaborate and make joint decisions in addressing the dynamics in a safe and supportive environment that is conducive for the facilitation of sanitation and hygiene practices.

Management

The **management** process to be carried out by teachers, in their capacity as agents, involves planning, organizing, directing, coordinating activities and resources necessary for the facilitation of sanitation and hygiene practices among primary schools. As managers, teachers are expected to have leadership, supervisory and administrative skills to enable them to collaborate, make decisions, solve problems, and creatively manipulate stakeholders towards the achievement of the goal. As change agents, teachers should employ effective communication skills and always ensure that they are transparent, flexible, and authentic as they continuously strive to manage the procedure.

Environment refers to the external (community) and internal (school) settings or *contexts* which housed the agents and stakeholders involve in the promotion of sanitation and hygiene practices in schools. A conducive environment should accommodate diversity and address interrelated elements such as social, cultural, biological and physical factors that have an influence on the practice of sanitation and hygiene. A conducive environment should promote continuous networking, and interaction among stakeholders.

Related concepts

Primary school: A primary school is a school, or part of a school, in which basic education, from the level of the first grade to the level of the seventh grade, is provided (Education Act No. 16 of 2001). This is the context where collaboration between stakeholders has to place to ensure effective management of sanitation and hygiene practices.

Learner: A learner is any person who is registered and receiving basic education or a course of study (Education Act No. 16 of 2001). The learners are the primary stakeholders (beneficiaries) and recipients of the model, who are expected to be positively affected once the dynamics in the school and community contexts are addressed.

Teacher: In relation to state schools, a teacher is a staff member who is professionally qualified to teach others in formal education and whose occupation is teaching, and includes a professionally unqualified person whose occupation is teaching (Education Act No. 16 of 2001). In this study, a teacher is an agent and a facilitator for the implementation of the model.

Stakeholders refer to all individuals, groups or organisations with an interest in the initiative (Green & Tones, 2010). There are three types of stakeholders: primary, secondary and key stakeholders.

Primary stakeholders refer to the beneficiaries, who are directly affected, either positively or negatively by the initiative: the learners in this case. Secondary stakeholders are those involved in implementing the model, such as the parents, school board members, community members, labourers and cleaners at schools. Key stakeholders are those whose support is essential for the continuation of the model, such as the MoE, MAWF, MoHSS and NGOs. In this context, stakeholders are recipients of the model.

Procedure: Refers to an intervention, treatments, therapies, or actions that are implemented by researchers to determine their outcomes in a study. Similarly, a procedure can be implemented by health care professionals to and with patients in a particular situation, to move the patients' conditions toward desired health outcomes (Grove et al., 2013). In this study, the procedure refers to the model and its guidelines which stipulated activities which once implemented can lead to the realisation of the purpose of the model.

Outcome: Something that follows as a result or consequence (<https://www.merriam-webster.com/dictionary/outcome>). In this context, the outcome is the maintenance of the conducive environment and effective management of sanitation and hygiene practices.

6.2.2.4 The nature of relationships

Walker and Avant (2010) emphasised that the aim of a relational statement is to affirm the existence of the relationship between two or more concepts. The researcher deduced the relationship statements from the essential and related criteria of the concepts.

- The main relationship statement of this model is that collaboration between teachers and stakeholders can lead to the joint implementation of the management process with an outcome of effective management of sanitation and hygiene practices in schools through the maintenance of a conducive environment.

- Through collaboration, teachers and stakeholders share their knowledge, skills, and strength required for creating a conducive environment necessary for effective management of sanitation and hygiene.
- Teachers and stakeholders collaborate to address the dynamics that influence the practice of sanitation and hygiene in schools.
- Teachers and learners manage sanitation and hygiene practices effectively in the schools.
- The teachers, as agents, apply the management process as a procedure to plan, organise, direct, coordinate and manage activities and resources that are necessary for the facilitation of sanitation and hygiene practices among primary schools.
- Effective management process requires leadership, and administrative skills that enable teachers to creatively manipulate stakeholders towards the achievement of the goal.
- An environment in which stakeholders feel safe and respected, enhance trust, motivation, commitment towards effective management of sanitation and hygiene practices.

6.2.2.5 The structure of the model

The structure of the model is presented into two squared shapes that represent the two *environments* which are the *contexts* that affect the management of sanitation and hygiene practices in schools. According to Creative Blog Staff (2016), **a square shape** suggests sturdiness, forward thinking trust, stability and strength. The outer (external) square in green colour represents the community (*context*) environment. The inner dotted square in purple shape within the external environment, represents the schools' environment. The school setting is dotted to indicate its dependability on the external environment.

According to UNICEF (2010), schools are an integral and important part of a community. They therefore do not operate in isolation. Though operating in school context, learners and teachers are members of communities. Bascia (2014) shared UNICEF's sentiments, by stating that schools are housed within an external environment, which includes parents and the community in which they are situated. The two environments represent the *context* in the model. The facilitation of the *management process* is the first step of the model. The *procedure* (in blue colour) comprised of guidelines and activities that guide agents who are the facilitators of the implementation process of the procedure. The procedure in this study refers to the model and its guidelines. The activities of the procedure are directed to the dynamics in both environments for which it was developed. The model was therefore developed to guide teachers with the *management* of the procedure and its activities.

The *agent*, in this model refers to the teachers. All the stakeholders are regarded as *recipients*. The teachers, in their capacity as *agents* initiate and facilitate the *collaboration* process (in orange colour) with stakeholders (*recipients*). The implementation of the model may result in the improved personal hygiene as well as effective sanitation and hygienic status of the schools environment, which is the outcome of the model. There are three types of stakeholders within the two environments: primary, secondary and key stakeholders. Primary stakeholders are the school learners who are directly affected by the model. Secondary stakeholders are those involved in the implementation of the model, such as the parents, school board members, community members, labourers and cleaners at schools. Key stakeholders are those that support the initiative with resources (facilities, human, materials, finance, etc.). Key stakeholders are essential for the continuation of the initiative, for example, the MoE, MAWF, MoHSS and NGOs. Key stakeholders mostly operate within the community, while secondary stakeholders operate in both environments. Primary stakeholders operate mostly in schools.

The diversity and interactions within these stakeholders contribute to the maintenance of a conducive environment and an improved management of sanitation and hygiene practices as an outcome. All the stakeholders, whether in the community or school context, are the *recipients* of the model because the activities of the model are directed to them to ensure the realisation of the purpose of the model. Since some of the challenges that hinder hygiene promotion in schools originated from both environments, collaboration between stakeholders and agents is needed to collectively address these challenges. The formation of the collaboration process is the first step of model implementation.

The challenges (*dynamics*) identified from the study are indicated in red colour. The three red circle shapes across the environments indicate that those challenges are influenced by both environments. The three circles represent the three main concepts (management, collaboration and environment) as illustrated in Table 5.9. Dickoff et al (1968) defined dynamics as the internal energy or power sources or motivating factors that enable an individual to become successful. The dynamics in this model are the challenges, barriers and factors that have an influence on hygiene promotion and the management of sanitation and hygiene practices. The interaction between stakeholders and agents are directed to the dynamics.

Some of challenges and barriers stemmed from poor relationships between teachers. Factors such as sociocultural aspects, lack of parental involvement or general knowledge and practices of the community members may hamper proper management of sanitation and hygiene practices. Some of the parents do not support activities that promote hygiene at school or reinforce them at home. These challenges served as the *dynamics* against which the model was created. Although each setting (community and primary schools) is characterised by its own dynamics, more focus is given to the school setting. Most activities in the model are within a school context.

Once the dynamics are addressed after the implementation of the procedure, the outcome should be a *conducive environment* for sanitation and hygiene practices, which is the third step of the model.

The *outcome (terminus)* is the last step of the model. It refers to the consequences of the model implementation. When the *environment* become *conducive*, that is when the challenges are addressed or strategies are in place to address them, stakeholders should feel safe and motivated to work towards the achievement of the goal. After successful implementation of the *procedure*, the outcome of the model should be improved management of sanitation and hygiene practices among schools. The impact of its success should be seen in a school context in particular, and the community at large. That is why the outcome extends across the two environments. The phrases and concepts in the model are written in black.

Colours used in the model structure

The colours used in the structure of the model are green, purple, orange, blue, red, white and black. The meanings of these colours are adapted from the Creative Bloq Staff (2016), and are described below.



The green colour used for the community context represents growth, harmony, freshness, fertility and safety. The colour green has a strong emotional correspondence with safety; it also suggests stability and endurance. Green symbolises hope and better collaboration.



Orange is used for the collaboration process between the agents and stakeholders. Orange has an energizing effect which stimulates mental activity and creativity.

The color is associated with joy, enthusiasm, happiness, attraction, success, encouragement, and stimulation. Orange symbolizes strength and endurance. Since it has very high visibility, it catches the attention of the collaborators. The features above fit in well with collaboration.



Since red colour brings images to the forefront, it was used to stimulate stakeholders to make quick decisions about addressing the dynamics (challenges) which are the threats to the environments. Red was used to indicate vulnerability of the environments. It is also associated with energy, strength and willpower.



Blue was used to represent the procedure, as well as the conducive environment. Blue is beneficial to the mind and body. The colour symbolises stability, trust, loyalty, wisdom, confidence, intelligence, faith, truth, and heaven. Blue is strongly associated with tranquillity and calmness. All the features indicated are important in the maintenance of a conducive environment.



Purple colour was used for the school context. Surveys indicate that purple is the preferred colour of 75% pre-adolescent children. The majority of learners in primary school context are pre-adolescents, hence the use of the colour. Purple symbolises power, dignity, loyalty and motivation. It is associated with stability, creativity, wisdom, dignity, energy and independence. All the above-mentioned features are associated with younger people.



The colour black was used for the text in the model. Black is associated with power, stylishness and formality. The use of black colour enhances visibility.



Yellow, is the color of sunshine, hope, and happiness. The color was used to represent the achievement (outcome) because it is associated with happiness, cheerfulness, positivity, enhance vision, and build confidence. Combination of the above features is believed to sustain the outcome which was the purpose for the development of the model. A further description of the model is presented, according to the four steps identified by the researcher. The steps direct the facilitation for the management of sanitation and hygiene practices in primary schools. The descriptions of steps are as follows.

- Step 1: Teachers facilitating the management process.
- Step 2: Teachers forming collaboration with stakeholders.
- Step 3: Teachers maintaining a conducive environment.
- Step 4: Effective practices of sanitation and hygiene (outcome).

Step 1: Teachers facilitating the management process

The procedure refers to the intervention that addresses the challenges identified. In their capacity as agents, teachers will facilitate the management process. The teachers need to facilitate the implementation of the guidelines and actions of the procedure that address the dynamics as identified by the findings of the study.

The agents, at this juncture would use their skills and knowledge indicated in Figure 6.2, to empower the recipients and stakeholders involved in the management of sanitation and hygiene

practices. Achievement of this step will ensure smooth transition to the formation of collaboration with stakeholders. The management process is illustrated in Figure 6.2.

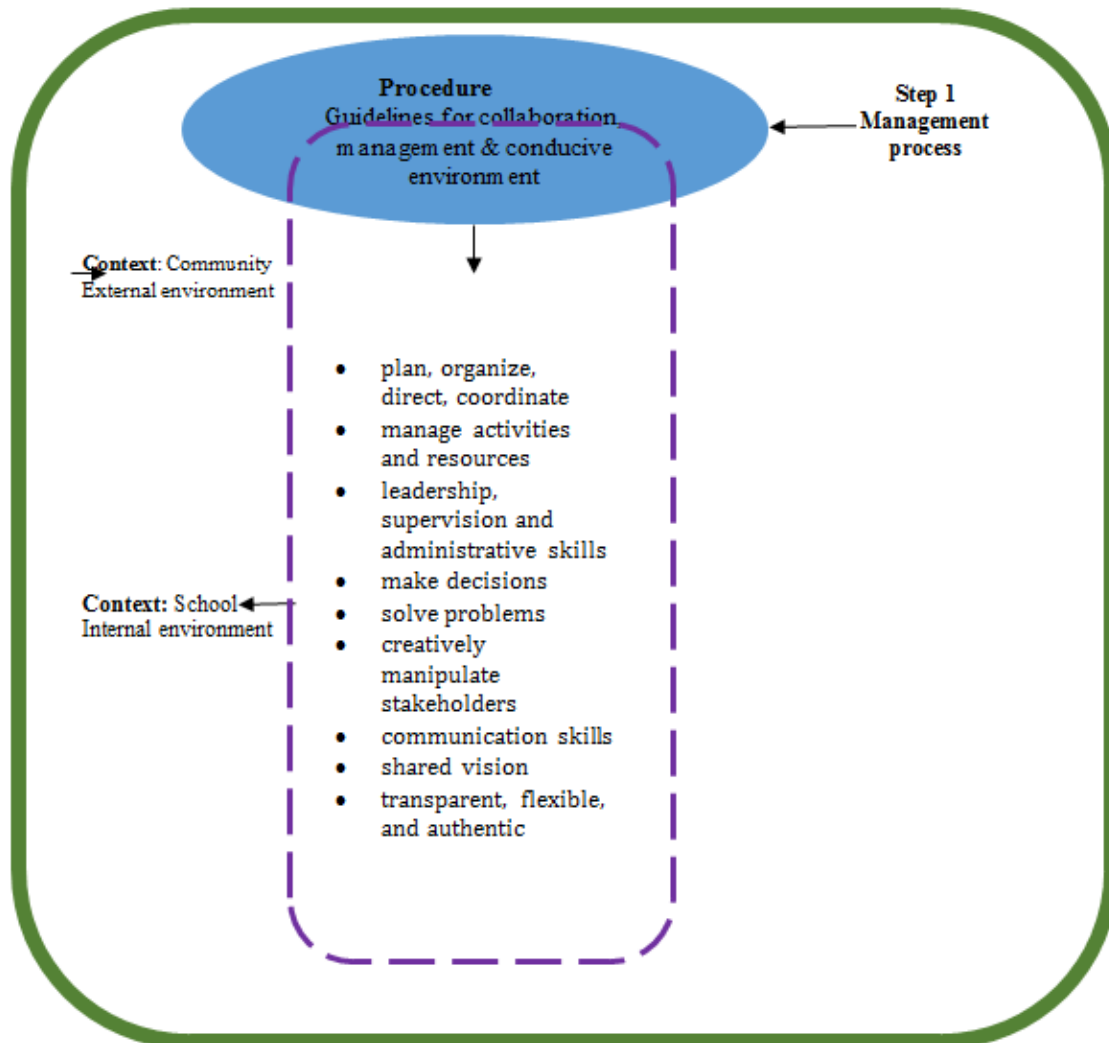


Figure 6.2: Step 2: Teachers facilitating the management process.

Stage 2: Teachers forming collaboration with stakeholders

In this phase, teachers in their capacity as agents, initiate and facilitate the collaboration process with stakeholders.

As evidenced from the study findings, the challenges that hinder and or influence effective management of sanitation and hygiene in the schools are influenced by both environments, and this necessitates the need to form collaboration with stakeholders in order to collectively address challenges in both environments. The teachers use their communication skills (mentioned in Chapter 3) to ease the process of collaboration.

Teachers and stakeholders should work as a team by sharing experiences, expertise and skills, resources, and activities in a well-coordinated manner towards a shared vision. Teamwork enables teachers and stakeholders to complement their respective effort through their contribution towards the realisation of the overall goal. As indicated in Chapter 5, the concepts involved in the establishment of a partnership include shared vision, networking, and mutual co-operation, communication, sharing of responsibility, joint decision making, participation and involvement. The collaboration process by the teachers was guided by the defining attributes, antecedents and consequences for collaboration as indicated in Table 5.2. The dynamics in the school environment for which collaboration is formed are:

- inadequate human and material resources
- dilapidated toilet facilities
- old and unhygienic conditions of school building
- lack of flushing toilet facilities
- insufficient school budget
- inadequate water points in schools
- lack of facility specially designated for learners with disabilities
- lack of knowledge and skills on the part of the stakeholders
- handwashing facilities (buckets) very dirty
- fewer toilet facilities in relation to the number of learners
- lack of privacy for some toilet facilities without doors

- handwashing facilities located far away from toilet facilities
- unhygienic (dirty, messy, smelly, disgusting) toilet facilities
- unsafe disposal of wastes at some dumping sites, attracting learners to have fun with them
- lack of supplies (toilet paper, soap, paper towels) for effective toilet use
- lack of materials (e.g. posters, leaflets, etc.) to encourage or remind learners to wash their hands.

The *dynamics* and challenges in the community environment that necessitated collaboration are:

- different cultural background of learners
- lack of parental involvement in hygiene promotion
- poor interpersonal relationships between the stakeholders and the teachers
- lack of knowledge and skills in stakeholders on hygiene

Though challenges are identified in the two environments, not all of them can be resolved in the environment they are identified in. The roots of a challenge may have originated in an external environment, but identified in the school setting, hence they are addressed with stakeholders through collaboration. The challenges below are found in both environments.

- lack of knowledge of pre-primary school learners regarding proper use of toilet facilities
- lack of knowledge on hygiene and sanitation among young learners in lower grades
- bad attitude and views of hygiene practices
- bad practices towards personal hygiene
- poor knowledge on hygiene practices.

The challenges identified in the school environment below call for collaboration with key stakeholders who may assist with provision of resources or funds, namely:

- inadequate human and material resources
- too few toilet facilities in relation to the number of learners
- lack of privacy for some toilet facilities without doors
- handwashing facilities located far away from toilet facilities
- old and dilapidated toilet facilities
- lack of supplies (toilet paper, soap, paper towels) for effective toilet use
- lack of materials (e.g. posters, leaflets, etc.) to encourage or remind learners to wash their hands
- inadequate human and material resources
- dilapidated toilet facilities
- old and unhygienic conditions of school building
- lack of flushing toilet facilities
- insufficient school budget
- inadequate water supply
- lack of a facility specially designated for learners with disabilities

Looking at the nature of the challenges identified in both environments, it is evident that the teachers and learners will not be able to address them on their own, within their context. Involvement of the external community (stakeholders) is needed to complement the effort of teachers and learners.

The teachers therefore are to initiate the collaboration process with different stakeholders in the external environment, as indicated in the model structure from the teachers' circle of collaboration within the school environment (peach colour).

The teachers should initiate collaboration because of the values teachers hold about the stakeholders: willingness to participate, cooperate and work together as a team by planning and making joint decisions, expertise through members' skills and knowledge on hygiene and sanitation, trust and respect in collaborators. The benefits that this collaboration might bring are:

- bigger accomplishments than teachers on their own
- increased public awareness whereby messages being transmitted to more people that might influence the outcomes positively
- sharing of resources and expertise can make overwhelming responsibilities more manageable
- obstacles faced by some stakeholders may be overcome by another stakeholder
- a partnership or network has more power to influence policy than a single body because collective efforts and services would not be unnecessarily repeated, and resources would be distributed appropriately
- some partners have a trusting relationship with the community it wishes to serve and can therefore serve as a bridge into the community.

Each person in the collaborative team, be it the recipients (the learners or stakeholders) or the agents, has some expertise on the phenomena of interest. The learners are experts on the challenges and needs they experience in relation to hygiene and sanitation in the school context. Agents possess collaboration and management skills that enable them to facilitate the management of sanitation and hygiene practices.

Figure 6.3 illustrates the collaboration process.



Figure 6.3: Step 2: Teachers forming collaboration with stakeholders.

Step 3: Teachers maintaining a conducive environment

The third step, after the collaboration process, is maintenance of a conducive environment. This step was derived from the challenges related to the conditions of the sanitation facilities that made the school environment unconducive.

Inadequate toilet facilities in relation to the number of learners at a school, unhygienic facilities, lack of privacy, old and dilapidated facilities, lack of hand-washing facilities, lack of materials and supplies, all create unsanitary and unkempt conditions. The latter provide conducive environments for vectors and pathogenic organisms associated with diarrhoea and other infections. Therefore, a conducive environment will only be created and maintained if the challenges (dynamics) that hinder effective management of sanitation and hygiene practices are addressed and resolved. By facilitating the management process, teachers are required to direct the guidelines, strategies and activities set out in the model to address the dynamics. The same communication and interpersonal skill employed in the formation of the collaboration process are to be employed during this stage. While effective management of sanitation and hygiene practice is achievable, some challenges in the environment, for example, building enough facilities in relation to the number of learners, need long term interventions before their benefits are realised.

It is the responsibility of schools to ensure that a school environment is safe, and free of threats that may impact learners' health negatively. This implies that a conducive environment, where people feel safe and develop themselves, needs to be created to enhance maximum benefits. Continuous support and maintenance from teachers and stakeholders is of the utmost importance. The success in maintenance of a conducive environment is also determined by reinforcing factors: support, cooperation, motivation and commitment of the agents and recipients towards the overall process, for example. The safety of an environment can only be achieved by ensuring that sanitation facilities are in good working order, and that there is running water. Also needed are ensuring the provision of enabling factors such as adequate toilet facilities, and supplies such as soap, handwashing facilities. Figure 6.4 illustrates the third step whereby teachers would maintain a conducive environment.

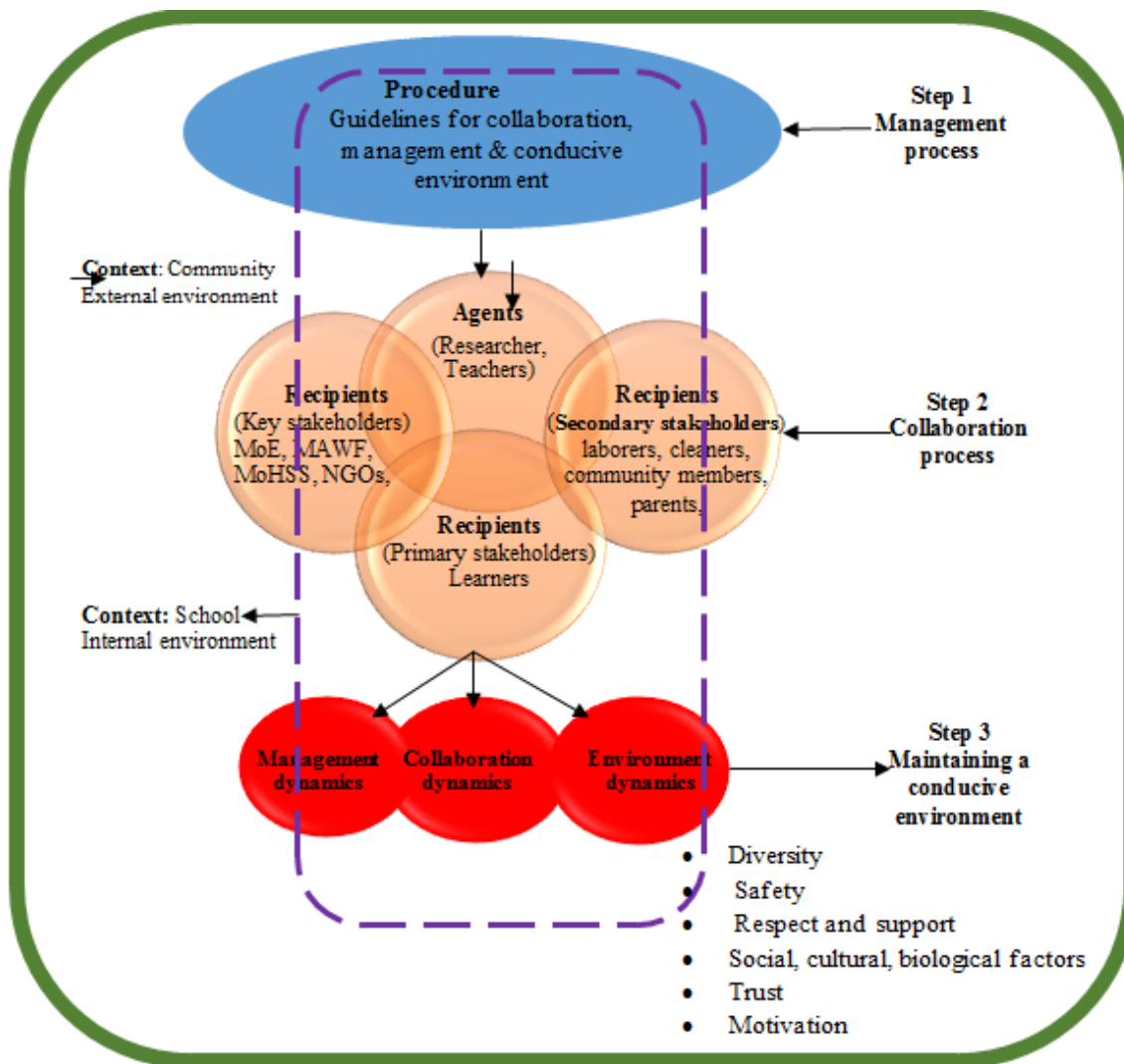


Figure 6.4 Step 3: Teachers maintaining a conducive environment.

Step 4: Effective practices of sanitation and hygiene (outcome)

The last step involved in the facilitation process of the model is the outcome or terminus. This model aims for the effective management of sanitation and hygiene practices in primary schools. The final step of the model is therefore directed at all stakeholders involved, the learners and teachers, in particular, to maintain a hygienic status of primary schools. The management of sanitation and hygiene practices in schools should be a success if the first three steps are accomplished.

Once the environment becomes conducive, agents and stakeholders, alike, should feel safe, and motivated, and would then jointly commit their energy to maintain the success of the outcome. Although it is the responsibility of all stakeholders involved in the collaboration process, if better and improved management of sanitation and hygiene practices in schools is to be realised, it is mainly the teachers' role to oversee all the activities. Teachers have a big role to play by ascertaining that all the activities, suggested in the first three steps, are implemented accordingly. The outcome of the model can be augmented and strengthened if there is a close collaboration between the school and communities (parents). Figure 6.5 illustrates step 4: the outcome of the model.

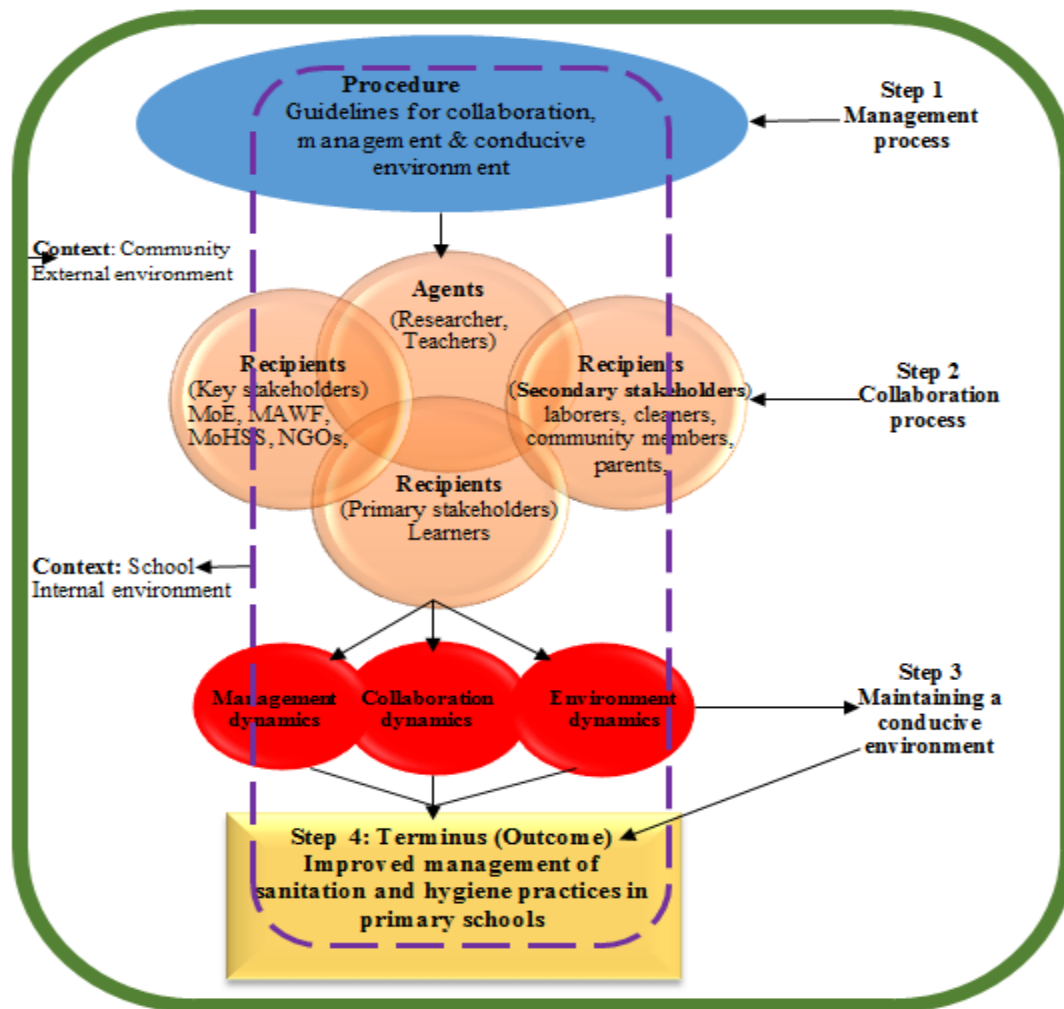


Figure 6.5 Step 4: Outcome of the model.

6.2.1.6 The assumptions

The following theoretical frameworks: the collaborative problem-solving model (CPS), a collaborative approach to improving outcomes for children and enhancing the quality of government services to families and the school context model guided the researcher to when developing the model.

The collaborative problem-solving model (CPS)

The CPS Model is “a systematic, community-based approach for stakeholders aimed at achieving lasting solutions to local environmental and/or public health issues or concerns” (EPA, 2008).

The assumptions of the CPS are:

The conversational competence required for practical dialogues, while still complex, is significantly simpler to achieve than general human conversational competence.

- Within the genre of practical dialogue, the bulk of the complexity in the language interpretation and dialogue management is independent of the task being performed.
- The approach will provide learners and staff with a safer working environment by reducing serious incidents, injury and occupational health and safety issues.
- The approach can offer a more humane way to solve problems and teach the skills necessary to participate in a school or community care, where negotiation is paramount and valued.

A collaborative approach to improving outcomes for children and enhancing the quality of government services to families: The strengthening families’ strategy

Bazley (2000) emphasised that the approach of strengthening families’ aims at improving life outcomes for children in families where social and family circumstances might make the outcomes for children less than they would otherwise have been.

It is concerned with outcomes such as enhanced health status, improved educational achievement, and the capability to form positive relationships.

Research assumptions are:

- What goes on in families has a profound impact on outcomes for children.
- A collaborative approach, across sectors, involving families and agencies, is more effective than unilateral, separate interventions.

According to UNICEF WASH (2010), there is interaction and synergy among stakeholders in both environments.

- Minimum required portion of UNICEF vision e.g. inter-sectoral collaboration from framework.
- Enabling environment can be created and behavior change can be prioritized by communities.
- Inter-sectoral collaboration reaches school level.
- School children are inspired to adopt voluntary, creative methods for promotion.
- Culture of supportive supervision/monitoring can be instilled at all levels.
- Willingness to work together for the sake of development agenda.
- Stakeholders willing to dedicate time to building communications capacity despite heavy workloads.
- Resources needed for hygiene promotion made available.
- Reform the system for the allocation of financial resources to schools and to facilitate child friendly environment with an emphasis on WASH.

The school context model by Bascia (2014) provides a framework for studying the influence of school environments on student learning. How school environments shape students' opportunities to learn.

- The whole school environment, including its individuals and their relationships, the physical and social environment and ethos, community connections and partnerships, and policies, are seen as important areas for action if a school is to promote health.
- Home and community contexts contribute significantly to students' schooling experiences and their learning outcomes.
- Student success is actually a construct of a broad array of skills, experiences and outcomes across a number of different domains, from social-emotional learning and health, to creative, critical thinking and qualities of democratic citizenship.
- The papers on creativity, social and emotional learning, citizenship, and health have all pointed to the importance of quality learning environments in fostering a range of desirable student outcomes.

6.3 EVALUATION OF THE MODEL

The development process of the model to facilitate the management of sanitation and hygiene practices amongst primary schools in Ohangwena region was done under the guidance and supervision of the two study supervisors. Supervisors closely monitored every step involved in the development and adjustment was made as recommended. In the second instance, peer evaluation was done by the group of researchers, and supervisors at the school level, who are experts in model development.

Invitation to peer examiners was done as follow: First, the developed manual which has detailed description of the model, the guidelines and the evaluation criteria was send to the fifteen peers prior the seminar together with a printout of the model (Figure 6.1) and an invitation letter.

Ten participants consisted of three experts in model developments and seven researchers attended the seminar. The researcher presented the model development process by means of power point presentation, which includes: the background of the model development, the purpose, concepts, definitions, structure and assumptions of the model. After the presentation, participants were given opportunity to evaluate the model the accordance with the criteria as proposed by Chinn and Kramer (2011), namely clarity, simplicity, generality, accessibility, and importance.

How clear is the model?

Chin and Kramer (2011) refer to clarity as to how well the model is understood. The key concepts in this model “collaboration, management, and environment” were examined and defined in detail in such a way that their interrelatedness to the six components of the practice oriented theory are easy to understand.

How simple is the model?

Simplicity refers to how minimal are the number of the concepts and their relationships (Chinn & Kramer, 2011). It was agreed that the concepts used and the steps involved are also clearly numbered to indicate the sequence of activities. The structural graph of the model is simple, with clear arrows to make it easy to understand the relationship between concepts. Two suggestion were made: to adjust the arrow pointing from the conducive environment, to point the opposite direction, and for the positions of the concept “procedure” need to be moved on top” in order to make it moreclearer and simple to understand.

How general is the model?

According to Chinn and Kramer (2008), the generality of a theory refers to its breadth of scope and purpose. Scope addresses how broad the model is.

The evaluators agreed that the model was developed and described in detail, it was adequate and that it can be broadly applied not only to the Ministry of Education, but public health, nursing and any agency that intend to make a positive impact in that area.

How accessible is the model?

Empirical applicability addresses the accessibility of a theory, and determines the extent to which empirical indicators can be identified for concepts within a theory (Chinn & Kramer, 2008). The evaluators agreed that there is evidence of empirical accessibility in the model because the specific of the model was attained.

How important is the model?

The importance of this model was related to its significance in public health and nursing practice in general, because improved sanitation and hygiene practices in schools and general population (external environment) should relieve the burden to the nursing practice and contribute to the health of the population in general. The evaluation team regarded the model as useful and important in terms of promoting hygiene practices among school children.

Judging from the feedback, the collaborative, management for the environment model was successfully evaluated with regard to its clarity, simplicity, generality, accessibility and its usefulness.

The inputs from the evaluation form part of the final version of the model. The remarks from the final evaluation are presented in table 6.1 below.

Table 6.1: Evaluation of the model

Evaluation criteria	Comments
1. Clarity of the model	<ul style="list-style-type: none"> • <i>“After its description, the structure is easier to understand”.</i> • <i>“The model is well clarified with simple understandable terms”</i> • <i>“The model is clear and the researcher has indicated guidelines developed to make it clearer”</i>

	<ul style="list-style-type: none"> • <i>“The model is clear in terms of the structure, consistency and terms used in the development”</i> • <i>“The relationship between concepts and the components of the practice oriented theory is clear”</i> • <i>“The word “efficient” on the outcome should be replaced with “improved”</i>
2. Simplicity of the model	<ul style="list-style-type: none"> • <i>“It is comprehensive but concepts are understandable”</i> • <i>“The model is brief, simple and easy to follow”</i> • <i>“It is understandable and the structure is clear”</i> • <i>“The arrows pointing from conducive environment need to face the direction of the dynamics”</i> • <i>“The model is comprehensive and may not be easily understandable”</i> • <i>“The positions of the concept “procedure” need to be moved on top”</i>
3. Generality of the model	<ul style="list-style-type: none"> • <i>“The model is specific for the teachers and it is well applicable”</i> • <i>“Well done on this part”</i> • <i>“The scope, application and purpose of the model are acceptable in facilitating public health management of hygiene and sanitation in schools”</i> • <i>“Well defined scope, application and the purpose”</i>
4. Accessibility of the model	<ul style="list-style-type: none"> • <i>“The model can be well applied”</i> • <i>“It is easy to understand with the assistance of the guidelines”</i> • <i>“The model will be easily implemented by different stakeholders and contribution to behavioural changes on hygiene and sanitation”</i> • <i>“The model can be tested in proposed environment”</i>
5. Importance of the model	<ul style="list-style-type: none"> • <i>“The model will be useful”</i> • <i>“It is very useful in promoting sanitation and hygiene practices”</i> • <i>“It is useful, new ideas were developed”</i> • <i>“The model presented will be useful and has generated new concepts in the management of hygiene and sanitation in schools”.</i> • <i>“New ideas and concepts were created in public health”.</i> • <i>“The model is very much useful among school children who are at risk of illnesses”</i>

6.4 SUMMARY

This chapter presented the model. The overview of the model, its purpose, concept relations, definitions, structure and the assumptions of the model were discussed. The four steps, which directed the activities of the implementation, were elaborated on. Evaluation of the model was done according to Chinn and Kramer’s (2011) guide for a critical reflection of a model. The next chapter discuss the guidelines that operationalise the model.

CHAPTER 7

GUIDELINES FOR OPERATIONALISATION OF A COLLABORATIVE MANAGEMENT OF THE ENVIRONMENT MODEL

7.1 INTRODUCTION

Chapter 6 described the process and structure of the model, as well as its evaluation. This chapter presents the guidelines for the operationalisation of the model to facilitate sanitation and hygiene practices among primary schools. The guidelines are developed as activities and strategies to address the challenges that serve as hindrance towards effective hygiene promotion in primary schools following the collaborative problem-solving model, which is a community-based approach for stakeholders aimed at attaining long-lasting resolutions to local environmental or public health issues (US EPA, 2008). These guidelines aimed at assisting with the facilitation of the management of sanitation and hygiene practices in primary schools through the management of a collaborative environment model. The guidelines are presented in terms of objectives, strategies and activities to provide direction to the teachers and stakeholders involved in the facilitation process of the model.

7.2 GUIDELINES FOR THE FACILITATION OF SANITATION AND HYGIENE PRACTICES AMONG PRIMARY SCHOOLS.

The guidelines, to operationalise the model, are presented as recommendations based on the achievement of the objectives for the four steps of the model (Figure 7.1) identified in the previous chapter.

- Step 1: Teachers facilitating the management process.
- Step 2: Teachers forming collaboration with stakeholders.
- Step 3: Teachers maintaining a conducive environment.
- Step 4: Improved management of sanitation and hygiene practices (outcome).

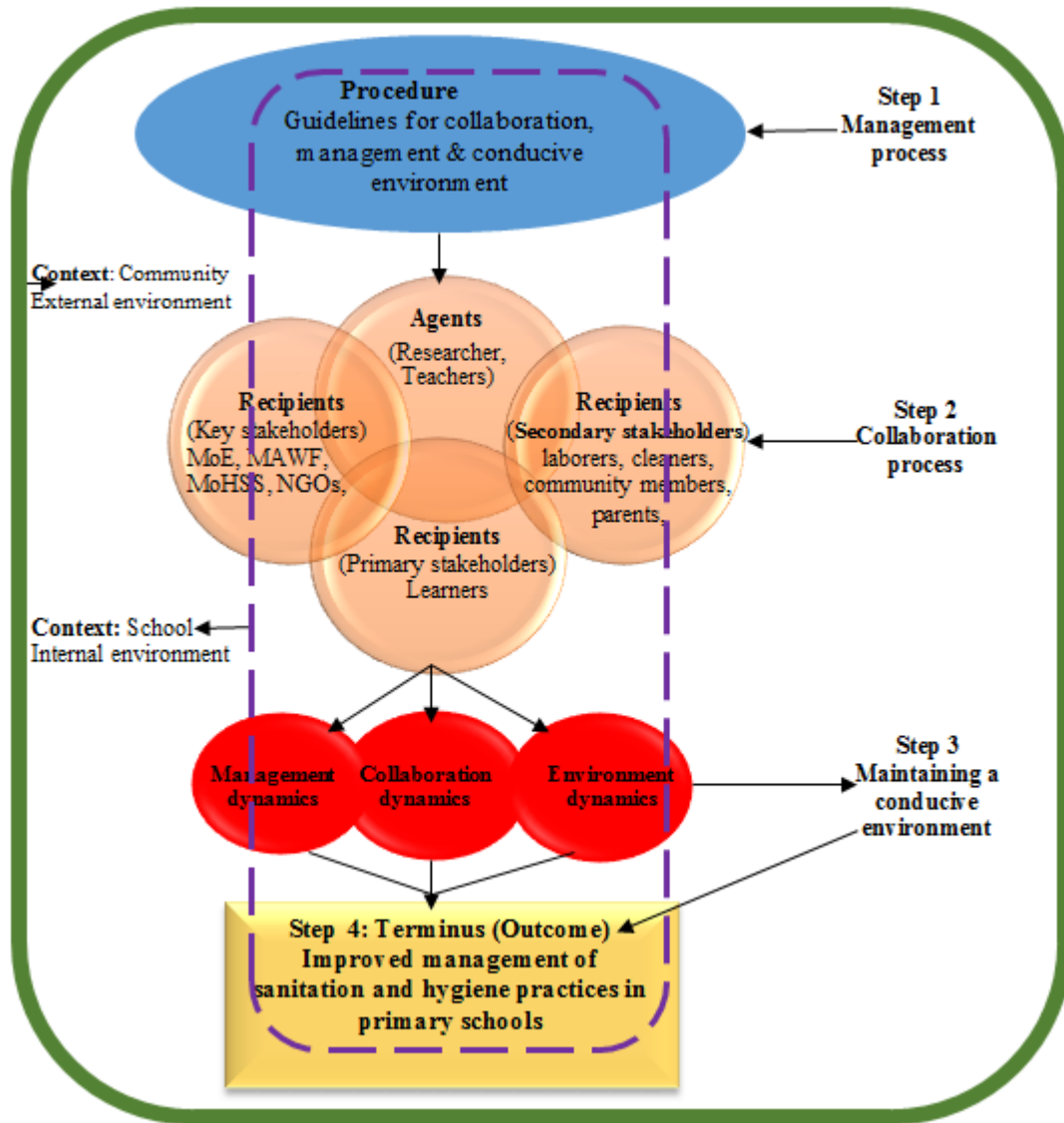


Figure 7.1 A management of the collaborative environment model to facilitate the management of sanitation and hygiene practices in primary schools.

7.2.1 How to form collaboration with stakeholders.

7.2.1.1 Objective

The objective of this step is for the teachers to plan and execute a collaboration process with stakeholders involved in sanitation and hygiene promotion within community and school environments. Collaboration is the working practice whereby individuals work together towards a common purpose to achieve the desired benefit. During this step, the teachers, as agents, would assess readiness for collaboration among stakeholders in terms of the antecedents stated in Table 5.7, which are prerequisites to the formation of collaboration.

7.2.1.2 Strategies and activities

The following strategies and activities would be executed to address the collaboration challenges in both environments: planning, leadership, decision-making, interactive, communication, shared vision, commitment, cooperative arrangement, working together, involvement intellectuals, expertise and skills. At this stage, teachers, as facilitating agents, would try to understand stakeholders' roles and explore together solutions towards the challenges that necessitated collaboration.

❖ Activities for planning, leadership and decision-making

The following activities should be carried out to ensure efficient planning, leadership and decision-making at the initial stage.

- Teachers should identify stakeholders and communicate to them the intention and areas for collaboration to ensure that they (the stakeholders) have a better understanding of the objectives of decisions and the issues surrounding the collaboration.
- Enable and lead a well-structured involvement of all stakeholders.
- Create a sense of ownership of decisions and measures.

- Plan resources that will be required.
- Identify and schedule suitable decision-making stages and methods for involving all the different stakeholder groups.
- Develop an overall cooperation strategy and principles for stakeholder involvement.
- Create a planning culture based on regular communication, mutual consultation, and cooperative decision-making.
- Render the decision-making process more democratic, give team members and local communities the power to influence decisions and, as a result, a greater sense of responsibility.

❖ **Activities for interaction and communication**

The teacher, as a facilitating agent, should ensure that communication among team members is clear, open, honest, and respectful. Team members should be allowed to express their feelings in a way that prevents a build-up of hidden anger or distrust. Lamb (2017) identified the following characteristics of collaboration, as contributions, to effective communication among the group. It is the teachers' role to ensure that they uphold these characteristics during the collaboration process with stakeholders.

- Listen to team members and acknowledge all viewpoints.
- Be empathetic to the feelings of group members.
- Speak up to clarify peer statements.
- Contribute new perspectives to the group.
- Commend the good work of group members.
- Offer constructive criticism of group members.
- Encourage ongoing evaluation of group collaboration.

- Facilitate group consensus or a decision-making process.
- Involve all members in the group.
- Promote a positive atmosphere for group work.
- Refrain from dominating discussions.

❖ **Activities for shared vision**

After the team has clarified their mission, the teachers need to explain the reason they are together and what they intend to accomplish in the future. Teachers, in collaboration with stakeholders, should formulate the vision statement, which is specific, measurable, achievable, realistic and time-bound. There should be a mechanism in place with which to evaluate the vision.

❖ **Activities for commitment**

Commitment refers to the hard work and loyalty that someone gives to an organisation, activity, or person. In order to improve commitment among collaborators, the teachers should clarify to stakeholders what principles they must uphold in order to remain a valued member of the team. Employing the following activities would help improve commitment among team members:

- ***Ask for the commitment:*** Ask how each member will ensure commitment to the team.
- ***Know members' expectations and needs:*** Assess stakeholders' expectations such as what they expect to gain from the collaboration, their short and long term goals.
- **Understanding** the team's motivations will help teachers find the best way to motivate them to work hard.
- ***Clarify roles and responsibilities:*** Discuss the strengths and talents each individual and/or the team brings to the collaboration.

- Teachers should find out what skills and talents are possessed by stakeholders, the roles and responsibilities they will undertake, and if it is possible to assume these responsibilities with available resources.
- ***Set clear expectations from the start:*** Teachers communicate to the stakeholders on what they are expected to do and achieve as early on as possible. Making the goals clear would help stakeholders set clear directions.
- ***Train appropriately:*** Teachers should not assume that stakeholders have the right skill sets, they should find out. If necessary arrangements should be made to train or give them information. Having this done early is much less costly than realising their inabilities when it is too late.
- ***Ensure effective communication:*** Effective communication between and among team members avoids frustration. Make sure team members know what their roles are, who to go to for help, and who is responsible for doing what within the team.
- ***Reward regularly:*** Appreciate and recognise team members' efforts. This can be at a personal or team level. When your team feels proud about their contributions, it makes them more enthusiastic and more committed.

❖ **Activities for cooperative arrangement and work together**

Friedman (n.d) has identified some tips that can help teams work together and cooperatively: these are discussed below.

Respect individuality: When a group of people with different skills and personalities are brought together to accomplish a task, understanding what each team member brings to the table is critical. Each team member needs to contribute his or her strengths in order for the team to function as one.

Encourage creativity: Encourage creativity from every team member on every project.

Cultivate a supportive environment that is open to new ideas. Encourage brainstorming to throw ideas out without placing judgement, or refrain from negative comments.

Define roles: Effective teams require clearly-defined roles so that everyone knows what he or she is responsible for; this should result in better team cohesion and productivity.

Don't settle: Know what you want in terms of team members, and keep looking until you find the candidates that are a perfect fit.

❖ **Activities for involvement**

To ensure successful involvement of stakeholders, teachers should consider the following activities.

- Take into account the different interests and activities of the different stakeholders; consider involving stakeholders at each stage of the model, from implementation to evaluation, to ensure that their concerns are addressed.
- Teachers' collaboration with stakeholders is to address collaboration, management and environmental challenges that hinder the promotion of sanitation and hygiene practices in primary schools. By giving information pertaining to the objectives of the model, teachers help the stakeholders to better understand the problems and possible solutions.
- Consider the level of general knowledge among stakeholders as well as the complexity of the issue.
- Choose the level of stakeholder involvement, for example, the degree of involvement stakeholders are expected to commit to do.

❖ **Activities for sharing resources, intellectuals, expertise and skills**

Sharing is the ability to share or give. In this collaboration, teachers should assess team members for their willingness to share resources, ideas or opportunities together for the same purpose of achieving a common interest. Everyone brings something to the table, whether it is intellectual, creative, or finances. It is therefore important for teachers to create opportunities for stakeholders to learn from each other by exchanging information and experiences.

7.2.2. How to facilitate the management process.

7.2.2.1 Objective

This objective aimed at assisting teachers with strategies and activities to manage the collaboration process and the environment successfully. The teachers will serve as managers to manage the facilitation of the model implementation. The management process will only be successful if the antecedents, indicated in Table 5.6, are present.

7.2.2.2 Strategies and activities

The following are strategies and activities to address the management process: planning, organizing, directing, and coordinating activities and resources through leadership, supervision, communication and administrative skills. Management processes can be successfully attained by being transparent, flexible, and authentic. Employing these strategies and activities will help teachers, together with stakeholders, to address the management challenges.

❖ **Activities for planning**

In their toolkit for involving stakeholders: organising successful consultations, Civitas (2011) identified the following strategy for planning and developing engagement with stakeholders, which is a great guide for teachers.

- Plan your timeframe and budget. As managers, teachers should plan the timeframe according to objectives, in terms of how long they should wait before they see the impact of the team effort.
- Activities should include suggestions for raising funds at community and school level to complement the budget from MoE, which is not always sufficient to cater for school needs.
- As part of the management process, teachers, together with key and secondary stakeholders, should suggest ways on how to provide essential supplies for hygiene promotion such as soap for handwashing, toilet paper, cleaning materials for sanitation facilities, dust bins for safe waste disposal, safe dumping site for waste disposal, and cups or bottles for drinking water.
- To make the most efficient use of resources and time, and to ensure the best results, it is crucial to select the right level of involvement for each stakeholder.
- Ensure the appropriate identification of all relevant stakeholders and involve them in all stages of the process; take into account the different interests, resources and capacities of stakeholders.
- Provide sufficient transparent information to enable informed stakeholder involvement and to prevent negative perceptions (such as secrecy or corporatism).
- Implement a follow-up mechanism to ensure that stakeholders' requirements are taken on board, and plan for the outcomes of each participation procedure to be fed back into the decision-making process; and consider different involvement tools and techniques and select the most suitable for your local context.

❖ **Activities for organising, directing and coordinating activities**

- To ensure smooth coordination of activities, teachers should keep important deadlines in mind, as they can limit the scope of their involvement activities.
- Identify and communicate with stakeholders.
- Analyse their objectives and resources available.
- Enable a well-structured system that ensure involvement of all stakeholders.
- Identify and schedule suitable decision-making stages and methods for involving all the different stakeholder groups.
- Develop an overall cooperation strategy and principles for stakeholder involvement.
- Create a planning culture based on regular communication, mutual consultation and cooperative decision-making.
- Prepare and follow up with stakeholders for all events.

❖ **Activities for making decisions**

In order to promote consensus in joint decision-making, teachers should take the following issues into consideration.

- Identify controversial issues and difficulties before a decision is made.
- Bring together different stakeholders with different opinions.
- Enable an agreement to be reached jointly and prevent opposition among members at a later stage, which can slow down the decision-making process.

7.2.3 How teachers maintain a conducive environment

7.2.3.1 Objective

The objective of this step aims at guiding teachers and stakeholders about strategies and activities to undertake that can assist in maintaining a conducive environment for sanitation and hygiene practices. Teachers, as agents, should ensure that the antecedents, stated in Table 5.8, are present, as these are a prerequisite to a conducive environment.

7.2.3.2 Strategies and activities

The following strategies and activities: diversity, safety and respect, motivation, recognition, continuous networking, interaction among stakeholders support, once implemented will address the environmental challenges.

Strategies to promote safety

Safety in the school environment can be expressed in terms of physical, social and psychological safety. Learners (primary stakeholders) should feel safe when using the sanitation facilities in a school environment. Safety will be achieved, if environmental challenges, which may make schools unsafe places, whereby diseases may be transmitted with mutually reinforcing negative impacts for the children, their families and overall development, are addressed (UNICEF, 2013).

The following strategies may be implemented in order to promote safety in the schools' sanitation facilities and environment:

- Teachers, together with secondary stakeholders, should address and explore different cultural background of learners that affect hygiene promotion.
- Together they can explore interrelated elements such as social, cultural, biological and physical factors that have an influence on the practice of sanitation and hygiene practices in the community and at school, by addressing the misconceptions and malpractices, if any.
- Teachers, together with secondary and key stakeholders, should address challenges related to maintenance of the sanitation facilities.

- Challenges such as dilapidated toilet facilities that are not safe to use, old and unhygienic conditions of school buildings and lack of privacy for some toilet facilities without doors, affect the learners' safety.
- Primary stakeholders' safety is affected given the challenges stated above; hence a maintenance plan should be discussed among the collaborators.
- Teachers should train and educate learners, especially young learners, on how to correctly use the toilet facilities to avoid unhygienic (dirty, messy, smelly, disgusting) toilet facilities that are unsafe for use by other learners.
- Teachers should explore and address the KAP of all stakeholders involved by giving the correct information through health education and training and by correcting malpractices.
- Together with stakeholders, teachers should develop a training module to educate the communities on the importance of sanitation and hygiene.
- They should design teaching and information material in local languages.
- The vision, mission and value statement of WASH should clearly indicate how safety should be ensured in the school environment.
- Teaching material, such as pamphlets and posters, should be displayed both in class rooms and sanitation facilities as reminders to uphold hygienic status among learners.
- The roles and responsibilities of all stakeholders in ensuring safety in communities and schools should be clearly spelt out.
- Clear policies and guidelines should be developed which spell out clearly the supervision of sanitation in schools, proper refuse disposal site, and provision of handwashing facilities.
- Facilities provided are kept clean, are durable and the maintenance is well organised.
- The water and sanitation facilities are child, gender and age friendly.

❖ **Strategies to promote respect**

- Teachers should support stakeholders, by encouraging them to be positive and committed to activities that favor hygiene promotion.
- Teachers support learners by providing guidance on the importance of a healthy and hygienic school environment including toilet facilities.
- Teachers can support collaborators by showing positive regard, warmth, empathy and acceptance.
- Through communication, teachers can establish trust by being honest, open and respectful of collaborators' contributions, diversity and level of expertise

❖ **Strategies to promote diversity**

- Teachers can embrace diversity among stakeholders by making the collaboration more welcoming and productive for everyone, conducting sensitivity training or orientation that addresses diversity to help partners work more effectively.
- Effective sensitivity training focuses on activities that recognize, and explain, aspects of different customs, beliefs, value systems and cultural takes on both personal and professional behavior (McQuerrey, 2017).
- Teachers should discourage thoughtless comments, and encourage appreciation of differences and similarities among collaborators.

❖ **Strategies to promote motivation and recognition**

- Team members will feel motivated if their effort and contributions are recognized.
- Teachers can motivate collaborators by setting clear, small yet measurable goals that can be easily achieved, and gradually add more goals. Nothing is more demotivating than working on goals without visible progress.
- Positive reinforcement is highly motivating instead of focusing on the wrong aspects. An example, if learners have managed to wash their hands after toilet use, praising them will motivate them to continue with the newly learned habit.
- Dickson (2016) emphasized the importance of understanding the goals one is after, in order to be motivated to achieve them. Understanding starts with transparency, and ends with clarity. Without clarity, transparency begins to lose its effectiveness and motivational power.
- Teamwork is one of the greatest motivators; it should be encouraged among team members all the time. Pulling together, seeing everyone's hard work and yours coming together is an incredible feeling that ups motivation.

7.2.4 How to effectively practice sanitation and hygiene (outcome).

7.2.4.1 Objective

The objective of this guideline is to evaluate and give feedback to the stakeholders about progress made towards achieving the goals. Activities of this objective aimed at sustaining the learned good practices aimed at improving the management of sanitation and hygiene practices. Therefore, during this step teachers together with stakeholders will evaluate the actual practice in the school environment in relation to the objectives and activities set.

7.2.4.2 Strategies and activities

At this stage, the teachers will monitor and evaluate the implementation of the activities laid out in the first three steps. This process will assist in determining progress made, areas of improvement if any, resources needed and so forth.

In broad terms, this step aims at determining if the overall goal of the model is achieved and, to determine ways to maintain the desired outcome.

❖ Activities for evaluation and follow-up

Evaluation and follow-up should be given particular attention throughout the process. To make evaluation effective, teachers should:

- Try to act as much as possible on the results of the stakeholder consultation and keep stakeholders informed of how their input is used.
- Evaluate both the process and the outcomes of the consultation.
- Ensure that indicators for evaluation are defined before the start of the consultation process, to allow for collection of necessary information along the way.

A process evaluation can be carried out by all stakeholders involved through an evaluation meeting to determine the progress towards achieving goals. A complete evaluation is needed to cover both the process and the outcomes of the stakeholders' consultation and achievements compared against the goals that were initially set. Clear evaluation strategies, which include the most important indicators of success, should be made.

Below is a list of sample indicators, adopted from Civitas (2011) that should be used to structure the evaluation process.

- Who took the initiative for stakeholder consultation?
- Who was involved in elaborating the content? Specify each role.
- Was a budget defined? What for?
- Were some tasks outsourced?
- Was the timing appropriate?
- How was/were your target set?
- Were the resources enough? What resources were needed?
- Was this a good way?
- Were the right information materials available in time?
- What activities were carried out?
- What progress was made in terms of collaboration, management and environmental challenges?
- What were the surrounding challenges?
- Anything that could have been done differently?
- What type of people participated in the evaluation process?
- How do the various stakeholders perceive the progress made?

❖ **Activities for feedback**

After evaluation, teachers should provide feedback to the stakeholders on the outcome, by taking the following factors into consideration.

- The concrete result of the collaboration process.
- Ways of providing feedback to stakeholders should be determined.
- After the feedback is given, stakeholders should decide on further involvement and follow-up.
- The most important factors for success (or failure) should be highlighted and noted for replication or adjustment, if need be.

- Has the collaboration process resulted in the better outcome?

The feedback should be specific, timely, non-judgemental, without generalisations, and based on observable behaviour. It should be descriptive when stating views and not be evaluative or emotionally manipulative.

7.3 SUMMARY

This chapter presented the guidelines for the implementation of the model, which were discussed in terms of objective and activities based on the four steps of the model. The next chapter discusses the conclusion, justification, limitations, and recommendations.

CHAPTER 8

CONCLUSION, LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

8.1 INTRODUCTION

The previous chapter presented the guidelines for the operationalisation of the model to facilitate sanitation and hygiene practices among primary schools. This chapter evaluates whether the aim and objectives of this study were realised. Conclusion is made and limitations are discussed. Recommendations are made based on the findings, with regard to operationalise the model in practice.

8.2 CONCLUSIONS OF THE STUDY

The purpose of this study was to develop and describe a model that would facilitate the management of sanitation and hygiene practices among primary schools in the Ohangwena region. The objectives of the study were to assess the conditions of sanitation facilities, describing the knowledge, attitudes and practices of schools learners on hygiene practices, and to explore and describe the teachers' perceptions of hygiene promotion in schools. The results from the objectives translated into the development of the conceptual framework and the "collaborative management of the environment model to facilitate the management of sanitation and hygiene practices amongst primary schools in Ohangwena region. Lastly, the guidelines to operationalise the the mode were developed and described.

To realise the objectives stated above, a theory-generative research and a mixed-method design of quantitative and qualitative was used. The study was conducted in four phases namely: the concept analysis, construction of the relationship statements, description of the model, and guidelines to operationalise the model.

8.2.1 Phase 1: Concept analysis

This phase involved the identification of the main concepts. Concept analysis was done by assessing the conditions of sanitation facilities, describing the knowledge, attitudes and practices of schools learners on hygiene practices, and exploring and describing the teachers' perceptions of hygiene promotion in schools. Stratified multi-staged sampling was used to select ten primary schools in five circuits, using a proportionate sampling method. A checklist and a questionnaire were used to collect quantitative data from sanitation facilities and (n=450) school learners in 10 primary schools.

Simple random sampling was used to sample learners in grades 5, 6 and 7 learners who were seven (7) years and older. Learners gave assent to participate in the study, while parents and teachers, gave permission as 'loco parentis'. Quantitative data were analysed with the Statistical Package for Social Sciences (SPSS) version 22, while Tesch's method of open-coding was used to analyse qualitative data. Teachers were purposively sampled and signed a consent form to participate in the study. Five focus group discussions (FGDs) were conducted with teachers to collect qualitative data. Verbal consent was given to audiotape the FGDs, they were transcribed verbatim.

The findings proved that a combination of challenges implicate the management and promotion of sanitation and hygiene practices stemmed from poor collaboration between the schools and parents and inefficient management of resources and facilities in schools. The three main concepts of collaboration, management, and environment, were identified and analysed.

8.2.2 Phase 2: Construction of the relationship statements

The conceptual framework based on the three main concepts from concept analysis and the six survey list (agent, recipient, context, dynamic, procedure and terminus) of the practice oriented theory by Dickoff et al (1968), was developed.

8.2.3 Phase 3: Descriptions of the structure, process and evaluation of the model.

A collaborative management of the environment model, to facilitate the management of sanitation and hygiene practices among primary schools in Ohangwena region, was developed and described (Figure 6.1 in Chapter 6) and described, based on Chinn and Kramer's (2008) strategies for theory description. The model was described in terms of its purpose, concepts, definitions, structure, relationships and assumptions. Evaluation of the model was done by expert researchers to validate whether the model brought about the desired outcome necessary to meet the study's objectives, with regard to its clarity, simplicity, generality, accessibility and its usefulness.

8.2.4 Phase 4: Guidelines for operationalizing the model

The guidelines for operationalizing the model were formulated and presented in terms of objectives, strategies and activities to provide direction to teachers and stakeholders involved in the facilitation process of the model in primary schools. The guidelines were developed based on the four objectives of the model, to address the challenges that serve as a hindrance towards effective sanitation and hygiene promotion.

Therefore, this research process led to the justification that the purpose of this study was accomplished by developing a 'of a collaborative management of the environment' model.

8.3 LIMITATIONS

The sample size as well as participants for quantitative and qualitative were not the same.

The management of the collaborative environment model, to facilitate the management of sanitation and hygiene practices among primary schools, was not tested in a school context before one can claim its suitability.

Since the developed model based on the findings from primary schools in the Ohangwena region only, it might not be applicable to other regions as they may not experience the same challenges as the Ohangwena region.

The researcher preferred to conduct FGDs at all ten sampled schools, however, practical challenges such as time and availability of teachers for FGDs, made it impossible. There was limited literature on the teachers's perception on hygiene promotion in schools. It can however be viewed as an added value to the limited existing literature to subsequent researchers in the same area. Guidelines developed for the implementation of this model have not yet been tested in the practical arena, hence their actual practicality is not known.

8.4 RECOMMENDATIONS

The following recommendations are made in terms of their application to the MoE, public health and nursing practice, as well as future research.

8.4.1 Recommendations for the MoE

The MoE should:

- The model developed is directed to facilitate the management of sanitation and hygiene in the school content. Since not all stakeholders on the ground are actively involved in the whole process of hygiene promotion, the MoE should advocate for collaboration of all stakeholders to ensure that basic structures and resources, necessary to facilitate management of sanitation and hygiene, are in place and adequately managed. Involvement of communities may greatly contribute to the success of WASH programme in schools.
- Effective management of sanitation and hygiene practices in schools is important in disease prevention and learning. If this is to be realised, all the teachers, learners and school labourers should be trained in WASH.

- Improve monitoring and reporting on WASH activities in schools that have rolled out WASH program.
- Form school health committees that will foresee the implementation of school health plans, and supervise, monitor and evaluate activities that are related to health to include hygiene promotion.
- In collaboration with other sectors, such MoHSS, MAWF, etc., the MoE should develop a training module and leaflets to educate the communities on the importance of sanitation and hygiene.
- Create awareness and sensitise everybody involved by making use of national broadcasting corporation, information, communication and technology (ICT) sectors, other radio stations, as media for public education on the importance and benefits associated with sanitation and hygiene on the individual and the communities at large.
- The MoE should consider making sanitation and hygiene content part of the curriculum that can be taught to learners and students at primary, secondary and tertiary levels of education and evaluated in the examination, but more specifically physical evaluation of learners' personal hygiene.
- The guidelines developed in this study need to be tested in a school context to determine their practicality and feasibility. The MoE in collaboration with the researcher may determine how to best pilot the guidelines.
- Design a reward system to award schools, teachers, learners, labourers, and communities that are effectively managing sanitation and hygiene practices.

8.4.2 Recommendations for public health and nursing practice

- The Ministry of Health and Social Services' (MoHSS) school health programme should be strengthened to support the schools in the area of sanitation and hygiene.
- MoHSS, in collaboration with stakeholders such MoE, WHO, UNICEF, et cetera, should design teaching and information materials on sanitation and hygiene in local languages to reach both public and school communities.

8.4.3 Recommendations for future research

- For comparison purposes, the same study may be replicated to primary schools in other regions in Namibia to determine whether there are any similarities in challenges or not, and if possible to adopt the same model.
- Future research in this area, especially in relation to learners's practice of hygiene and sanitation at home, is recommended.

8.5 SUMMARY

This chapter described the aim of the study in terms of how the three objectives were evaluated. Through this research, a 'management of a collaborative environment' model was developed to enhance the facilitation for the management of sanitation and hygiene practices among primary schools in the Ohangwena region. Conclusion, limitations and recommendations were made. The researcher hopes that if this model is applied, it will contribute to an effective hygiene promotion and management of sanitation and hygiene practices not only among primary schools in Ohangwena region, but in other regions nationally.

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ANNEXURE A: PERMISSION LETTER FROM UNAM

University of Namibia, Private Bag 13301, Windhoek, Namibia
248 Mainway Ndamsilago Avenue, Panseveloop
☎ +264 61 206 3111, URL: <http://www.unam.edu.na>



19 February 2015

TO WHOM IT MAY CONCERN

RE: RESEARCH PERMISSION LETTER

1. This letter serves to inform that student: **Anna P K Shilunga** (Student number: **9115749**) is a registered student in the School of Nursing and Public Health at the University of Namibia. Her research proposal was reviewed and successfully met the University of Namibia requirements.
2. The purpose of this letter is to kindly notify you that the student has been granted permission to carry out postgraduate studies research. The School of Postgraduate Studies has approved the research to be carried out by the student for purposes of fulfilling the requirements of the degree being pursued.
3. The proposal adheres to ethical principles.

Thank you so much in advance and many regards.

Yours truly,

Name of Main Supervisor: **Dr H Mitonga**

Signed: _____

Dr. C. N.S. Shaimemanya

Signed: _____

Director: School of Postgraduate Studies
Tel: 2063523
E-mail: cshaimemanya@unam.na

ANNEXURE B: ETHICAL CLEARANCE CERTIFICATE FROM UNAM



ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SONPH/16/2015

Date: 10 February, 2015

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Management of sanitation and hygiene practices among primary schools in Ohangwena Region Namibia: A Model development

Nature/Level of Project: Doctorate

Researcher: ANNA P. K. SHILUNGA

Student Number : 9115749

Host Department & Faculty: School of Nursing and Public Health

Supervisor : Dr. H. Mitonga ; (Main) (Co) Dr. H. Amukugo

Take note of the following:

- (a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
- (b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
- (c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
- (d) The UREC retains the right to:
 - (i). withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
 - (ii). request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

A handwritten signature in black ink, appearing to read 'Mapaura', is written over a faint circular stamp.

Prof. Mapaura
UNAM Research Coordinator
ON BEHALF OF UREC

ANNEXURE C: PERMISSION LETTER FROM OHANGWENA DIRECTORATE FOR EDUCATION



OHANGWENA REGIONAL COUNCIL
DIRECTORATE OF EDUCATION
DIRECTOR'S OFFICE

1st Floor Greenwell Complex Private Bag 88005 Eruhuna Tel: 065 – 290 291 Fax: 065 -290 224

Enquiries: Magano Gases
Email: mcmotto@yahoo.com

21 April 2015

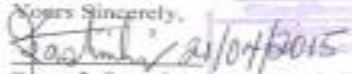
Ms. Anna P.K. Shilunga
University of Namibia
School of Postgraduate Studies

Dear Ms. Shilunga,

Subject: Request to carry out Research in Ohangwena Region

1. Receipt of your letter on the above subject matter is hereby acknowledged.
2. Permission is granted for you to carry out the research on "Management of sanitation and hygiene practices amongst primary schools in Ohangwena Region, Namibia: a model development.
3. Embarking on a case study as yours is indeed welcomed as it is done with a view on sanitation and hygiene that will definitely be a tool to a conducive working environment when put into practice.
4. As this is directly affecting the learners, it will be appreciated, it is very critical that learners stay up to date with the learning process.
5. This office hereby wishes you the best in your research and salutes you for the initiative you have taken to go through with the study.

Yours Sincerely,


Sanet L. Steenkamp
Director: MoE
Ohangwena Region



ANNEXURE D: CHECKLIST FOR ASSESING SANITATION FACILITIES.

OBSERVATION CHECKLIST TO ASSESS THE CONDITIONS OF SANITATION FACILITIES IN PRIMARY SCHOOLS.

SCHOOL'S DEMOGRAPHIC DATA			
No	Questions	Coding categories	Skip to
1.1	Name of school	.....
1.2	Name of city/town/village	.....
1.3	Location of school	Urban <input type="checkbox"/> 1 Peri Urban <input type="checkbox"/> 2 Rural <input type="checkbox"/> 3	
1.4	School's circuit	.....
1.5	Classification of school	Government <input type="checkbox"/> 1 Private School <input type="checkbox"/> 2 Mixed <input type="checkbox"/> 3	
1.6	Number of years since school was established	.....
1.7	Total number of learners	Boys:..... <input type="checkbox"/> 1 Girls:..... <input type="checkbox"/> 2	
1.8	Number of learners leaving with disability	Boys:..... <input type="checkbox"/> 1 Girls:..... <input type="checkbox"/> 2	

QUESTIONS ON THE CONDITIONS OF SANITATION FACILITIES		
	QUESTIONS	CODING CATEGORIES
1.9	What are the types of toilet facilities at the school?	No toilet facilities <input type="checkbox"/> 1 Flush toilet <input type="checkbox"/> 2 Composting toilet <input type="checkbox"/> 3 Bucket <input type="checkbox"/> 4 Ventilated Improved Pit (VIP) latrine <input type="checkbox"/> 5 Pit latrine with slab <input type="checkbox"/> 6 Pit latrine without slab <input type="checkbox"/> 7 Other (specify) <input type="checkbox"/> 8
1.10	Where are the toilets located?	Within the school building <input type="checkbox"/> 1 Out of the school plot (Separate from the school building) <input type="checkbox"/> 2
1.11	If the toilet is located outside the school, what is the distance in metres?	.....
1.12	Are there separate toilet facilities for boys and girls?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
1.13	Number of toilets available for boy learners?	.....
1.14	Number of toilets available for girl learners?	.....
1.15	Number of toilets available for teachers?	.....
1.16	Is there a toilet facility to accommodate learners with physical disabilities?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
1.17	How is the condition of the toilets?	All in good condition: no improvement necessary <input type="checkbox"/> 1 Fair condition: minor repairs are necessary <input type="checkbox"/> 2 Poor condition: major repairs are required <input type="checkbox"/> 3

		Very poor condition: complete (re)construction require <input type="checkbox"/> 4	
1.18	Where is personal cleaning material disposed of after use?	Inside the toilet receptacle <input type="checkbox"/> 1 Outside the toilet <input type="checkbox"/> 2 Other (specify)..... ... <input type="checkbox"/> 3	
1.19	Is there a toilet paper in toilet?	Yes (present) <input type="checkbox"/> 1 No (absent) <input type="checkbox"/> 2	
1.20	Is there any soap present in toilet?	Yes (present) <input type="checkbox"/> 1 No (absent) <input type="checkbox"/> 2	
1.21	How is the condition of the immediate area around the toilet building and entrance to toilet?	Good maintenance (cleaned, free from bad smell, free of trash, dirt, waste water, tall grass, etc.) <input type="checkbox"/> 1 Poor maintenance (Dirty, presence of trash, bad smell, mud, waste water and/or tall grass etc.) <input type="checkbox"/> 2 Require urgent intervention (Extremely dirty, unsightly litter, waste water, bushy) <input type="checkbox"/> 3	
1.22	Is water available at school?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	
1.23	What facilities does the school provides for hand washing?	Wash basins with tap running water <input type="checkbox"/> 1 Wash basins with bucket accessed water <input type="checkbox"/> 2 Other (specify) <input type="checkbox"/> 3 None <input type="checkbox"/> 4	
1.24	Where is the hand washing facility located?	Inside the toilet unit <input type="checkbox"/> 1 Immediately outside the toilet unit <input type="checkbox"/> 2 Outside in the school plot far from the toilet unit <input type="checkbox"/> 3 Inside the classrooms <input type="checkbox"/> 4 Outside the school building or plot <input type="checkbox"/> 5 Other (specify) <input type="checkbox"/> 6	
1.25	Is there any evidence of effective hand washing practice?	Yes (present) <input type="checkbox"/> 1 No (absent) <input type="checkbox"/> 2	

1.26	If yes/present, tick all that is available	Running water <input type="checkbox"/> 1 Water in the bucket <input type="checkbox"/> 2 Soap <input type="checkbox"/> 3 hand dryers <input type="checkbox"/> 4 paper towels / tissues <input type="checkbox"/> 5 Reminders for children to wash hands <input type="checkbox"/> 6 Other (specify) <input type="checkbox"/> 7	
1.27	Are there posters, stickers or other signs in the toilets that encourage good hygiene practices?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	
1.28	Are there bins and other equipment for managing wastes?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	
1.29	Who is responsible for cleaning the toilet facilities	Learners only <input type="checkbox"/> 1 Teachers only <input type="checkbox"/> 2 Hired cleaners <input type="checkbox"/> 3 Other(Specify)..... <input type="checkbox"/> 4	

ANNEXURE E: LEARNERS QUESTIONNAIRE

QUESTIONNAIRE FOR ASSESSING THE KNOWLEDGE, ATTITUDES AND PRACTICES OF SCHOOL LEARNERS ON SANITATION AND HYGIENE PRACTICES.

Identification code:.....

School Name.....

Circuit.....

No	Questions	Coding categories	Skip to
Answer all the questions by: ticking in the box correct with your correct answer and by writing your own answer in the dotted line provided.			
SECTION A: DEMOGRAPHIC DATA			
1.	Sex	Male <input type="checkbox"/> 1 Female <input type="checkbox"/> 2	
2.	Grade	.....
3.	Age/ date of birth?	.....
SECTION B: QUESTIONS ON LEARNERS' KNOWLEDGE			
Please indicate the extent of your agreement with each one of the following statements. Choose your answer by ticking in one of the box and by writing in the provided space.			
NB: Strongly Agree (SA), Agree (A), Don't know (DK), Disagree (D) and Strongly Disagree (SD)			
4.	g) Human faeces contain germs h) If hands look clean , no need to wash them before eating or after kaka i) Washing hands with water only after toilet use is enough to protect illness j) Playing near the rubbish or waste water is not dangerous k) Kaka in the open/bush can led to spread of illness l) Poor hygiene and sanitation can led to diarrhoea and lung illnesses.	SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1	

SECTION C: QUESTIONS ON LEARNERS' ATTITUDES

Please indicate the extent of your agreement with each one of the following statements. Choose your answer by ticking in one of the box and by writing in the provided space.

NB: Strongly Agree (SA), Agree (A), Don't know (DK), Disagree (D) and Strongly Disagree (SD)

5.	a) Hands should be cleaned before eating at school and at home b) Hands should be cleaned after defecation c) Hands should be cleaned after blowing nose with plain hands d) It is my duty to keep the toilet clean. e) It is my duty to keep the school environment clean.	SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1 SA <input type="checkbox"/> 5 A <input type="checkbox"/> 4 DK <input type="checkbox"/> 3 D <input type="checkbox"/> 2 SD <input type="checkbox"/> 1	
6.	Do you use wash your hand at school?		Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
7.	If no, state why are you not washing your hands	..... ..... .....
8.	Do you spit on ground?		Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
9.	If yes, why (state why)?	..... ..... .....

SECTION D: QUESTIONS ON LEARNERS' PRACTICES

Please indicate the practices/experiences with each one of the following statements by choosing the most suitable answer.

10.	Do you use a toilet at school?		Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
11.	If not, why (state why not using it)?	..... ..... .....
12.	Do you pee / kaka outside the school toilet?		Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
13.	If yes, why (state reasons)?	..... ..... .....

14	Do you always wash my hands after toilet use and before eating	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
15	Do you always take care when using the toilet to avoid making it dirty	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
16.	(Observe) Does the learner/child hasClean clothing? a) Clean fingernails? b) Clean face? c) Clean hair? Observe learner for the following: d) Trimmed fingernails? e) Eye discharge? f) Presence of scabies?	VC <input type="checkbox"/> 4 C <input type="checkbox"/> 3 D <input type="checkbox"/> 2 VD <input type="checkbox"/> 1 VC <input type="checkbox"/> 4 C <input type="checkbox"/> 3 D <input type="checkbox"/> 2 VD <input type="checkbox"/> 1 VC <input type="checkbox"/> 4 C <input type="checkbox"/> 3 D <input type="checkbox"/> 2 VD <input type="checkbox"/> 1 VC <input type="checkbox"/> 4 C <input type="checkbox"/> 3 D <input type="checkbox"/> 2 VD <input type="checkbox"/> 1 Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2 Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2 Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2

SECTION E: GENERAL QUESTIONS ON HYGIENE AND SANITATION PROMOTION IN SCHOOL

17.	Are you taught about hygiene and environmental sanitation at school?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
18.	If yes, when (how often)	..... .....
19	Are you being taught how to wash hands to prevent germs?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
20	Are you being shown by the teacher how to wash hands properly?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
21	Do you receive educational materials on Personal Hygiene and Sanitation promotion from school?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
22.	If Yes, which type of material does the school provide?	Brochures <input type="checkbox"/> 1 Posters <input type="checkbox"/> 2 Leaflets <input type="checkbox"/> 3 Other (specify) <input type="checkbox"/> 4
23	Do you think the school is doing enough about hygiene and sanitation?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2
24.	If not, what do you think the school should do?	..... ..... .....

NB: Strongly Agree (SA), Agree (A), Don't know (DK), Disagree (D) and Strongly Disagree (SD)
NB: Very Clean (VC), Clean(C), Dirty (D), Very Dirty (VD)

ANNEXURE F: CONSENT FORM FOR LEARNERS

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY.

TITLE: MANAGEMENT OF SANITATION AND HYGIENE PRACTICES AMONGST PRIMARY SCHOOLS IN OHANGWENA REGION, NAMIBIA: MODEL DEVELOPMENT.

Investigator: Anna PK. Shilunga, Student No: 9115749

Ms. Shilunga has registered for the Doctor of Philosophy in Public Health with the University of Namibia (UNAM). The study is being conducted under the supervision of Dr. H. Amukugo and Dr. H. Mitonga from the Faculty of Health Sciences UNAM. The study and its procedures have been approved by UNAM Postgraduate Studies Committee, UNAM Research Ethical Committee and the Ministry of Education.

One of the objectives of this study is to describe the knowledge, attitudes and practice (KAP) of schools learners in grades five (5) to grade seven (7) on hygiene practices with a purpose to develop a model that will facilitate the management of sanitation and hygiene practices among primary schools in Ohangwena region.

Your child is invited to participate in this study since he/she is in one of grades identified. Although there may be no direct benefit from participating in this study, his/her participation will provide information that might enable decision makers to assist primary schools in matters related to learners' personal hygiene in future. Participation in this study will take approximately 15 minutes which might cause temporal fatigue for you. The procedure includes responding to questions on demographic and personal hygiene at school.

Your child's participation in this study is voluntary; he/she have the right to withdraw at any time should he/she feels so. The study data will be coded so they will not be linked to her/his name. His/her identity will not be revealed during the study or when the findings from the study is being reported or published. The data will be stored in a secure place, and not shared with any other person without his/her permission.

You are free to ask any question about the study by calling: Ms. Shilunga at 061 206 4623 (work) or 0813915767, Dr. H.J. Amukugo 061-206 4617 (work) or Dr. H Mitonga 061-206 5015 (work).

PARENT/LEGAL GUARDIAN’S/LOCO PARENTIS STATEMENT

Documentation of Permission

I have been given a copy of this form. I have read it or it has been read to me. I understand the information and have had my questions answered to my satisfaction. I agree to the participation of my child in this study.

Child’s Assent (7 years and older)

Date

Parent/Legal Guardian’s/Loco Parentis Signature

Date

Researcher’s Signature

Date

ANNEXURE G: FOCUS GROUP DISCUSSION GUIDE

FOCUS GROUP DISCUSSION FOR TEACHERS ON THEIR PERCEPTIONS ON THE EXTENT OF HYGIENE PROMOTION IN THEIR SCHOOL.

1. Welcome

Thanks for agreeing to participate in the focus group discussion. I appreciate your willingness to participate. I am very much interested to hear your valuable opinion on your perception on the extent of hygiene promotion in school.

2. Introduction

My name is Anna Shilunga, a PHD registered student at the University of Namibia. I will be facilitating the focus group discussion.

3. Purpose of the focus group

The purpose of this focus group discussion is to determine your perception on the extent of sanitation and hygiene promotion in school. I hope to learn more things that the Ministry of Education can use to improve hygiene and sanitation conditions in schools.

4. Ground rules

- Everyone should participate. I may call on you if I haven't heard from you in a while.
- There are no right or wrong answers
- Every person's experiences and opinions are important.
- Speak up whether you agree or disagree.
- What is said in this room stays here.
- Information provided in the focus group must be kept confidential
- I am going to tape record the group discussion because I would like to capture everything you have to say.
- Your name will not be identified in the report. You will remain anonymous. However, you will be identified by letters A, B, C during the discussion.
- Please don't have side conversations
- Turn off cell phones or put them on silence if possible.

5. Main question:

What are your perceptions about hygiene promotion in your school?

6. Probing Questions:

1. Is there a hygiene education plan in the school on hygiene behaviour?
2. If yes, is the hygiene education actually happening at school?
3. When does it happen (frequency)?
4. In your opinion, do you think what is done is enough?
5. Is there any arrangement on handling menstrual waste disposal in girls' toilets?
6. What are the challenges towards effective promotion of hygiene and sanitation among school learners in your school?
7. What do you think can be done to improve the situation?

7 Conclusion

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us. There is a short evaluation form that I would like you to fill out. If you have additional information that you did not get to say in the discussion, please feel free to write it on this evaluation form.

ANNEXURE H: CONSENT FORM FOR TEACHERS

Consent Form to Participate in Focus Group Discussion

My name is Anna Shilunga, a Phd student at the University of Namibia (UNAM), student number: 9115749. You are being asked to participate in a focus group discussion. The purpose of this focus group discussion is to determine your perception on the extent of sanitation and hygiene promotion in school. The information gathered will help the Ministry of Education and other stakeholders use to improve hygiene and sanitation conditions in schools.

You can choose whether or not to participate in the focus group and stop at any time. Although the focus group will be tape recorded, your responses will remain anonymous and no names will be mentioned in the report and the tapes will be destroyed as soon as they are transcribed.

There are no right or wrong answers to the focus group questions. We want to hear many different viewpoints and would like to hear from everyone. We hope you can be honest even when your responses may not be in agreement with the rest of the group. In respect for each other, we ask that only one individual speak at a time in the group and that responses made by all participants be kept confidential. You can always contact these phone numbers: +264 61 206 4623 or 0813915767, should you have any questions after we have completed the discussion.

I understand this information and agree to participate fully under the conditions stated above:

Signed: _____ Date: _____

ANNEXURE I: TRANSCRIPTION OF FOCUS GROUP DISCUSSIONS FROM OMUNGWELUME PRIMARY SCHOOL

OMUNGWELUME PRIMARY SCHOOL

- Moderator **I would like to hear your perception on how you is promote hygiene in your school? Anybody can just answer**
- Participant (1) Thank you. Many ways we focus to keep our school at a standard regarding hygiene. We (umhmm) motivate and give ways to our learners to keep up neat, dress well and wash their uniforms as much possible as they can. We also have bucket containers of water to wash their hands before and after (eating) breakfast.
We also some running cleaning campaigns at our school, during special events or special days, mass, we also give them ways on how they should use toilets and how they should engage in every activity regarding hygiene
- Moderator **Thank you madam. Who would like to add next?**
- Participant (2) We focus with pre-primary kids, the young one that is where we start because we do not only focus on grown-ups. The teachers take them to the toilet and teach them how to use the toilet, how to sit on the toilet, what to do when they come back from there, that is the WASH system. The kids know that they have to wash their hands after toilet use.
- Moderator **After showing them, do you see them doing what you taught them?**
- Participant (2) As they growing older you can see, when move from pre-primary to grade 1 you can see their actions they are doing the right thing, you can see they are using the inside of the toilet instead of doing things outside the toilet. At the beginning of the school, we struggle because they use to make use of the outside of inside the toilet itself. Later on as time goes, you can see there is a change, they start to go inside the toilet.
- Moderator **Thank you very much. Other than what you said, is there an educational written plan on hygiene that you follow or you just identify a need and then you act on it?**
- Participant (3) Well, we cannot say all the strategies we are using are written plan from Ministry somewhere but we can say we are applying the general plan of the Ministry to keep the school and those that are in clean and hygiene. There are special program like we are introduced to like WASH (where) we use to be trained in workshops on hygiene but then it did not specify that use buckets like the one we have. It is up to the school to come up with the strategy to implement what they think will work well with their school in order to implement we got from the training.
- Moderator **Thanks madam. Anybody who would like to add?**
- Participant (4) Basically at school we have a school feeding program. We are emphasize the use of clean plates, they wash their hands before they eat especially those without spoons. The plates are kept in class to prevent them from undesirable effects and the bacteria, to prevent anything that can temper with their health if the children. Most of them demonstrate the understanding of hygiene especially learners from grade 5 to grade 7

who do agriculture. When it come to the site where they have to choose for their garden, do they projects they complain about the location of their garden they are not fully satisfied because they are near to the toilets, so we have to come up with the new site. Still in pipeline the teachers and management are going to look into the issue of having a clear site for our garden

Moderator **Thank you very much Participant (4). From the look of thinks, do we think that we are doing is enough or are there challenges that we are faced with in our effort to promote hygiene at school?**

Participant (1) We are all aware of our cultural backgrounds, though we are trying to implement. The way the learners perceive thinks do maters also. We cannot really say we are failing out or we are being successful, although things are going according to our plan. (Umm), culture and the way the learners are brought up at home has also an effect on their behavior at school. Happily enough, we are happy because we can see changes although not really the way we want to. I feel that this brought up buy different ways people are brought up, but they are trying to adapt. There is a change in preprimary learners and to those in senior grades as well, it is just a matter of adapting to the process of hygiene.

Moderator **Thank you participant (1). Who else would like to add on the challenges?**

Participant (5) Yes, may be in addition we can say we are still in the process. We cannot measure yet to say we have achieved or not but as far as the process is going, it is going well. We use to see changes among learners washing their hands as my colleagues have said it, although it is not yet 100% to all learners. The main challenges that comes in is because we are not doing this together with the parents. Us we are doing at school but when learners go home they go back to their normal way of doing thinks at home. They may foeget that hey have to clean their hands before they eat, so time and again you have to reminder the learners. Sometimes we are trying to come up with strategies which we think are helping with hygiene, but they might be not very relevant to some of the parents. For instance, a learner who continuously come with dirty hair or dirty T-shirt, you may want to take that learner to wash those clothes but it might be a problem when it is being heard by parents. You might be attacked. Or, maybe you want to cut the hair so that the learn look healthy, this can be a problem to the parent. Those are the challenges.

Moderator Thank you participant 5. Having highlighted on the challenges we are going through, what do we think ca be done?

Participant (6) Basically at school we are trying our best. Awareness will be the best thing to be done to the parents, so that together with teacher we can come up with doable solutions that we can all agree upon.

Participant (4) From my point of view I think the Government has done well by introducing the early childhood learning, but they have to go an extra mile when it comes to their toilets. Those preprimary learners find it difficult to use those toilets. May be they can come up with those well ventilated pit latrines or at least flushed toilets to promote hygiene and sanitation at school starting from early age.

Participant (6) In addition, in the Ministry there is a division for maintenance that fix stuff in schools. The same can be done with sanitation and hygiene to have its own department, or may be a facility at the regional level whereby hygiene and sanitation is monitored in the region where by all the schools are expected to do the same thing unlike now when schools might be doing thigs differently.

Moderator **Thank you very much.**

- Participant (1) (uhmm) Another addition is that, what I found to be vital is knowledge, education. I feel that the Government should extend their hands by recruiting people to go in the community to educate parents to understand the importance of hygiene. Because it does not only need to be applied at school but also at home. In my view, I think if parents understand the importance then education will be seen as a group, instead of only happening at home. This will help learners to understand better and to be positive in applying hygiene because at home education is there so as at school. Education in the community especially in the villages is important to contribute to knowledge because some people are against how hygiene should work. Some think hygiene is not needed or vital. I think education is important, so the Government must do something about that.
- Moderator **Do we have a focal person who is leading hygiene activities at school?**
- Participant (4) There is a committee on sanitation and hygiene, of about 6 teachers, but every teacher has to do their part at school when it comes to sanitation and hygiene.
Only teachers and institutional workers
- Moderator **Other than teachers, who else is in this committee, do we have parents/community members?**
- Participant (6) It is only teachers and two institutional workers at school.
- Moderator **Thank you. I was wondering, other than buckets with water, do we have toilet papers for the learners?**
- Participant (5) Well, by then we had toilet papers that were provided by the government. They were many and every class used to be provided with toilet papers and learners are free to use it. I forgot to mention that challenge, when they got finished, then it is hard to buy toilets for learners. (eee) it just ended when they finished, but when they come again, we will give them in class for learners to use again. About soap, we use to put liquid soap in water so that when they wash their hands, the water is already dilutes with soap. We change the strategy again, we wanted to make it like it can be one function whereby they can drink from those buckets and they can also wash their hands. There was a time when we bought the bar soaps, a learner can just take that bar soap from the lid to wash the hands and can use the same water to drink.
- Participant (6) Sometimes the teacher provide the liquid soap, put it on top of the bucket the learner can just wash the hands.
- Moderator **We are getting towards the end of our discussion, is there any final thoughts there any other thing that we can add**
- Participant (7) I just want to add about hygiene in classes. We also promote learners to wear properly with clean uniform, tucked in and collars down but when they come from break everything is out. If Government can come up with a procedure to let the parents know how to help learners to have clean uniform..... (Yeah)...just like that.
- Participant (4) Before we close the discussion, I also would like to applaud the move to mop our classes at least twice a week. I would like to urge the Government or the region to expose us to the outside world to see what others are doing in the area of sanitation and hygiene. To observe what others are doing, we can go even to Khomas region, (yeah, umhm) funded by region and then we come back and implement best practices we have learned, if at all possible.

- Participant (5) Another recommendation is that we have now realized that there is an addition of safety and security across the curriculum. May be we can recommend for hygiene and sanitation to become also a standalone module like safety and security not as across the curriculum like what is happening now.
- Moderator** **Are we saying we do not have a content specifically on hygiene and sanitation in our curriculum?**
- Participant (7) We have through other subjects only such as natural science but not on its own as safety and security.
- Participant (4) We also promote hygiene and cleanliness by conducting the neatest learner on yearly basis
- Moderator** **Tell me more about this, how do you do it?**
- Participant (4) We award these learners in front of their parents and fellow learners because the idea is to promote hygiene and to motivate others to do the same.
- Moderator** **Any final final thought before I conclude?**
- Participant (5) Although you are doing your study, You have awaken our thoughts about hygiene and sanitation and the need to take it seriously.
- Moderator** **Thanks very much for your time and contributions. I to appreciate your time, I know you have just started and it is almost exam time. I am thankful that you accommodated me, just want to wish you well in your daily endeavours with your students**

ANNEXURE J: TRANSCRIPTION OF FOCUS GROUP DISCUSSIONS FROM ENDOLA PRIMARY SCHOOL

ENDOLA PRIMARY SCHOOL

- Moderator **I would like to hear your perception on how you promote hygiene in your school? Anybody can start**
- Participant (1) (Yeah) if I understand you well, according to my own view, at our school for different learners in the school surrounding, let me say about the usage of water by children sometimes they play with sand and so on, we emphasize that each child should have own clean cup and bottle of water that can be used to collect water at the water point. (hmm) I addition, we have a feeding program,[where] we make sure that the plates are clean and that they hand should be washed as well as other containers that are being used. Hand washing in a good way and cleanliness of the environment including behind classrooms, we also talk about rubbish and other wastes I the surrounding in order to maintain a clean and hygienic environment at school.
- Moderator **Thank you for your contribution Participant (1). Who will add next?**
- Participant (2) Thanks. On the other hand we have taught the children that they cannot just relieve themselves wherever but they should use toilets. Even if the toilets are know, we teach them [learners] how to use toilets, how to sit because if they stand or not properly sit they will make the seat dirty which will be disgusting for the next person. That is why we emphasize on proper usage of the toilet so as not to mess on the floor and to avoid others to step on their wastes. Toilets are being cleaned every week to prevent bad smell and flies that might transmit illness among us at school.
- Moderator **Thank you very much Participant (2). Who will add next? If I understand Participant (2) well, are you saying you took children to the toilets and show them there how to use the toilet properly, not just teaching and talking in class?**
- Participant (2) **Exactly. They are being taught and shown at the beginning of school**, especially those at pre-primary. In the process those (children) in senior grades keep teaching and showing others to use the toilet properly.
- Moderator **Thank you very much Participant (2) for clarification. Who will add next or is that the only thing that we are doing?**
- Participant (3) (Eee) let me add a bit. Us at management, we are not only looking [focusing] at the children but to all the staff at school. (ee) We do order for supplies such as soaps or we go buy as a school so that the cleaners can use them to clean properly. We also take care about the hygiene and safety of our cleaners, if they asks things like masks or gloves, they let us know and we buy for them. (ee)In addition, we also look at the different small [fragrances] of the soaps when buying, we let them (cleaners) take part by advising on the type of soaps to be bought that are good and strong enough to clean with. In addition, every class has children that are cleaning the classes every day according to turns. Classes

- are supposed to be cleaned every day, the list of children and their turns are in their [respective] classes. If they clean they took the garbage to be burned. we many a times emphasize on a clean environment by encouraging children not to throw rubbish and papers and sweet wrappers around, but to properly gather them to be burned. Thank you.
- Moderator **Thank you very much Participant (3).Do we think that we are doing is enough or are there other things that we think will enable us to promote hygiene smoothly? Or what other strategies do you think ca help?**
- Participant (1) Maintaining hygiene is a good thing although sometimes it is not possible due to various needs. Our main wish is to have flushing toilets. Those we think are hygienic to the children and us all, but so far we do not have them though we need them. (yeah) That will be a good thing.
- Participant (4) [Voice], in addition, like others talked about the feeding program, we do not have a proper place for preparation and cooking. We need a separate standard building where to prepare food and cook. We also need a place where they are seated nicely and eat because now, they are eating in the open and all over the place which is not hygienic.
- Participant (5) Her at our school, the toilets especially those that are used by children are very old. They cannot hold the smell anymore. One can say they need to be demolished so that new ones can be build. If the wind is blowing from the west where the toilets are located (aaye), you cannot even breathe, and flies are all over, it is really a big problem. It is really disgusting. We really need new toilet so that our health can be at standard.
- Participant (6) (Yeah), about tap water, we only have one water point. Although we are encouraging every child to have [his/her] own cup and bottle, not all have. Sometimes you will find children drinking directly from tap, placing the tap in their mouth, the next child is doing the same or using a cup. This is very much unhygienic. In some schools, they have water points with many taps but a bit high that a child will not be able to put the mouth there at all. I think that will help with hygiene.
- Moderator **Thank you all for the contributions. Any addition on the challenges?**
- Participant (3) Another challenge is that, we have three classes with bats [infestation]. Our classes are very old and they are built with sand those days with hollows in between. We have tried to call some industry that are managing bats but have realized they have not helped much. The bats have come back and it can be very smelly to the children and all of us. We have reported the matter to the circuit and the region, even if the building inspectors were here, we still feel that we did not receive the help we needed most. As a school we cannot repair old buildings, but if you look at some of the classes where we are teaching from, they really pose danger because they are old. I second other on what they have said about the toilets, it is quite correct. In the school board's plan of activities we have proposed to have demolished some of the toilets in term two. We really want flushing toilets but (eish...laughter) we are in a dire situation. Al these are challenges.
- Moderator **Thank you very much Participant (3). Any other challenges that we would like to highlight on? I managed to visit the toilets and has noted the movement of children to and from the toilets. I had a question about toilet papers and soaps. Do you**

- receive ay from the Government or do you ask children to bring their own, or what do you do?**
- Participant (3) While others are getting ready, let me talk about toilet papers. We order them with other needs. But because of limited budget we priorities what we need to place as number one. Because if you choose to order toilet papers instead of books then you will be in a big problem. That is why we place them in the order towards the end according to the budget, because we do not get money enough for all our needs. Sometimes when there is nothing we ask those who ca to bring their own but as you know our people, not every child can afford to bring. So, toilets [papers] are a big challenge. We do have enough soaps, you might have seen a woman at the feeding program pouring liquid soap in the buckets for hand washing. Soaps are not a challenge.
- Moderator **Thank you. Anybody has who remembered something to add on any of the issues that we spoke about?**
- Participant (7) I am not too sure if you will going back to the community after you are done with your research. This is because we are trying to emphasize on hygiene at school but there are problems at home. some children are coming with very much dirty bakkies [lunchboxes] you will not even believe there is food there, the bottles are much better. There are many weaknesses at homesteads, it is very much needed for program like this to be taken to the people in the communities, especially parents to help us because it will be useless for us to promote hygiene here at school while nothing is happening at home. Sometimes we just decide to wash children’s clothes at school because they are very much dirty, or the child self. Some children have sores in head or elsewhere but teachers use their own cars to take these children at the clinic even if you can see that it is not a fresh wound or illness at all but parents do nothing. We really need parents to be sensitized so that we all talk the same language.
- Moderator **Which means hygiene promotion is not balanced since it is only at school and nothing is happening at home?**
- Participant (7) Yes, exactly.
- Moderator **I earlier on have hear people talk about WASH committee, who is on this committee, are parents involved also?**
- Participant (3) We have about twenty parent that are volunteering to help with feeding program, which means four per day. With those one, we have given them information on WASH and hygiene as was earlier said. The teachers are also community members they can share the information in their communities. It is not everybody but we thing the few can share with other in the community.
- Moderator **Is there anywhere in the curriculum a content on hygiene or a standalone unit/module?**
- Participant (3) In the preprimary, she has a program where she orientate them about hygiene which I think is part of pre- primary content.
- Moderator **Thanks you. What about other subjects?**

Participant (8) Yes we do have some content in natural science, which is Grade two. There is content on personal hygiene, food hygiene, washing fruits, and so on.

Moderator **Dearests, is there any final thought before we can get to the end of our discussion today? [Silence].**

If there no more additions, let me use this opportunity to thank you all, it has been a long day, I would like to thank you immensely for your time and for sharing with me how you promote hygiene in your schools. Thank you so much, keep well.

ANNEXURE K: TRANSCRIPTION OF FOCUS GROUP DISCUSSIONS FROM EFIDI PRIMARY SCHOOL

EFIDI PRIMARY SCHOOL

How do you promote hygiene and sanitation in your school?

- Participant (1) Many a times we meet on Mondays and Fridays, we tell our children about hygiene and sanitation that you should do this and that, so that things can be like this. First, we start with the new young children who have just started school on how they can use the toilet, how to sit on the seat, and importance of washing hands after using the toilet. [In order] to make sure that it is happening, we bought buckets, we put water and soap in. Children are then encouraged to pass through to where the buckets are located, to wash their hands when coming from the toilets so that the dirtiness on their hands wherever they have touched when they were in there will be removed. The buckets have taps so that when they are washing their hands the dirty water from their hands are going down and not back in the bucket (noise in background).
- Moderator Thank you very much sir for your contribution. Who would like to add next?
- Participant (2) (mhm) Okay, what he just said is quite correct because it is exactly what we are doing. I just want to add a little bit. We have a feeding program here and the parents are helping to cook for the children. We always inform them how to properly handle food, how to cook, to keep the cooking pots and the plates which are being used by the children clean after eating. We have informed them to always cover their heads (hair) during food preparation and we also monitor children to make sure they have washed their hands before eating. That was my contribution.
- Moderator Thank you very for your contribution. Are parents helping with cooking part of your staff or are they doing it voluntarily?
- Participant (2) They are doing it on voluntary basis.
- Moderator Who else would like to add? Or, are those the only ways you are using to promote hygiene at your school? (Silence). (Aaah) Participant (1) spoke about teaching the young ones how to use the toilet and washing of hands. The next question is:
- Do you see them doing what you have taught them? Is there any noticeable difference?**
- Participant (3) Yes, there is a change. One can observe the young ones in pre-primary and grade 1, if they asked during the class to go visit the toilet, you could see when they are coming back that their hands are wet, which shows that they have washed their hands. So, there is a change.

- Moderator **Is there an educational plan on hygiene and safety that you follow?**
- Participant (3) There is no educational plan but there were some teachers trained on WASH that is why we have those buckets with water.
- Moderator Do you have a focal person at school necessary for hygiene and sanitation?
- Participant (1) No we do not have a specific person, as I said at the beginning if there is something we do come together as teachers on Mondays and Fridays.
- Moderator Thank you very much. Who else would like to add on the point? (Long silence). Okay, if there is nothing more to add on that point;
- Do we think what we are doing is enough or are there things that we think or wished to have used? Are there challenges?**
- Participant (1) In my opinion, I do not think it is enough. Although we are teaching children especially in primary, grade 1 and 2, when it comes to implementation of what they are being taught, that is where the problem is. When they go to the toilets they do not do what they are being taught. I should think that the types of toilets that we have, might have contributed. May be some children are afraid or think they are falling inside the pit. That is why you may just find some children have urinated or defecate on the floor. Sometimes they use the space between the toilets or they go to the fence. Although we are trying to remind them many a times to do the right things, it is just a problem. My suggestion is that if the healthcare workers that are doing outreach visits can come to visit our school once or twice in the term and talk to our children about hygiene and its importance, may it will be better because it is (coming from) different people. We need an outside help so that children hear from somebody who is not part of the school, may be it will help.
- Moderator Thank you very much for your contribution. What are others saying? Is there something else that we think of other than what Participant (1) has just said to complement what we are currently doing or is do we think what was said is enough? (noise in background) (silence)
- I am not familiar with your curriculum. Is there somewhere in your curriculum across the grades where sanitation and hygiene is covered?**
- Participant (4) Hygiene and sanitation is covered in Grade 3, 4 and 5
- Moderator **Is there a specific subject where they are covered, and if so which one or is it a stand alone subject?**
- Participant (4) The topics are covered in Natural Science.
- Moderator In your opinion as a teacher, do you think what is covered is enough, or what do you think about the content covered?
- Participant (4) For me I think what is covered is enough. I only think that if parents were also were informed about hygiene and sanitation, it will be good for them to also promote at home because one can see that promotion is not happening at home, and therefore even

- if we keep teaching children here and they are not practicing the same at home, it will remain a problem.
- Moderator So, think if teachers and parents are complementing each other's effort it will be helpful?
- Participant (4) Very much.
- Oh, I see. Thank you very much for your contribution. I hear you talking about soaps. **Where do you get soaps from? Are they always available or there times when you do not have anything to use at all? I also would like to know about toilet papers. Do you give toilet papers to learners or do they bring theirs from home? Where do you get these suppliers from? (silence)**
- Participant (5) We are never in short of toilet papers, they are always available. We get once in a year from Government store, if finished, then the school buy. We place them in classrooms, when a child is going to the toilet; they take from the roll in the classroom to go use.
- Moderator Thank you very much. Who would like to add?
- Participant (1) We are not doing good when it comes to sanitation and hygiene. We have only one laborer for the whole school and it is not enough for the cleaning of toilets and general yard in relation to the number of learners. Sometimes it is not easy for her also to clean without mask, gloves, and boots, need help. Yes, about toilet papers, he is right. Sometimes money at school is used for other needs and toilets may wait. Because we just receive once from government store as was said, sometimes when there is nothing while waiting, there a problem comes in because there is nothing to use. Our Government really need to work hard when it comes to hygiene and sanitation. We take money from school development
- Moderator Thank you very much. Who else would like to add?
- Including challenges also that hinder effective hygiene promotion at school, some challenges we have indicated already in the process.**
- Participant (6) In my case, because my children are young and in order to prevent them from wasting water at the tap outside, I always have a bucket of clean water for drinking in my class. The challenge is that there are only two cups in class one for girls, one for boys to drink with and they are not being washed immediately after use. For me this is not what hygiene supposed to be.
- Moderator **What do you think can be done in that case or do you suggest?**
- Participant (6) I am suggesting each child to have own cup and the bucket to have a tap like the ones outside, so that when a child drink there would be no chances of a used cup going back in the bucket again like the case now.
- Moderator **What do we think can be done?**
- Participant (1) There is something that we do here but with a bit of fear. Some children have challenges at home that contribute to their (unhygienic) conditions, either due to unemployed parents, old parents, etc. Sometimes these children come to school with

very dirty hair, body or clothes. Some teachers take the initiative of cleaning these children or making these children washes their clothes at school, but then for some people or parents, that is a problem. You will find that even your own senior will not be happy with your action and you do not even know where they read it. (In your opinion) what do you think Ms. Shilunga?

Each department/ Ministry has their own norms. Me as a nurse I cannot work with a dirty patient that is our area, even my superior will discipline me for not bathing the patients. I am sorry I cannot really give you whether it is wrong or not since I am not familiar with the education system

Moderator We have come to the end of our discussion, but before I close the discussion is there anybody remembered something about any area we have touched so that we can add?

Participant (7) (UUH VOICE),the government should give us enough suppliers such as enough toilet papers, towels for drying hands and (to build for us) flushing toilets since we have water available.

Participant (1) In addition, Schools are very old, classes not in good condition, there are bats in roofs and can be very smelly. Even if we are washing our hands, what about smell from bats and hygiene in classrooms? .They make the environment unhygienic.

Moderator Thank you very much Participant (1) for all your contributions. I think we have exhausted the points and we have now come to the end our our discussion. I would like to thank you all for your time and the information you have shared with me. I would like to wish you all the best in your work. Thank you very much.

ANNEXURE L: TRANSCRIPTION OF FOCUS GROUP DISCUSSIONS FROM OMUTAKU PRIMARY SCHOOL

OMUTAKU PRIMARY SCHOOL

Moderator	I would like to hear your perception on how you promote hygiene in your school? Anybody can start
Participant (1)	The arrangement here [at school] is that there are learners that are cleaning their classrooms every day according to shifts made in their classes. The teachers check the classes and identify the best cleanest class at school
Moderator	Do you have a system of awarding the cleanest class at school or the best cleaners at school?
Participant (1)	Yes we do award them by either individual group of learners who cleaned or the class as a whole.
Moderator	Who else would like to add?
Participant (2)	Another way we are promoting hygiene is through announcements every Monday and Friday during morning devotions. Every teacher is free to announce according to their observation or just as an encouragement, from classroom hygiene to toilet use.(noise in background
Moderator	Anybody else who would like to add?
Participant (3)	About personal hygiene, to put on clean uniform hygiene of body, brushing of teeth, cleanliness of hands, and hand wash before eating. We have buckets with water in the class, where children are reminded to wash their hands before they eat, or after playing so that they do not touch their books with dirty hands. It is the teacher's responsibility to make sure there is water in the bucket and that children are really washing their hands. The bucket you spoke about, are they in class or in the school yard?
Participant (3)	They are in classes Is there Soap in the bucket water or not?
Participant (3)	There is soap in water. The teacher takes a container with soap and uses it to always put in water. Unless the soap is totally finished at school, otherwise the water should always be soapy.
Moderator	If I understood you correctly, it means it is the teacher's responsibility to make sure that in her/his class there is a bucket with soapy water and that children are really washing their hands.
Participant (3)	Exactly.
Moderator	Ooh, I see!

- Moderator **What about toilet papers?**
- Participant (4) We do have sometimes but they are not always available. If they are available we always give to the learners.
- Moderator **How do you give them to learners, do you place them inside the toilets or how?**
- Participant (4) The teachers take the toilet papers to their classes. If the learner would like to go to the toilet, he/she will take from the roll in class enough for his/her needs.
- Moderator **Like now, do we currently have them?**
- Participant (4) No, for now we do not have.
- Moderator **Grade 7 girls- growing –periods, are there arrangements at schools to cater for learners on**
- Participant (5) There is. We tell them to come to their teachers, but now we do not have , no money now
- Anything else that we would like to add?**
- Participant (5) We do not have toilets and sanitary pads; we have a problem getting them. When it comes to big girls, although we have informed them to come talk to us when in need, not all of them are free to come out, some are embarrassed to talk. Sometimes you just see a learner seated for a long time not wat to move and when she is going to stand up, she has already spoiled herself and the chair which is not good. I think if we can get where we have enough to give to learners to have their own and put in their bags, it will be easy rather than them coming and asking, which not an easy thing to some learners is. Especially to be given on monthly basis.
- Participant (1) Let me add also that the teachers that are teaching life science and social science are also teaching these girl learners about periods and emphasize on hygiene.
- Moderator **Do we have a focal person at school that has to do with hygiene?**
- Participant (6) Committee on WASH
- Moderator **What is the role of this committee?**
- Participant (6) The committee have been trained in wash, they are the one who brought up the issue of buckets for handwashing from that training. I has just been recently trained but I am yet to give feedback to my colleagues. We give guidance to learners, I am thinking of calling boy children when it comes to hygiene of male reproductive and hair, and nails. Girl learners those in puberty we also wat to talk to them about hygiene, what type of soap, how to use soap when washing private parts. We have doing these things in the past but we have not been doing well for some time now. We would like to restart again in order to help our learners with regard to hygiene.

- Moderator **Do we think what we are doing is enough, if not what do we think can be done?**
- Participant (7) It is not enough. Other than the bucket, we have a challenge with the toilets. Even when we tell our learners how to use the toilets how to sit, you can find they still mess on the floor or with everything. We want flushed toilets.
- Moderator **I am sorry to disturb, when you say you teach the learners how to use the toilet, is this the teaching in class or talk at devotion or do you take them and show them at the toilets?**
- Participant (7) The young ones at the beginning of the school they are taken by their teachers to the toilets and show them how to sit and use the toilet. As time goes we keep repeating the same at morning devotions and in classes also.
- Participant (8) Young ones do not always adhere to what they are told. Toilets are not enough in relation to the number of learners. The type of soil is not good. Especially when the wind is blowing from that side, us with classes on that side are always in a problem, we cannot breathe in our class, and the smell is really bad.
- Or another committee, to take care of cleanliness like what class is most hygienic, cleanliest learner, then the school is informed like every week who was the cleanliest learner, class, etc.
- Every month, we have a cleaning campaign when we knock off at one and commence the cleaning of the environment and the surrounding.
- Moderator **Anything before we close**
- Participant (9) Another problem is some children are coming from home very dirty. Some parents are not taking care of their children. These children are smelling badly (odor) very dirty hair, clothes and hands. Although we are trying at school, nothing is happening at home. We have albino children here at school but if they get dirty there is more apparent than any other person. If there were even programs on radio where parents are really made to understand their role in taking care of their children's hygiene, it will help a lot.
- Moderator **You mean to complement each other**
- Participant (9) Yes.
- Moderator **Are we trying also to be role models when it comes to hygiene and cleanliness?**
- Participant (2) Yes, we are trying.
- Moderator Let me thank you all for your time and all your contribution.

ANNEXURE M: TRANSCRIPTION OF FOCUS GROUP DISCUSSIONS FROM KAPOMBO PRIMARY SCHOOL

KAPOMBO PRIMARY SCHOOL

- Moderator **I would like to hear your perception on how you promote hygiene in your school? Anybody can start**
- Participant (1) (Hmmm), is it just in the school environment?
- Moderator **Yes madam, it is about hygiene promotion here at your school**
- Participant (1) In short, children are made aware about the cleanliness of the environment. They are told that if they come across any garbage, papers or rubbish, in the school environment they should pick them and throw them in the in dust bins. We have dustbins around the school environment for that purpose. We have also informed them that once they finished eating, their wrappers of sweets, chips should be fold nicely and placed them in the dust bins. When it comes to classrooms, we have names of school learners that are scheduled to clean their classes every day from Monday to Friday. The children follow this order very well, without any strict supervision even. About the toilets, children also got trained on how to use the toilets. They are informed to use inside the toilet and not to use the outside area, to ensure that the surrounding is clean. Those are the main issues that we focus on and think are burning issues when it comes to hygiene.
- Moderator **I understand the building outside the school yard belongs to pre-primary. Do they also use the same toilet in the school yard or do they have their own?**
- Participant (2) No, those ones [are] just using the open area, especially when peeing. But other than peeing they seem to come and use these ones [toilets] in the school yard. They seem to have something like a cubicle that they use for peeing, but sometimes you children running behind trees there.
- Moderator **Is that pre-primary part of your school also?**
- Participant (3) No, it is not. That is a private think.
- Moderator **Ooh, I see.**
- Participant (3) I wanted to add. We had buckets in each and every classroom. They use to wash their hands when they eat their food or can take their containers and take water to drink. As I can see now, not all [the] classrooms have any more they are now few and not replaced, I think some have broken down that is why.
- Moderator **Did you used to put soap in these buckets with water?**
- Participant (4) (Hmm)The buckets had taps where children can take their containers and drink from or to wash hands. We do not put soap in, they were just meant mainly for drinking to avoid children moving around and going out more often to go drink outside.

- Participant (5) When it comes to personal hygiene, they are told to wash their bodies very well, but we have noted that their heads [hair] are very dirty. We use to cut their hairs at school if they are not neat enough because they are not taken very care of at home. Some children do not have proper care at home. We also informed them to always wash their uniforms during the weekend and if gets dirty in the week to wash them on Wednesdays as well.
- Participant (4) We do not really know their [children] environment and what they are going through at home, but we are trying to promote hygiene at school for children to have neat uniforms so that they can be comfortable among others. Although we are promoting hygiene at school, encouragement from home by the parents is also needed.
- Participant (6) I wanted to add that in Life skills subject, there is a clear content about hygiene, and especially on personal hygiene such as how and when to wash yourself, body parts to take care of, teeth brush such as traditional brush because not all have these modern tooth paste and brushes.
- Moderator **In what grade is the life skills subject?**
- Participant (6) It starts in grade four up to grade seven. The topics are very clear in there.
- Moderator **Other than subjects like life skills and what we are currently doing, do we think that we are doing is enough or are there other things that we think will enable us to promote hygiene smoothly?**
- Participant (4) No, it might not be enough. Promotion need to be done at home also, there in the community. Parents need to be taught, care starts at home if parents get to understand that cleanliness and hygiene is needed and important, then we think children will be more receptive if it comes from home also in addition to school.
- Moderator **Meaning parents need to complement hygiene promotion from home also and should not only be at school?**
- Participant (4) Exactly, so that we each talk the same language.
- Participant (5) When it comes to toilet facilities, they are few comparing to the number of learners. They are not enough, they need enough toilets in relation to learners. Sometimes all the toilets are occupied and it might be difficult for some learners to wait, this may force them to use the outside area or the bushes which is not hygienic anymore. In the process they can pick germs especially the young ones can play anywhere and you may find them sitting even there where others have relieved themselves. It is not safe. This can cause infection. Education need to happen from home and at school.
- Participant (7) (hmm) I want to add that the Ministry of Health especially staff at the clinic are visiting us and examine the children about tooth cavities, ears, and so on. This years they have visited us two times already. If the Ministry of Health can continue doing that to all schools, because many children have health needs. Because parents do not take it the same way from us like they take it from nurses. Sometimes they can even remark that you are just a teacher, not a nurse or a doctor. How did you manage to know that my child is not well? Children have different needs, some cannot see or hear very well or talk well and you think they need special attention at special schools but parents do not trust us as teachers.

- Participant (7) There are many of them with dental cavities, ear [hearing] problems and sores in the heads. That is what makes us decide to cut their hairs because there was a time when it was really worse. It is much better now that their hair is being cut off. (ee)
- Moderator **I see, which means those are some of the challenges. Any other challenges that we are faced with?**
- Participant (1) Just like my colleague has indicated that the Ministry of Health need to keep visiting schools. I hope it will help a lot to detect problems while it is early. There are even some forms that we are filling but some areas need to fill by the nurses, so we just leave them blank. It is not easy because not everybody can go to the hospital.
- Moderator **Is there a focal person or a committee that spearhead hygiene promotion at school?**
- Participant (3) We do not have a focal person or a committee at school. Each and every teacher is a manger for her/his ow classroom. You should know what is happening in your classroom and report to the school management if need be.
- Participant (2) Myself I am dealing with the young ones. It is me who admit them in school, (yeah) I like to ask parents report from home if a child has a certain illness or on certain medications. This is important to avoid situation where you do activities with the child when it is not supposed to, like athletic.
- Moderator **Are we also trying to be role models when it comes to hygiene?**
- Participant (5) Yes, we are really trying so that we can set good examples to the children. That is why some children even indicated them wishes to be like a specific teacher. All in all, we can only achieve much if teachers and parents are working together.
- Moderator **We have up to grade 7. The big girls that are getting their periods. Are there arrangements at school in relation to help when ti comes to periods?**
- Participant (6) Yes, we have [sanitary] pads at school. We tell the big ones that they should approach the teachers if they are in need. We used to have, but if they are finished we are trying to get. We really want to ensure we want to have them throughout not this on/off thing.
- Moderator **What about supplies like soaps, toilet papers? I have seen toilet papers in teachers' toilets what about learners?**
- Participant (4) We keep toilet papers in the classroom. Learners take from that roll if they are going to the toilet. If gets finished, we are always get from the secretary. It is the teachers' responsibility to make sure that the toilet papers is in class or replaced if finished. We also use to place them in the toilets, but some children especially big ones take them out, you will never know who took it.
- Participant (4) I think keeping them [toilet papers] in classroom will help a lot, rather than placing them in the toilets.
- Moderator **Good, thank you for your contributions. Is there anything else we would like to add before we come to the end of our discussion?**

- Participant (5) That strategy of placing toilet papers in the toilet was in way teaching children to have a responsibility but because children have come from different home with different background, it is not working. You wanted to instil ownership in children but one just feel like taking it for her/his own. When will they be responsible, they just want to be controlled all the time?
- Participant (7) As we said we do not know the background of all the children at home, some children are the ones heading their houses, no parents or parents are not in the houses there are mostly at cuca shops. Even if you tell them that this is what is right, no reinforcement at home. Therefore it is not easy for the teacher to bear everything on the shoulder without parents' involvement, but we are trying.
- Participant (4) We want the government to build for us flushing toilets, those are hygienic. Those days we did not have water at school, now that water is available they should provide us flushing toilets. Even if we teaching children, some have never seen a flushing toilet and some are not using toilets at home, it will also be a good opportunity to know them.
- Participant (1) During the water season, we will not even want to go to the toilets, you will see bugs on top and if you drop stuff in the water will even come back touching you. It is very much disgusting, you don not even what to sit and we are afraid of infections. Toilets are overflowing with all the dirt during rainy season. Some holes were not deep enough, some are old.
- Moderator **Thank you so much. Any final though? (silence)**
- Participant (4) Our government has very good ideas, but people do not have the mentality that we are working for ourselves, for our nation. Those other toilet was just build but in two years' time, they are like that already. The Government is not monitoring work being done if things are of standards at the end beneficiaries suffer the consequences because the work is of poor quality.
- Moderator **At the end I would like to thank you for your time and for the information that you have shared with me. Thank you very much. I wish you all the best I your work and have a nice weekend.**