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## *SUMMARY*

### BACKGROUND

This study commenced with a certain rationale in mind, emerging from a personal, felt responsibility, which were further embedded in global declarations by the FAO and the WHO, as well as commitments made during the World Food Summit in 1996 and 2002. Results from the most recent 'National Food Consumption Survey' also inspired the study and the intervention. This study has to be viewed against the background of community development, which in a broad sense connotes a process of social learning through participation. Within the context of this study, it means to identify and address felt needs of people within a particular community and to improve their lives for the better. A commonly accepted approach to rural community development was followed, namely to establish programmes, which were referred to in this study as the nutritional intervention.

### AIM

The challenge was to design, implement and evaluate a community-based intervention, specifically with the aim to address nutrition-related problems in a rural community on a commercial farm in South Africa. It was not the intention to strive for external validity (generalise the findings to other rural communities) but to internalise the process of research (specifically Participatory Action Research) within a rural community, contributing to the body of knowledge on the relevance and success of interventions in rural communities within the realms of health and nutrition. This process provided opportunities for the research team to learn more about implementing Participatory Action Research in rural communities, to learn from the community itself and to apply that knowledge into a constructed model for future projects.

### METHODOLOGY

The research study and intervention process were based on a four-phase approach, which included a situation analysis (also called needs assessment), design, implementation and evaluation. Findings from the needs assessment were prioritised and incorporated in the design and implementation of a relevant intervention. Qualitative data-gathering techniques were mainly used which included observations with field notes, group discussions and key informant interviews. Several techniques were deployed during the implementation-phase, of which the personalised, educational support material was considered an important outcome. Principles of evaluative research have been incorporated from the starting point to measure the success of the process as well as the outcomes of the intervention.

**OUTCOME**

The value of the study is found in the generic model that was structured as a visual presentation of a nutritional intervention in a rural area. The model was drawn from previously applied models, grounded in this research study and was further enriched with comments from a panel of external evaluators. It can be considered a comprehensive, logic methodological framework, ready for pragmatic testing. It addresses the entire continuum of processes involved in developing valid and reliable interventions for rural communities and should serve as guideline for similar projects in future times.

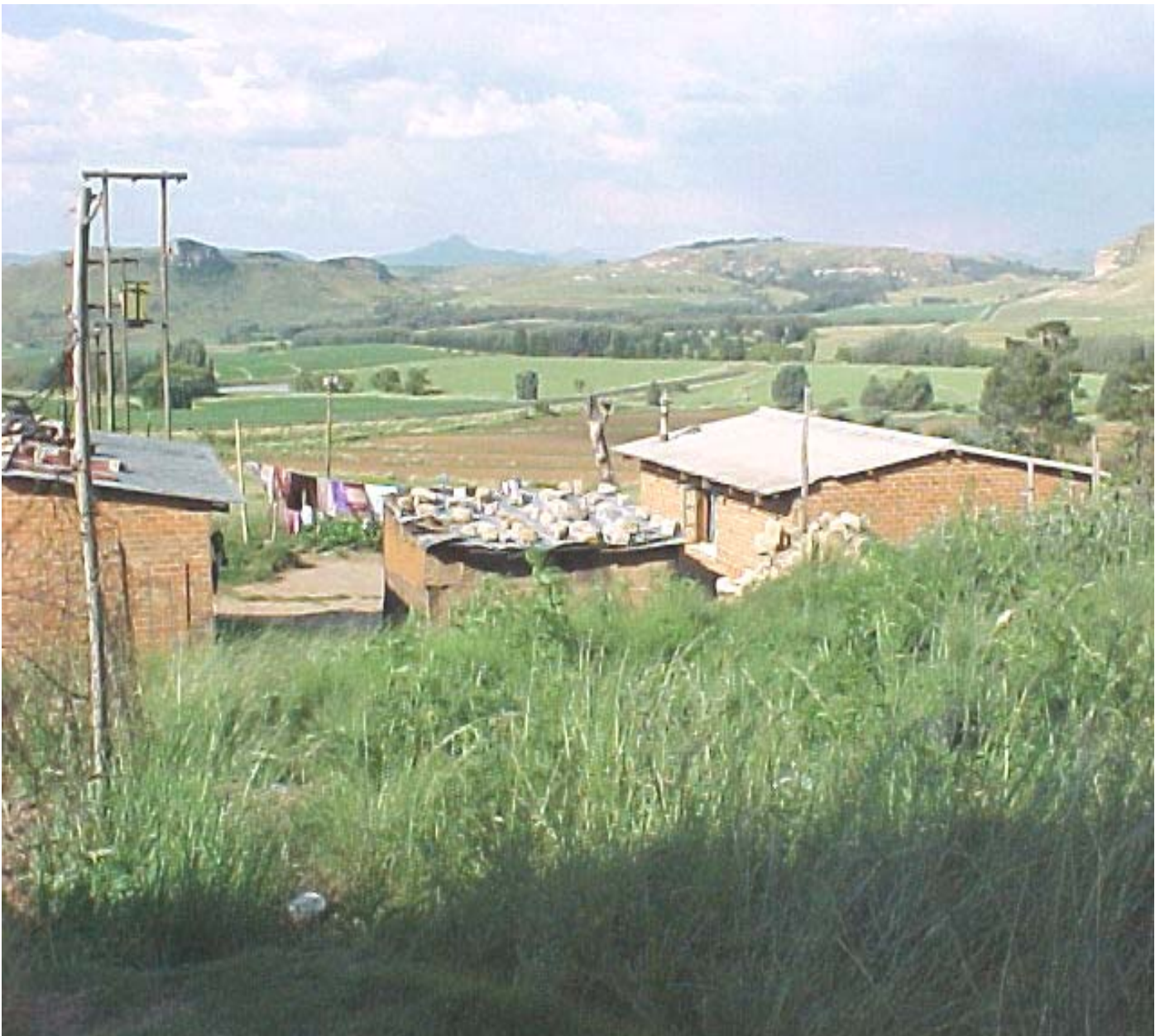
**RECOMMENDATIONS**

During this study certain insights were gained, which centred on the factors that motivated or hindered behavioural change. A list of lessons learned was formulated to guide future projects, which were set in terms of managerial aspects, financial aspects, methodology (instruments and methods) and enabling factors.



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## 1.1 COMMITMENT

*"We work with the people not out of pity but out of respect for their potential for growth and development, both as individuals and as communities"* (Yen, 1920).

This statement is interlocked in the notion of community development. We as researchers and scholars have a shared responsibility to others and to the world, namely to have a keen interest in the welfare of people. This felt responsibility has resulted in a commitment to do research together with communities in need. There are so many needy people in the world, which are in an extremely vulnerable position, encountering great difficulties to break out of the deprivation trap. Deprivation in this study is seen in the context of health and nutrition. People are deprived of being healthy for various reasons. In South Africa, these reasons usually relate to poverty, unemployment, and previously being underprivileged (UNDP, 2000). There is also a close link between poverty, unemployment and nutritional problems. Nutritional problems can be seen on a continuum ranging from severe malnutrition and hunger to marginalised micronutrient deficiencies and perceptions of food insecurity with various causal factors involved (Latham, 1997:9). The immediate causal factors are related to low frequency of feeding, low density of consumed staples and disease particularly malaria, diarrhoea, and intestinal worms. Other underlying causes are poor household food security, inadequate maternal and childcare, insufficient health services, an unhealthy environment, lack of education and information and poverty (Latham, 1997:9; UNICEF, 1992).

People have a right to adequate food, and to be free from hunger. The right to adequate food is firmly established worldwide as a fundamental human right and implies access to adequate food at all times. This right is a distinct part of the right to an adequate standard of living, with the ultimate objective to achieve nutritional well-being. This right is articulated in Article 11 from the 'International Code of Conduct on the Human right to adequate food' (CESR, 1997:10). It also states that every individual should strive, *"by teaching and education, to promote respect for the right to adequate food, helping to secure the universal and effective recognition, implementation and observance of this right, both among individuals and communities"*.

The realisation of the right to adequate food and nutrition is oriented to the eradication of poverty and the satisfaction of basic needs. The concept 'poverty' is used here to refer to the inability of an individual, a community or household to meet its basic needs satisfactorily. Basic needs are those necessities that are essential for survival as a human being. Essentially these

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are adequate and nutritious food, clean air and water, culturally and climatically appropriate clothing and shelter (Burkey, 2000:3). One of the consequences when basic needs are not met is manifestation of malnutrition. Malnutrition, however, is not only a food-related problem. Other important aspects include sanitation, education and care. Malnutrition has far-reaching implications such as growth retardation in infants and young children, impaired resistance to infections, impairment of mental development, reduced educational capacity, and increased morbidity and mortality (FAO, 1997:2). Improvement of the nutritional conditions of people is therefore an investment, which can help raise the productive capacity of both present and future generations.

Considering every human's fundamental right to adequate and sufficient food, nutrition and well-being, the question that comes to mind is who should take responsibility to execute this right. At the World Summit for Social Development, 1995 (UNDP, 2000), the South African government committed itself to enhance social development and eradicate poverty. The statement was also made that, in fact, all societies need to be involved in social development. The University of Pretoria also places a high premium on involvement in the community and community-related projects (UP, 2002), implying that its researchers also have a commitment to serve the community in ways that are contributing to their well-being in a meaningful way. My standpoint is therefore taken from a research and academic view that more research activities should be employed towards reaching needy people. This does not imply conventional research in the sense of only understanding and describing phenomena as they occur or as they are experienced by people, but research where change is implied. Such research should be attached to intervention that can lead to improvement of the conditions of needy people.

### **1.2 RATIONALE**

The rationale of this study was embedded in the declaration of 'The International Conference on Nutrition', convened by the Food and Agricultural Organisation of the United Nations (FAO) and the World Health Organisation (WHO) in Rome in 1992. Delegates at this conference addressed nutrition education and the promotion of appropriate diets and healthy lifestyles as a priority issue to approach existing nutrition-related problems. Nine priority themes were identified in the Plan of Action for Nutrition for alleviating malnutrition and hunger (FAO, 1998; FAO, 1997; Latham, 1997:9), namely to:

- improve household food security
- protect consumers through improved food quality and safety
- prevent specific micronutrient deficiencies
- promote breastfeeding

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- promote appropriate diet and healthy lifestyles
- prevent and manage infectious diseases
- take care of the economically deprived and nutritionally vulnerable
- assess, analyse and monitor nutrition situations
- incorporate nutrition objectives into development policies and programmes.

Global commitments were also made in the Rome declaration at the World Food Summit in 1996 and renewed in 2002, which included the vital role of women in nutrition and food security, the need for nutritionally adequate and safe food for all and the highlighted need for attention to nutritional issues as an integral part of addressing food security. Attention should also be given to improving the quality of diet, access to potable water, health care, health education and sanitation. They also recognised the importance of interventions to relief micronutrient deficiencies (FAO, 2002; FAO, 1996).

Commitment 2 from the World Food Summit in 1996, declares the following:

*"We will implement policies aimed at eradicating poverty and inequality and improving physical and economic access by all, at all times, to sufficient, nutritionally adequate and safe food and its effective utilization"* (FAO, 1996). A specific objective was set in the document to promote and support community-based food security and nutrition programmes that encourage self-reliance, utilising participatory planning and implementation processes. This specific objective is seen as the foundation on which any community-based research project should be built.

Seventy percent (70%) of the world's poor live in rural areas (World Bank, 2004). The World Bank's approach to rural development focuses on improving the well-being of rural people by building their productive, social and environmental assets. The World Bank's rural development strategy, 'Reaching the Rural Poor', as announced at the 'World Food Summit: *five years later*', includes focusing on the poor, promoting broad-based rural economic growth and building alliances with stakeholders. It aims, among other things, to bring services like health, education, sanitation and water supply to the rural poor (US Department of State, 2002). The rural development strategy for Africa rests on four pillars: making governments and institutions work better for the rural poor; promoting widely-shared growth; enhancing management of natural resources; reducing risk and vulnerability (World Bank, 2002a).



### 1.3 THE NUTRITION SITUATION IN SOUTH AFRICA

About 14,3 million South Africans are vulnerable to food insecurity (Stats SA, 2000). Data from the most recent 'National Food Consumption Survey' (NFCS) (Labadarios, 2000) shows that one out of five children (21,6%) in South Africa are stunted. The most severely affected children live on commercial farms with a stunting prevalence of 33,3%, compared to those living in urban areas with a prevalence of 17%. On commercial farms, 13% of children are severely stunted ( $< - 3SD$ ) compared with 5% in urban areas. The national prevalence of underweight is 10% with 5 % of children living on commercial farms being severely underweight as compared with a prevalence of 1,5% nationally. Vorster *et al* (1997:31) also indicate that rural black children are the most vulnerable group in South Africa.

The mean intakes of children aged 1 - 9 years are very low compared with the Dietary Reference Intakes (NICUS, 2003) for the following nutrients: calcium, iron, zinc, vitamins A, D, E, C, B<sub>6</sub>, riboflavin and niacin. The (NFCS) report also states that the greater majority of children in the country consume a diet deficient in energy and of poor nutrient density (Labadarios, 2000). The literature review of Vorster *et al* (1997:31) also concludes that rural black children have low mean energy intakes. Protein intakes seem adequate, but the quality of the protein is questionable.

Dietary intakes of economically and socially deprived communities consist mostly of plant-based staple foods (maize, bread or rice), with fruits, vegetables and animal products seldom being consumed, predisposing these communities to low micronutrient intakes. The average number of food items procured by the lower income households ( $< R1\ 000$  per month) surveyed during the National Food Consumption Survey, was 8 and varied from 4 in the Free State to 13 in the Western Cape indicating widespread food insecurity. This was confirmed by results on the Hunger Scale questionnaire, which showed that food insecurity ranged from 48 - 91, 40 - 84 and 26 - 66% at the level of the household, the individual and the child, respectively. The foods most frequently consumed by the low income households were maize (83%), salt (63%), white sugar (62%), tea (51%), fat (poly-unsaturated fatty acid oils) (42%), white rice (36%) and white bread (35%) (Maunder *et al*, 2000).

### 1.4 CHALLENGES FOR RESEARCHERS IN SOUTH AFRICA

Challenges are stated with regard to the current (2004) nutritional situation as known in South Africa. Community-based programmes to improve food security needs to be developed with an increase emphasis on improving dietary diversity and micronutrient content. Local production of

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fruits and vegetables can potentially provide households with direct access to micronutrient-rich foods. Food production programmes are also more effective when combined with promotional and educational activities. Nutrition education and the promotion of appropriate diets and healthy lifestyles are seen as a priority issue to address existing nutrition-related problems (FAO, 1998; FAO, 1997; Latham, 1997:9).

Nutrition education is also mentioned as an important part of improving household food security. If nutrition education programmes are to be effective in South Africa, it must be tailored to the current prevailing consumption patterns and the desired changes there-in, including the improvement of the nutrient density of children's diets as well as food hygiene and feeding practices (Labadarios, 2000). Interventions should be comprehensive, community-based, integrated, multidisciplinary and multi-sectorial (Gibney & Vorster, 2001). Swart *et al* (2000) also recommend that programmes should be appropriate for the prevailing socio-economic conditions, planned with the main focus to raise awareness of the importance of correct nutrition, the widespread low micronutrient intakes of children, their effect on children's growth and development, as well as the specific measures that need to be implemented to attend to micronutrient deficiencies. Furthermore, interventions need to be targeted to include the caregivers of the children, particularly those subgroups with poor nutritional status, the poor, those with low educational levels, and those living in the rural areas and on commercial farms specifically (Labadarios, 2000).

A challenge to researchers will be to design, implement and evaluate interventions specifically with the aim to address nutrition-related problems in rural communities in South Africa. Effective and successful interventions, however, cannot be done without a sound situation analysis carried out first. More specifically then, researchers need to get acquainted with communities, conduct needs assessments and plan action accordingly. Another challenge will be to adopt research approaches that will be conducive to human and social development. Such approaches include the promotion of full participation and empowerment of people in all intended activities. Researchers should be explicitly committed to conducting research that will benefit the participants; either through direct intervention, or by using the results to establish the actions to be taken for changing the situation.

### **1.5 PERSONAL VIEW**

This thesis is meant to be a showcase of the research work that I did from 2000 until 2004. It also shows my development as a researcher and scholar. It emerges from a somewhat different level and angle than what I have ended with. The reasons why I got involved in this research

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study were numerous. First I did it to expand my academic career, but I also had an intrinsic interest in community nutrition. Linked up with that is an altruistic commitment to disadvantaged people in South Africa. I have done this study with empathy for the participants and to make a true contribution to their development. I further more do not want this thesis to be in an intellectual vacuum, gathering dust at a library shelve, but that it should have meaning. It was therefore also intended to be a reference guide for the postgraduate students of the Department of Consumer Science, interested in nutrition and community work. At the time I did my studies there were about 12 students enrolled with these interests and I wanted to leave them a resource book to use as guide for their studies as well. I hoped that it will be useful for them and that they will carry on their studies with the same enthusiasm and dedication as I did.

The scope of readership was novel and experienced scholars, academics and researchers. This market niche implied certain shared knowledge and assumptions on research methods, however this statement is not assured. I therefore wanted the thesis to be a comprehensive report on the full range of resources that I have used, my acquaintance with it and how I have managed to merge the theory with pragmatic work. As Blaise Pascal wrote (Auden & Kronenberger, 1981) *“Words differently arranged have a different meaning and meanings differently arrange have a different effect”*. The thesis might therefore perhaps be seen as tedious to some readers.

The literature was used as thinking and writing tool and therefore it is interweaved throughout the thesis. The writing activity as such was also an analytical task. Writing was a vital way of thinking about the research study and the findings, which taught me to think about data in new and different ways. Thinking about how to present data also forced me to engage in cognitive, intellectual accounts with meanings, understandings and experiences present in the data. I did not want to relegate the thesis to an apparently mechanical and minor aspect of the research as writing up. Writing has actually deepened my level of analytic endeavour.

### **1.6 COURSE OF THE STUDY**

The research study took up the challenges mentioned in 1.4, by conducting a small-scale case study to devise a model suitable for nutritional interventions in rural communities on commercial farms. This model was theoretically validated with current findings on the local situation and was adapted along the research process. Validation was therefore an ongoing, emerging process based on applied evaluative research to conform for implementation in other communities on commercial farms. Validation was further extended through external



evaluations and comparisons with findings from other studies found in the literature. The flexibility implied in the model allowed modifications to be made where needed and, as a result, the model became more focused.

The model was not an exhaustive mapping of different theoretical perspectives, but a visual presentation of the process to follow in order to design, implement and evaluate community-based nutritional interventions. It is a framework for the process wherein action can be taken methodological and systematic. It is not a recipe for action, but a guide to stimulate further intellectual cognitive activity. It is also not meant to constitute a final mould of steps, activities and techniques, but it rather offers a glimpse of an intervention in process. Some of these ideas might be discarded in future time and others modified; others might be developed and documented more fully. The process is therefore considered never complete.

The aim of the study was not to strive for external validity (generalise the findings to other rural communities) but to internalise the process of research (specifically Participatory Action Research) within a rural community, contributing to the body of knowledge on the relevance and success of interventions in rural communities within the realms of health and nutrition. This process provided opportunities for the research team to learn more about implementing PAR in rural communities, to learn from the community itself and applying that knowledge into a constructed model for future projects.

## 1.7 OUTLAY OF THE THESIS

I want to introduce this thesis to you by summarising each consecutive chapter.

**Chapter 2** departs with the underlying philosophy, which originates in the ideology of community development. PAR is evident as paradigm with various theories intertwined such as community-based participatory research (CBPR), critical social theory, adult education theory and evaluative research. These theories were reflected in the design, implementation and evaluation phases of this study.

**Chapter 3** follows, reflecting on the research proposal and how it evolved into the research plan. The study was planned according to four incessant phases, namely needs assessment, design, implementation and evaluation. The research aim and more specific goals and objectives are also addressed. The content part of the study was grounded in the field of 'nutrition' with the applied concept of 'nutritional intervention'. Conceptualisation was done to clarify the intended meaning of all the relevant concepts. A discussion on the study population

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and sample, methodology and delimitations followed. Ways and methods used to enhance the quality of the research process, as well as the research results were applied throughout the study, but were for practical reasons dealt with in **Chapter 4**.

The first phase, situation analysis, are presented in **Chapter 5**. This phase included describing the community, identifying particular nutrition problems, translating those problems into addressable needs, and establishing a basis for the designing of a suitable intervention. This chapter was published (Green, Botha & Schönfeldt, 2004), and therefore include aspects of the background of the study and the approach that was followed. Some of the methodology, as mentioned in Chapter 3, is also repeated. The particular designing phase are described in **Chapter 6**. The aim of this phase was to design a needs-based, participatory-action orientated intervention in order to address the assessed needs which were identified as (1) poor hygienic and sanitary conditions and practices, (2) perceived food insecurity, (3) insufficient dietary diversification, and (4) insufficient food coping strategies. A decision was made to give priority to the hygiene and sanitation conditions in the community. Three steps were followed, namely to develop goals and objectives, construct a facilitation plan and to formulate an evaluation plan.

**Chapter 7** explains the process followed during the implementation of the designed intervention. It included three steps namely: preparing of the team, participants and ambience; conducting, coordinating and integrating the facilitation plan and action strategies (including the mobilising of resources, application of strategies and the integration of the programme with different other services in the area; revising and adapting the facilitation plan. **Chapter 8** includes reflections on evaluation, with specific reference to application within the nutritional and sanitation context. These reflections were used to set up an evaluation plan (indicated in Chapter 6) and to apply the plan within the context of this particular study. The plan briefly positioned criteria, indicators and methods for both the process and the outcomes of the intervention. The evaluation plan was implemented through actions of gathering and reviewing information and reflecting on the results. The chapter concludes with indications on how feedback on evaluation results was given to the community and reported to other researchers.

In **Chapter 9**, I felt it necessary to reflect on the originally stated aim of the study, the goals of the intervention, the approach used and ultimately the findings and outcomes. Some personal views were also included. The constructed model is depicted in **Chapter 10** as a visual representation of the process to follow in order to design, implement and evaluate community-based nutritional interventions in rural communities on commercial farms. Modifications to the



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model were done in accordance with feedback from the participants, outcomes of impact evaluation, expertise and recommendations of external evaluators and other stakeholders.

**Chapter 11** concludes with comments on the value of the study and further insights that were gained. The insights led to a list of lessons learned and recommendations for future application and research.

Additional notes on this thesis are as follows:

An adapted version of the Harvard referencing style was used, as recommended and applied by the Department Consumer Science. The method of citing electronic works also fitted in with this style. If a particular reference consisted of more than three authors, the Latin abbreviation, *et al*, was used, even when the reference was used for the first time. If no page number was cited, the implication is that reference is done to the source as an entity. Sources from the Internet also do not have any page numbers.

All quotations were done in 'Lucida Calligraphy'-font, using quotation marks. Various techniques were used to isolate or emphasise certain terms within the text; namely either inverted commas or *Italics*. If any categorisation was implied, the word was also printed in bold (e.g. 3.6.1; 5.3.4). *Italics* were used when words from a different language were included (e.g. Sotho, Latin). Inverted commas were used when a term was used unconventionally. Abbreviations that were used throughout this study were taken up in a Glossary.

## *Chapter 2: Philosophical and theoretical driving force of the study*

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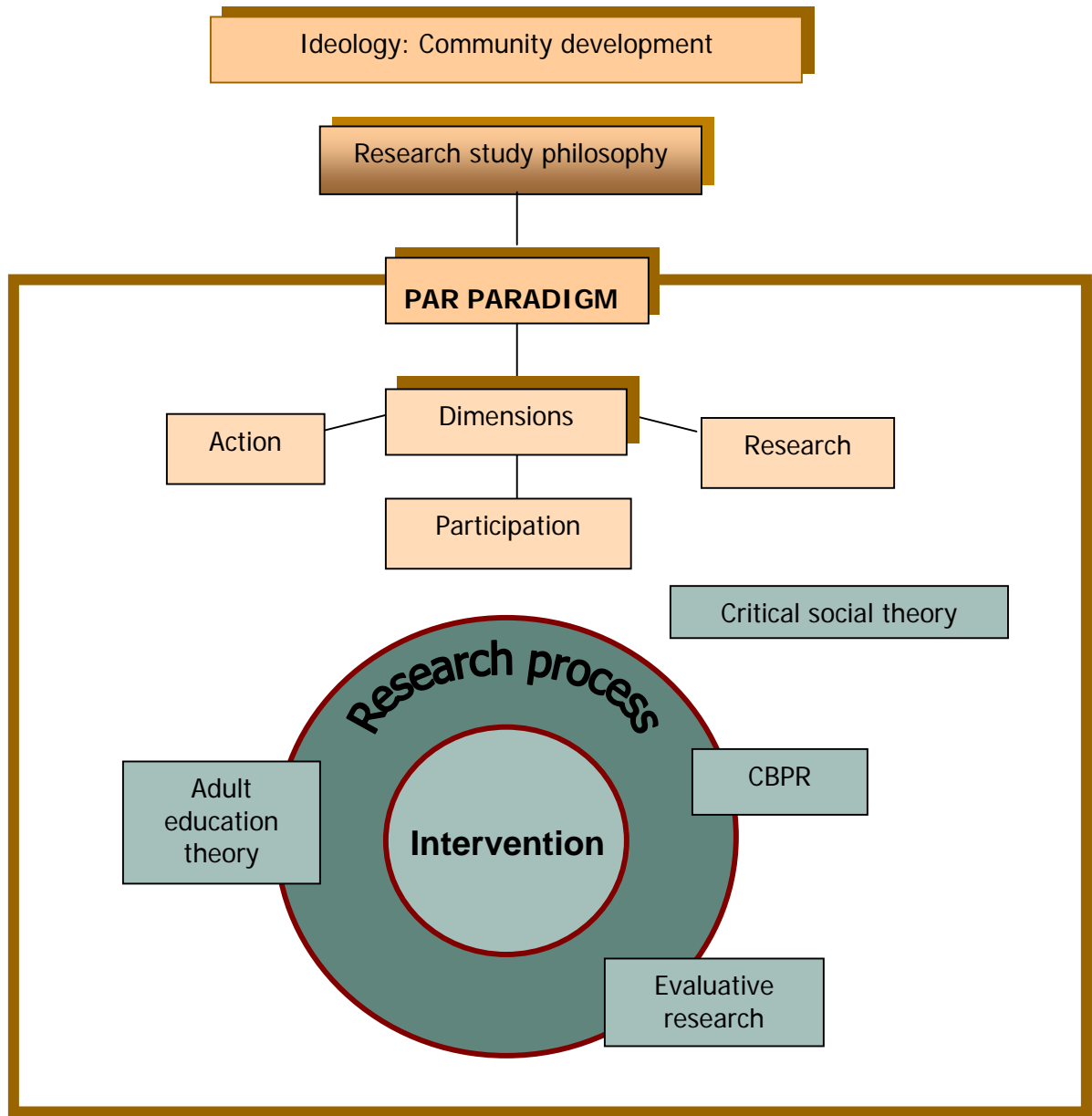
## 2.1 INTRODUCTION

The philosophical point of departure for this research study originates in the ideology of community development. The concept 'ideology' is used to refer to certain beliefs and doctrines reflecting the views of experts in the field. Community development in a broad sense connotes a process of social learning through people's participation in promoting self-reliance (Burkey, 2000:60). Within the context of this study, it refers to the process of assisting needy people within a specific geographical area (the community), to address felt needs and improve their lives for the better.

PAR is evident as paradigm. The term 'paradigm', as used here, means a pattern of ideas, values, methods and behaviour, which fit together and are mutually reinforcing. PAR is considered a research methodology as well as a development strategy. Although the dimensions of PAR denote participation, action and research, it is specifically rooted in the notion of 'participation', which is the very means to, and end of, human development (Fals-Borda, 2000: 30; Fals-Borda, 1991a:5; Greenwood & Levin, 1998:7).

The PAR paradigm, as applied in this research study, is underpinned by a combination of various research theories and approaches such as CBPR and critical social theory with aspects of adult education theory and evaluative research intertwined. CBPR is seen as PAR applied within the context of communities. The relevance therefore is noticeable. Critical social theory is seen as the mould into which PAR is set and needs to be discussed first. Principles of adult education theory and evaluative research are applied during the designing and implementation phases of the intervention and will only be briefly introduced in this writing. A more detailed explanation will follow during the discussion of each intervention phase. The common theme in all these theories is the full participation of the actors in the process of learning about their needs and opportunities and in the action required to address them.

This philosophy was considered the epistemological basis of the research process. It gave guidance, orientation, and direction to researcher, the change agent, throughout the study and me. This basis is graphically portrayed in Figure 2.1, indicating how the various theories, approaches and principles were applied. This writing was mainly done for academic purposes to reveal my own thoughts as researcher and conductor of this research effort. Each of the research theories, approaches and principles, as it appears in Figure 2.1 are introduced and discussed with the purpose to assist the reader in formulating a similar philosophical perspective on the study.



**FIGURE 2.1: PHILOSOPHICAL BASIS OF THIS RESEARCH STUDY**

## 2.2 COMMUNITY DEVELOPMENT

The ideology of 'community development' is often used as vehicle to bring about change in rural communities. There is no fixed and final definition of development; merely suggestions of what development should imply in particular contexts. It is been described as a normative concept that is value-laden, multidimensional, interrelated, and involving choices about set goals. These goals, within various contexts, all have in common to achieve the full potential of all persons in a community. Development in itself embraces change evolving gradually over time. It highlights the

fact that development is a process of continual learning, demanding the participation of all towards self-reliance (Swanepoel & De Beer, 1997:71).

Development can also involve structural transformation, which implies political, social and economic changes (Hettne in Burkey, 2000:33; Coetzee & Graaff, 1996; Wetmore & Theron, 1998). It can also imply the provision of social services or the introduction of new technologies. It is obviously not merely a simple matter of implementing programmes. Development involves changes in the awareness, motivation and behaviours of individuals and in the relations between individuals as well as between groups within a society. These changes have to appear from within individuals and groups and cannot be imposed from the outside (Burkey, 2000:48).

The fundamental objective of development lies in the idea of a world in which each individual has the right to live a life of well-being and worthy of a human being. In any meaningful sense, it will begin with and within the individual. Unless motivation comes from within, efforts to promote change will not be sustainable by that individual. Without such a development within people themselves, all efforts to improve people's quality of life will be immensely more difficult, if not impossible. The process whereby people learn to take charge of their own lives and solve their own problems is the essence of development (Burkey, 2000:56). Development is not always compatible with theory but should concern itself instead with reality as defined, not by scientists and researchers, but by people themselves (Wetmore & Theron, 1998:35). Burkey (2000:49) very illustratively wrote the following:

*“Participatory development is not a patchwork quilt of different coloured components, but a finely woven textile of many coloured threads. These threads are woven together by the people and the pattern is determined by their own needs and priorities”.*

### **2.2.1 Rural community development**

The commonly accepted approach to rural community development has been to establish programmes, which treat the community as a more or less harmonious unit (Burkey, 2000:42). It is assumed that individuals, groups and classes in a community have common interests, which are sufficiently strong to bind them together. It is also assumed that these interests are sufficiently common to create general enthusiasm and that any conflict of interest are sufficiently reconcilable. These assumptions have proven to be unrealistic. People in the community that are better off, usually benefited most from programmes, followed by a growing disparity and further inequality.

Given the negative results of programmes for the poor, arising from 'harmony models' of community development, an alternative must be used to ensure that the more powerful elements in the community do not receive most of the benefits of developmental activities. Burkey (2000:42) suggests that efforts should be directed to smaller, more homogeneous groups, which is precisely done within this research study.

Sustainable rural development, however, will only be achieved through the efforts of the rural people themselves working for the benefit of themselves, their families and their communities. After decades of paternalism, all too many rural people have come to believe that government agencies are going to develop them. The result was apathy interspersed with peaks of expectation as one or another new development programme comes their way. Rather than promoting development, such programmes have ended up developing 'dependency thinking' (Burkey, 2000:43).

## **2.3 CRITICAL SOCIAL THEORY**

The core concept of the critical social theory is to be found in the idea of transformation. To merely understand and interpret the lives of people is not enough; people need support to change their lives for the better. The aim of social science should therefore be to assist people in different ways to change their lives and liberate themselves. Researchers need to move beyond mere understanding and interpretation of phenomena to emancipation, empowerment and transformation of the people affected by the phenomena. Explanation of phenomena under investigation should thus lead to transformation and change in the world and lives of the people involved. The ultimate epistemological criterion of research should consequently be pragmatic (Babbie & Mouton, 2001:37).

The founders of the Frankfurt School originally formulated a critical social theory in the 1930s. They reinvigorated Marxian orthodoxy and rejected positivism as a worldview of adjustment (Agger, 1991:24). Positivism suggests that one can perceive the world without making assumptions about the nature of the phenomena under investigation. One experience the world as rational and necessary, thus deflating attempts to change it. It reinforces passivity and fatalism. Critical theorists attempt to develop a mode of consciousness and cognition that breaks the identity of reality and rationality, viewing social facts not as inevitable constraints on human freedom, but as pieces of history that can be changed. It has a sort of 'dialectical imagination', which Jay (in Agger,

1991:24) defines as *“the ability to view the world in terms of its potential for being changed in the future, a hard-won ability in a world that promotes positivist habits of mind acquiescing to the status quo”*.

Jürgen Habermas (1988) extended the theory giving it a linguistic turn in the form of his communication theory. He attempted to shift critical social theory from the paradigm of consciousness to the paradigm of communication. He tried to integrate the positivistic emphasis on control with the hermeneutic insistence on communication and added the critical interest of emancipation and transformative science. He introduced the concept of ‘self-reflection’, which determines the meaning of validity of critical propositions of this category. Self-reflection is determined by an emancipatory cognitive interest.

Brian Fay (1975) further developed the work of Habermas. He stated that a critical social science is one that “attempts to account for the sufferings and felt needs of the actors in a social group by seeing them as the result of certain structural conflicts in the social order.” He attempted to explain these conflicts and hence the sufferings and felt needs of the people by giving a historical account in quasi-causal terms. He depicted the latent contradictions between the needs, wants, and purposes, which the social order gives rise to as well as the satisfaction that it provides (Fay, 1975:96).

A critical social science must become part of the everyday life worlds of ordinary people. It should perform an educative and ultimately a transformative role. The aim is therefore to liberate people from their state of alienation through the process of self-reflection to transform or change the human condition through a critique of those alienating or repressing factors, which sustain their alienation/false consciousness/self-deception.

Agger (1991:19) moved critical theory into a third generation, indebted with post structuralism and postmodernism as well as with a feminist version of postmodernism. Postmodernism rejects all appeals to meta-narratives, but celebrates the local, the specific and the differences and accepts the link between inquiry and power. It promises a positive science (universal and objective) as well as an emancipatory science. It further supports the search for concrete, context-specific and historically situated narratives that are not divorced from the social and political interest of people.

Within the mould of critical social theory, PAR can now be cast.

## 2.4 PARTICIPATORY ACTION RESEARCH (PAR) PARADIGM

*“Participatory research was defined as a vivencia (life experience) necessary for the achievement of progress and democracy, a complex of attitudes and values that would give meaning to our praxis in the field. From this time on, PAR had to be seen not only as a research methodology by also as a philosophy of life that would convert its practitioners into ‘thinking-feeling persons’. Then our movement took on world-wide dimensions”* (Fals-Borda, 2000: 30).

PAR stemmed from community development movements for oppressed people. It originated as a ‘dialectical response to a contemporary crisis’, referring to the realisation within social science that the knowledge production aspirations of the academics did not inform social practice and the fight for social justice (Fals-Borda, 1991a:4). This contemporary crisis leads to an upsurge on so-called ‘alternative’ research methodologies, which by definition had explicit political goals and commitments, namely to liberate and empower those who were being studied. PAR seems to be an inevitable move towards a new paradigm of inquiry. It has been described, as a method of research where creating a positive social change is the predominant driving force. PAR grew out of social and educational research and exists today as one of the few research methods, which embraces principles of participation, reflection, empowerment and emancipation of groups seeking to improve their social situation (Seymour-Rolls & Hughes, 1995:1).

The following definition of PAR proposed by Whyte (1995:289-290) could be considered a basic definition including the views from different traditions and ideologies:

*“Participatory action research involves some members of the subjects of study, participating actively in all phases of the process from the design of the program, through its implementation, and including actions that come with or follow upon the research”.*

In the Third World, PAR has emerged as part of the search to render development assistance more responsive to the needs and opinions of the local people. Oppose to conventional research, PAR is defined by an approach that aims to democratise science, to engage the subjects of research as active participants in what is often an interdisciplinary enterprise (Maclure & Bassey, 1991:190). Three particular attributes distinguish PAR from other established research strategies:



- Shared ownership of the research enterprise
- Method of community-based learning
- Aims to stimulate community-initiated action.

Pragmatically PAR is further cited as a cyclical, reflective process. The different elements and aspects can therefore not be arranged in a consecutive order. It may start of with the formulation of a problem, including exploring a need for inquiry and deciding what the purpose of research would be. This may evolve from interactions with members and groups in the field or community. The researcher and research participants then decide together how to conduct the study. Implementation is done by periodic fact-finding trips (household trials) on a collaborative basis. The products/results of the research (also referred to as local theory) are created by using different types of expertise and frames of reference of the participants and researcher (change agent) as a point of departure. The data however, should make sense to the participants, and deployed in terms of their own language and in relation to their own perceptions and values. Dissemination of results should not only be to academic audiences but primarily returned to the participants (Argyris & Schön, 1991:86; Greenwood & Levin, 1998:65; Kemmis & McTaggart, 2000:595; Seymour-Rolls & Hughes, 1995).

The consecutive process of PAR is also described in terms of a cycle surrounding some inner moments, namely that of reflection, planning, action and observation. These research moments exist interdependently and follow each other in a spiral or cycle (Kemmis & McTaggart, 2000:597). The most distinctive feature of PAR, which informs and influences all the other characteristics of this paradigm is that it involves participation between the participants and the researcher (Babbie & Mouton, 2001:315). Participation as a feature and a dimension of PAR is discussed later in more depth. Other principles that form part of PAR are considered to be:

- The role of researcher as change agent
- The democratic nature of the research relationship
- Incorporation of local knowledge
- Knowledge generated for purposes of action
- Ownership
- Empowerment
- Emancipation
- Collaboration and social interaction
- Eclecticism and diversity

- Case orientation
- Emergent social process
- Linking scientific understanding to social action
- Recursive (reflexive and dialectical)

(Babbie & Mouton, 2001:315; Greenwood, Whyte & Harkavyl, 1993:178; Kemmis & McTaggart, 2000: 595; Whyte, 1991:97).

It is these principles, which set PAR apart from traditional research methods and other modes of 'action research'. The key difference between PAR and conventional methodologies lies in the location of power in the research process. Within PAR, participation is taken to the extreme, involving the people in data gathering, analysis and controlling and use of outcomes, to the extent of shared ownership of the research enterprise (Nelson & Wright, 1995; Reason, 1994:201). PAR is explicitly committed to conducting research that will benefit the participants either through direct intervention or by using the results to inform action for change. A detailed discussion on the minor differences between PAR and 'Action Research' is beyond the scope of this thesis.

PAR also has an overtly political stance. This orientation owes much to critical theory, which emphasizes the political role of scientific inquiry (Fals-Borda, 1991b:162). However, PAR also stimulates community-initiated action, which is often not politically motivated.

PAR emerges over time as a process; it does not appear full-blown at the outset in most situations. Each programme usually started as an attempt to solve a particular kind of problem and gradually opened into a much broader and deeper participatory action research process (Greenwood *et al*, 1993:180). PAR according to Burkey (2000:60) is a process of conscientisation. The primary objectives being to increase understanding of the local situation and to increase insight of the local people into what factors and relationships are the root causes of and contributing factors to their problems.

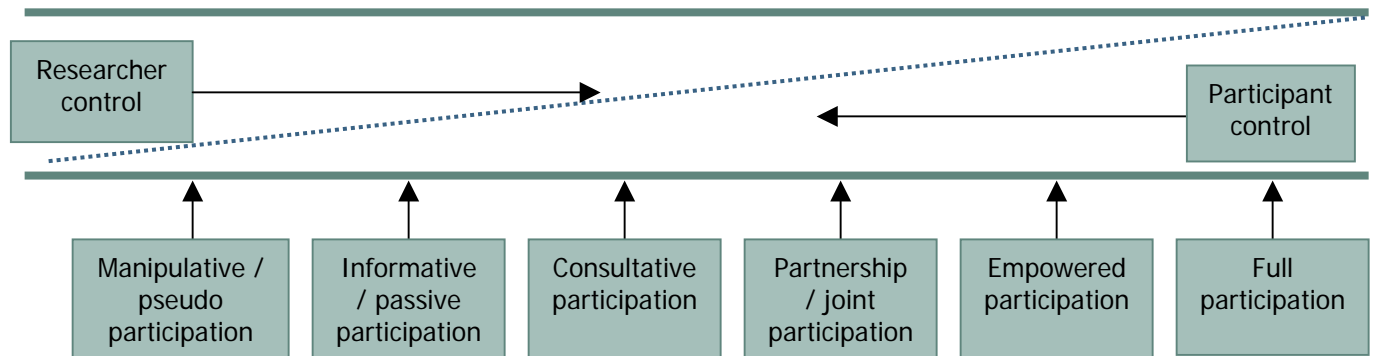
PAR is a contested concept applied to a variety of research approaches and employed in a diversity of fields and settings. The nomenclature itself reflects the contestation, with dimensions of action research encompassing most of the approaches with participatory research overlapping to include the rest. There is some convergence of interest among researchers in each of the approaches with some shared views but differences as well.

## 2.5 DIMENSIONS OF PAR

PAR can logically be dissected into dimensions of participation, action and research. This tripartite is also integral to any learning process within a community and therefore part of the development strategy itself. Within various research studies and programmes there will be a multiple meanings of these concepts. In some instances, people will be aware of the different meanings they give to a word and will contest them, but in others, people will assume that they understand each other when they use the same word, and implicit ideological differences will not be openly contested. To avoid any such confusion, the concepts of participation, action and research, as they apply in this study, need further explanation.

### 2.5.1 Participation

Scholars of PAR and many development agencies seem to agree that different degrees of participation can be discerned. They distinguish between a continuum of participation, ranging from minimal to intense participation, as illustrated in Figure 2.2. Each type of participation is related to the degree of involvement and control of the researcher and the participants. At the one end of the scale, there is the position where participation means manipulating participants into being involved in projects where they have no interest in, also referred to as 'pseudo-participation'. The next level can be described as informative, where the researcher, who holds control, is merely informing participants about decisions and actions. Then follows the level of consulting participants on the central aspects of the research, but the researcher stills stays in control, taking responsibility for decision-making. The middle position on the scale reflects the view of a partnership between researcher and participants with decision-making and control being shared. The researcher starts to transfer control until participants are empowered. At the other extreme of the scale is thus the realm of what is termed 'participant control' referring to the participants who are in full control of the research study (Fals-Borda, 1991a:5; Greenwood & Levin, 1998:7; Reason, 1994:198).



**FIGURE 2.2: CONTINUUM OF PARTICIPATION** (Eyben & Ladbury, 1995:199; Fals-Borda, 1991a:5; Greenwood & Levin, 1998:7; Karl, 2002)

The World Bank Learning Group also uses a schema to measure the intensity of participation (Eyben & Ladbury, 1995:199). This schema relates to four levels of participation, namely that of *information sharing, consultation, decision-making and initiating action*.

- Information sharing occurs when information is shared with programme beneficiaries about the aims of the programme and the way it will affect them. It puts people in the picture and can help facilitate individual and collective action.
- Consultation means that people are not just informed but consulted on key issues. Local people may provide feedback to programme managers who can use this to influence the design and implementation of future phases of the programme.
- Decision-making occurs when people are involved in decision-making about aspects of the programmes, including programme design and implementation from the beginning.
- Initiating action takes place when people feel confident enough to propose action and to initiate it themselves. Proposals are community-based, not assigned by outside agencies.

No particular hierarchical order is intended. The appropriate level of participation depends on the type of programme and the socio-economic environment in which it is being implemented. Beneficiary participation should only be fostered on the grounds of enhancing efficiency, effectiveness and sustainability (Eyben & Ladbury, 1995:199).

Effective participation is probably most likely when the various involved partners are satisfied with the level at which they participated. Because this was a PAR study and not a full blown developmental project, the degree of participation was limited. The research team had specific goals to reach and had distinct roles and responsibilities, which could not be shared with the participants. Other factors that limited full participation were the character of the needs addressed,

the environmental conditions (they were living on a commercial farm and are dependent on the farmer), the aims and capacities of the research team and the skills of the researcher. It was therefore not reasonable to demand full-scale participation.

The degree of participation, which is possible within a particular research study, is a function of a combination of factors. It is the joint result of the character of problems and environmental conditions under study, the aims and capacities of the research team and the skills of the researcher. The researcher also has a distinct role and responsibility, which cannot be shared by others, and therefore places limits on degrees of participation (Karlsen, 1991:145). It will not be reasonable to demand full scale PAR to be achieved in all cases or even the same degree of participation (Greenwood *et al*, 1991:180).

No one may mandate in advance that a particular research process will become a fully developed participatory action research programme. Participation is a process that must be generated. It begins with participatory intent and continues by building participation processes into the activity within the limits set by the participants and the conditions. To view participation as something that can be imposed, is both naïve and morally suspect. Developing the participatory dimension of PAR is a responsibility that never is completely fulfilled and can always be improved (Greenwood *et al*, 1991:180).

Participation, related to the research process of PAR, implies that all participants in a study are integrated by participating fully and actively. Research is thus transformed into an active and interactive communal enterprise (Fals-Borda, 1991b:150). The action part of PAR will now be clarified.

### 2.5.2 Action

There is a peculiar distinction in proximity and responsibility between action and research that makes it useful to consider these principles separately. Action in the research process is a strategy for using scientific models to solve practical problems. Research fulfils a dual aim of theorizing and taking action, with action based on theorising. The researcher is not only theorising and describing problems but also contributing to evolving solutions; not only responsible for the research process, but at the same time a participant and jointly responsible for the change process (Karlsen, 1991:145).

Most social scientists seek to understand social relations, not change them. Historically, research was considered an intellectual activity and researchers were not expected to engage in action. Schrijvers (1995:23) proposed an alternative by using a dialogical approach, where dialogue form the main communication process within the research process. This dialogical approach makes room for research that is action-based.

Action, for the purpose of this study, involves initiating change through a process of discussion, negotiation and dialogue between researcher and participants. Action is also seen as the only sensible way to generate and test new knowledge (Greenwood & Levin, 1998:6). An overlap with research, however, is eminent. Certain parts of the process remain the sole responsibility of the researcher and participants cannot share in that. Ensuring that the data, assumptions and interpretations are valid is the researcher's responsibility. Only researchers can present findings to scientific communities. The researcher can relate to the action process through dialogue, reflection and learning and therefore has a responsibility for both action and research processes (Karlson, 1991:149). The researcher, however, is not a permanent part of the field and can withdraw as soon as the research-defined part of the action process has been concluded. The outcomes of action and research do not therefore have the same degree of proximity to researchers. The participants do not have to take part in the research process, but they have to live with results from the action process.

Conclusively then, action refers to investigating reality in order to transform it. It involves a sequence of activities that starts with identifying a problem or opportunity, and the factors that may influence the solution. It then proceeds through several steps to formulate, implement, and access the required change with the aim to make a difference in the day-to-day- lived realities of participants in their work and lives (Walton & Gaffney, 1991:101).

### **2.5.3 Research**

Research within the PAR paradigm has a defined purpose to generate knowledge that leads to action and through reflection to new knowledge and action. Both research participants and researcher share created knowledge. Research becomes a social activity where the researcher is part of the reality being investigated. Without the action part, though, research is an exercise for the benefit of researchers only (Burkey, 2000). It is mainly seen as a learning strategy and only

secondarily as producing results in the conventional sense. It is a way of learning how to explain a particular social world by working with the people who live in it to construct, test, and improve theories about it so they can better understand and control it (Greenwood *et al*, 1993:179).

Research can be 'grounded' by including elements of action and participation. 'Applied research' is evident when the researcher identifies practical problems as research problems and emphasizes the implications for practice rather than for theory (Walton & Gaffney, 1991:119). Those in the action process share the steps taken during practicing research. Research and action, however, have different objectives (Karlsen, 1991:149). Each step of the research process can potentially contribute to, or being informed by, the aspects of the action process. Research and action without participation, however, cannot be effective. At each stage of these processes, participation can potentially strengthen both the knowledge and the action outcomes. The action and research processes can thus benefit from one another and from greater participation (Greenwood & Levin, 1998:56; Greenwood *et al*, 1993:189).

## 2.6 COMMUNITY-BASED PARTICIPATORY RESEARCH

When PAR involves the conducting of research, which recognizes the community as a social and cultural entity, with the active engagement and influence of community members in all aspects of the research process, it is referred to as community-based participatory research (CBPR) (Minkler & Wallerstein, 2003; O'Fallen, Tyson & Dearth, 2000:1). CBPR will be introduced to the reader with the purpose of showing the relevancy to the research study.

CBPR is committed to conducting research that will benefit the participants either through direct intervention or by using results to inform action for change. Community participation, as an active partner in the research process, provides numerous benefits to research findings and public health intervention programmes. Community participation builds and strengthens the capacity of community residents to address future health risks, through education, outreach, and training (O'Fallen *et al*, 2000:1).

The rationale for CBPR includes as its aim to improve health and well-being of communities involved, both directly through examining and addressing identified needs and indirectly through increasing power and control over the research process. Other advantages of incorporating this approach into research designs are stated as that it:



- Enhances data quality and quantity, by establishing trust and by engaging local knowledge and local theory based on the experience of people involved
- Moves beyond categorical approaches and overcomes fragmentation and separation of individual from culture and context
- Improves research definition and direction
- Enhances translation and sustainability of research findings
- Improves the community's health, education and economics, by sharing knowledge obtained from programmes
- Has the potential to bridge the cultural gaps that may exist between the partners involved (Israel, 2000:1).

The key principles of this approach are captured as that it recognizes the community as a unit of identity and that it strengthens a sense of community through collective engagement. It builds on strengths and resources within the community and seeks to support or expand social structures and social processes that contribute to the ability of community members to work together to improve health. Further more (it):

- Facilitates collaborative involvement of all partners in all phases of the research and focuses on issues and concerns identified by community members, creates processes that enable all parties to participate and shares influence in the research and associated change efforts.
- Integrates knowledge and intervention for mutual benefit of all partners
- Gathers information related to interventions and new understandings emerge as participants reflect on the interventions conducted
- Promotes a co-learning and empowering process that attends to social inequalities
- Facilitates the reciprocal transfer of knowledge, skills, capacity and power
- Gives explicit attention to the knowledge of community members and an emphasis on sharing information, decision-making power, resources, and support among members of the partnership
- Involves a cyclical and iterative process
- Includes community assessment, development of research methodology, data collection and analysis, interpretation of data, determination of intervention, dissemination of results, intervening, establishments of mechanisms for sustainability
- Addresses health from both positive and ecological perspectives
- Emphasizes physical, mental and social well-being



- Encompasses biomedical, social, economic, cultural, historical and political factors as determinants of health
- Disseminates findings and knowledge gained to all partners
- Gives ongoing feedback of data and usage of results to inform interventions
- Involves a long-term commitment by all partners (Israel, 2000:21).

CBPR should be an integration of these principles in various combinations and on various levels. The extent to which any research study can achieve these principles, or a combination there-of, will vary depending on the context, purpose and participants involved in the research process.

There are numerous examples of successful community-based participatory research programmes. These programmes have accomplished their research objectives and shown research productivity by maintaining a positive working relationship between community and scientific collaborators. While there are successful programmes, there seems to be not a single model for success. However, the process of CBPR entails several components and stages of elements that must be considered if we are to understand the features of successful process. These components include:

- The formation and ongoing maintenance of community relationships
- Developing a focus area
- Defining research problems
- Understanding the ideological background and political nature of CBPR
- Documenting and communicating results (Arcury, 2000:42).

Building relationships is extremely important for conducting successful CBPR programmes. These relationships entail individual scientific investigators working with and developing the trust of community members. Building these relationships takes time. The time invested to build mutual understanding is essential if a programme is to flourish, because the investment in person-to-person relationships is translated into the flexibility and trust necessary for those stressful aspects of collaboration. It is also important to establish relationships between the academic institution and the community that extend beyond the person-to-person relationships. Community members need to have a sense that academic institutions are reliable and that the scientific organizations will not withdraw when political pressure is applied. Involving students in CBPR programmes is a mechanism for increasing academic reliability. Scientists involved in CBPR programmes need to be aware of colleagues who have important research skills and who already have the ideology that will make them amenable to working in CBPR.

A successful CBPR programme is dependent on participants acknowledging the roles of ideology. Participation requires sharing an ideology about the importance of community participation in problem solving. Collaborating in a CBPR programme is a statement that reflects mutual respect, democratic decision making and enhances the benefits of research for local communities (Arcury, 2000:46). In the process of CBPR there is always political power of some sort involved. To ignore political and legal pressure would be detrimental to CBPR programmes. The willingness of academic researchers to engage in advocacy and policy enhances credibility in the community and build trust.

One of the exceptional features of CBPR is that it combines basic research with interventions, with a constant challenge in the tension between the research and intervention aspects of the programme. The need to delay the beginning of the intervention due to data collection for the basic research aspects of the programme can be a source of frustration for community members who feel the community is receiving no direct benefit from the research until the intervention activities begin. A well-designed study also involves extensive planning for the baseline and post-intervention data collection that will determine the success of the intervention. This methodological approach to planning the intervention can be viewed as too prolonged to community members who recognize the need in the community for the intervention to occur in a timely manner. Successfully navigating this challenge is greatly facilitated if the partnership has established a level of trust that allows honest and open discussion of all members concerned (Brakefield-Caldwell & Parker, 2000:57).

The value-addedness of combining basic research and intervention research can produce a synergistic effect for the overall research study as well as individual benefits. The intervention component can use data collected through the basic research component to guide intervention activities as well as to evaluate the effect of the intervention. If the basic research involves human participants, study participants are better recruited and retained through the opportunity afforded for involvement in intervention activities. The input of community members in the programme design, implementation and evaluation of combined basic and intervention research greatly enriches the research process and overall outcomes. Community member's contributions ensure the programme to be grounded in the experience of members of the particular community where the research is taking place. Involvement of community members also greatly increases the cultural

appropriateness of interventions and outcomes that are being measured (Brakefield-Caldwell & Parker, 2000:59).

Community members can assist researchers in finding solutions to possible ethical dilemmas that are identified such as translation of informed consent forms into a meaningful context for non-English speaking research participants. By involving community members in the planning, implementation, and evaluation of the initial interventions and basic research, researchers can ensure the acceptability of the intervention to potential consumers. Community members are the future consumers of the intervention that is being tested. Their input in refining the intervention and evaluating not only its effectiveness but also its acceptability to future consumers will enhance the quality of the research findings.

The approach of CBPR emphasizes capacity building for all partnership members. Through the acquisition of new skills and understanding, the capacity of all partners can be increased. This increased capacity can result in positive long-term effects such as social change and civic involvement. Though researchers are still struggling with how best to document and measure these long-term effects, there is growing evidence of the importance of effects such as civic involvement on the health of communities (Brakefield-Caldwell & Parker, 2000:59).

## **2.7 ADULT EDUCATION THEORY**

There are many theories useful in improving our understanding of adult education. Most of these theories focus on learning, or teaching or both aspects (Green, 2002:11). The emphasis in this research study is on the theories of learning, as it is assumed that the principles of these theories will contribute not only to understanding how adults learn, but also on how to construct and facilitate the learning process. Merriam and Caffarella (1999:249) organised the theories according to those that focus on adult characteristics, those that emphasise an adult's life situation, and those that centre on changes in consciousness. These three categories can broadly be linked to the adult learner, the learning situation and the learning process (Merriam & Caffarella, 1999:249).

Most of the theorists and authors on adult education seem to try to identify principles that can be applied to practicing adult education, summarising what has been learned from research or observed in practice. Merriam and Caffarella (1999:302) questioned the usefulness of a set of principles for guiding research or practice. Learning in adulthood is embedded in its context and a

single set of principles is not likely to hold truth for the wide-ranging diversity of learners in learning situations. Nonetheless, until an integrated theory is established, a generic set of principles can be useful to guide adult education activities.

For the purpose of this study, a summarised version of adult learning principles (as presented in (Green, 2002:11) will suffice. These principles are mentioned where it was applied, namely during the implementation phase of the intervention (see Chapter 7).

## 2.8 EVALUATIVE RESEARCH

Evaluative research can be undertaken for different purposes, namely to make judgments, improvements or to be knowledge-oriented (Patton, 1997:68-76).

In the case of **judgment** evaluations – the aim is to come up with a value assessment regarding the worth of an intervention. Evaluations done for this purpose endeavour to answer questions such as:

- was the intervention successful
- was it effective
- was the intended target group reached
- did the intended beneficiaries receive the intervention in the most effective and efficient manner (Babbie & Mouton, 2001:337; Patton, 1997:76).

**Improvement** evaluations are undertaken to inform programme managers and stakeholders about ways of improving the intervention. Formative evaluation and quality enhancements are examples there-of. Improvement is also called for when questions such as the following are asked: what are the programme's strength and weaknesses; has the programme been properly implemented; what constraints are there on proper implementation; are the programme participants responding positively to the intervention? (Babbie & Mouton, 2001:339; Patton, 1997:76).

To **generate knowledge** about programmes is often set as a more academic aim. Research is then done to gather a deep understanding of how interventions make a difference in the world of the participants. Generalisations about the effectiveness of a programme or to build new theories and models also plunge within this category (Patton, 1997:76). It is also said that evaluation

studies of this kind is driven by concerns for understanding how people change their attitudes and behaviour because of successful interventions (Babbie & Mouton, 2001:339).

### 2.8.1 Various approaches

Babbie and Mouton (2001: 350) offers three methodological approaches within evaluative research, namely:

- Applied PAR
- Experimental
- Qualitative designs.

Applied PAR (as previously discussed), refers to participatory evaluation which involves empowerment of the participants in a collaborative way to incorporate them as co-evaluators of the study or programme. Communities are empowered and emancipated through the involvement of the participants and other stakeholders in the evaluative process (Fetterman, Kaftarian & Wandersman, 1996; Reason, 1994:189; Rossi, Freeman & Lipsey, 1999: 57-62). Experimental approaches include quasi-experimental designs and are using quantitative data. These evaluations are often associated with outcome or impact evaluations. Within the quasi-experimental design, three different designs are found, namely time series, non-equivalent control groups and multiple-time series (Posavac & Carey, 1997: 142-180; Rossi *et al*, 1999:309-340). Qualitative designs are described as flexible, open and associated with process evaluation conducted in natural settings (Glaser & Strauss, 1999: 15-18; Posavac & Carey, 1997: 213-231).

The World Bank (2002b) provides a useful overview of some tools, methods and approaches for monitoring and evaluation. This overview is summarised in Table 2.1.

**TABLE 2.1: SUMMARY OF EVALUATIVE TOOLS, METHODS AND APPROACHES**  
(World Bank, 2002b)

<b>Approach</b>	<b>Purpose</b>	<b>Use</b>	<b>Advantage</b>	<b>Disadvantage</b>
Performance	Measures inputs, processes, outputs, outcomes and impacts	Setting targets Identifying problems Indicating if reviews & in-dept interviews are needed	Effective Facilitates benchmarking & comparisons	If poorly defined, not a good measure Tendency to define too many indicators Trade-off between optimal and measurable
Logical framework	Clarifies objectives Identifies causal links Identifies performance indicators Reviews progress	Improving quality of designs Summarising activities Assisting in operational plans Providing objective basis	Ensures analysis of assumptions & risks Engages stakeholders Can be used as management tool	Stifles creativity Static if not updated Requires training and follow-up
Theory-based	Allows identification of critical success factors	Mapping of complex activities Improving planning & management	Early feedback Early correction of problems Identifies side-effects Helps prioritising Basis for likely impacts	Easily becomes overly complex Stakeholders might disagree about critical factors
Formal survey	Collects standardised & comparable information	Providing baseline data Comparing of groups, changes over time, conditions within targets Describing conditions Key input to evaluation of impact Preparing for strategies	Can be applied to populations Quantitative estimates can be made	Results are not available for long time period Data analysis can be a bottleneck Expensive Time-consuming Information is difficult to obtain
Rapid appraisal	Quick, low cost way to gather views and feedback	Providing rapid information for decision-making, qualitative understanding, context and interpretation of quantitative data	Low cost Quickly (4-6 weeks) Flexible	Relates to specific communities Less valid, reliable and credible than other methods
Participatory	Active involvement of all stakeholders	Learning about local communities Identifying problems Providing knowledge and skills to empower people	Examines relevant issues Establishes partnerships and local ownership Enhances local learning Provides timely, reliable information	Less objective Time-consuming Potential for domination and misuse
				(continued)

**TABLE 2.1: SUMMARY OF EVALUATIVE TOOLS, METHODS AND APPROACHES**  
(World Bank, 2002b) (continued)

Approach	Purpose	Use	Advantage	Disadvantage
Public expenditure tracking survey	Tracks the flow of public funds Determines extent to which resources reach targets Part of a larger service delivery	Diagnosing problems Providing evidence on delays and corruption	Supports accountability Improves management	Reluctance to be transparent Substantial cost
Impact	Systematic identification of effects Better understanding of extent to which activities reach target	Distinguishing impact and outcome activities from other external factors Clarifying whether costs were justified Drawing lessons for future activities Comparing effectiveness Strengthening accountability for results	Estimates of magnitude of outcomes Answers to central developing questions Adds confidence to managers and policy-makers	Expensive Time-consuming Difficult to identify appropriate counter-factual
Cost benefit / cost effective	Measures inputs and outcomes in monetary terms Outcomes are sometimes measured in quantitative terms	Informing decisions about efficient allocation of resources Identifying highest rate of return on investment	Estimates efficiency Makes explicit economic assumptions Convinces that benefits justify activities	Fairly technical Results dependent on assumptions Results must be interpreted with care

Most of the indicators depend on the scope and depth of the process used to define indicators; programme complexity; quality of information sought and the comprehensiveness of the system. It was decided to left out information on the cost, skills and time required in the table, since these vary greatly, depending on the depth and duration of the activities. Most approaches need several days of training in a range of skills such as data collection, analysis, reporting, and management information.

Other approaches reported in the literature are

- Conventional (Greenwood *et al*, 1998:236; Rietbergen-McCracken, Wood & Simpson-Hébert, 1998:120)
- Constructivist (Lincoln & Guba, 1985)
- Partnership (Silka, 2000:49).

The theory-driven approach was also mentioned by researchers such as Bickman (1987:15) and Weiss (1997:501), who persuasively argued for the use of a theory-driven approach to programme



evaluation. This approach does not claim any theoretical proposition about the causal process by which a particular programme was expected to work. Although key variables and relationships are identified as being the foundation, the descriptive information is not connected to effective outcome or process evaluation. A useful evaluation model should therefore also contain an integrated theory within which the specific formulation of programme elements, rationale and causal processes can be embedded.

Lipsey and Pollard (1989:318) stated that it would be better for evaluators to have a long list of possible theory forms to think about as candidates for describing the different programmes as they study. The more differentiated the notions of possible theories, the more likely it will be to develop a theoretical framework that will fit well with any programme.

The approach of choice in this study was the participatory approach. If evaluations are to be truly participatory, then effort needs to be directed at developing practices that will prepare all parties to contribute to this process. There is a need to develop strategies for building evaluation capacity within all partnerships. The evaluation should not focus just on what is of interest to the funders or academic partners, but also be designed to gather information that will enable the community partners to answer community questions. Participatory evaluation aims to create a learning process for the programme recipients that will help them in their efforts to research desired goals. Evaluation aims to make a difference by helping programme recipients achieve their own goals better.

A standard practice in participatory evaluation is to involve the recipients of a programme or an activity in the process of interpreting evaluation results. The most conventional way to do this is to discuss the collected data with the local people as way of making sense of the findings. A more advanced form is to involve participants in the process of designing what to evaluate from the beginning of the programme, to engage them in the data collection process, and to include them in making sense of the findings (Greenwood & Levin, 1998:240).

This participatory process can differ widely amongst evaluation practitioners. Each evaluator engages the participants in ways that are comfortable for both parties. Some construct meetings; others use group dynamic processes and other participatory techniques. Participatory evaluation strategies have a lot in common with the complexity, diversity and specificity of 'Action Research' (AR) approaches in general. Participatory evaluation, though a form of practice in its own right,

builds directly on studies from AR, and many of the authors refer directly to particular AR works as part of their intellectual repertoire.

## 2.9 CONCLUSION

The philosophical perspective of this study is found in the broad field of community development. The researcher is seen as a change agent whose primary responsibility is to initiate and facilitate emancipatory change during the research process. The role of the researcher during this process will vary from participant, control agent, consultant and partner, taking us to an 'alternative' way of knowledge production, namely that of participatory action research. The following research theories, approaches and principles are applied, namely critical social theory, PAR (and dimensions thereof), CBPR, adult education theory and evaluative research. These theories are all reflected in the design, implementation and evaluation phases of this study. Evaluation is specifically seen as a participatory research activity. The specific combinations of methods as well as the particular approach chosen were seen as appropriate for the context of this study in terms of its aim and objectives.

The design of the research study is discussed next.



# Chapter 3: *Research design according to a four-phase model*



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A research design is... "*the complete strategy of attack on the central research problem*" (Leedy & Ormrod, 2001: 91).

### 3.1 INTRODUCTION

With reference to the above quote - a strategy can only be launched if the target is in full sight. The 'target' in this research study was nutritional problems as experienced by a rural community on a commercial farm. How this 'target' (as expressed in the research problem) came into sight was discussed in chapter one and how this 'target' was 'attacked' will be discussed in this chapter. The mandated mission of community development and PAR paradigm as discussed in Chapter 2 also guided the strategy of attack (research design). The research design was originally written in the form of a proposal, planned ahead of the execution of the study. This chapter, however, is a reflection on the proposal as it was designed and how it evolved into the executed research plan.

Reflecting on the research design then, the following is addressed in this writing:

- Research aim
- Four phase model
- Conceptualisation
- Study population and sample
- Methodology
- Delimitations.

It is clearly stated in the literature that interventions performed within communities should develop through incessant phases (Andrien, 1994; Dennill, King & Swanepoel, 2000:152; Endres, 1999:240; McKenzie & Smeltzer, 2001:23; Simpson-Hébert & Wood, 1998:6). The phases in this study are situation analysis (also called a needs assessment), design, implementation and evaluation. The activities in the various phases should not be rigidly demarcated into watertight compartments. This implies that both forward movement through successive phases, and a return to earlier phases may occur. The process itself usually starts with an initial contact and familiarisation stage, through which the research team conveyed their first collective action. The sequence within the process of research design should begin with a community with a particular need or problem and an investigation into the situation of that community. Through mobilisation and conscientisation, the situation should then be assessed and analysed.

The following two phases should be distinct but with interrelated dimensions and usually include designing the planned intervention and implementing the designed intervention. Knowledge obtained from the first phase should be used to translate the expressed needs and problems into connecting, developmentally focused hierarchies of needs, objectives, change strategies and outcomes, which constituted the planned intervention. Sequenced, incremental plans of action should be developed to respond to each of the needs, objectives, change strategies and outcomes. The research team should then invoke and use action strategies to implement the plans of action, and subsequently the planned intervention. These strategies usually include mobilising needed resources (human and material), implementing all aspects of the plans of action, and using feedback obtained from participants and other stakeholders.

Evaluation in a phase-approach is depicted as an activity interlinked with the other phases. Evaluations of all major decisions and actions taken during the needs assessment, design and implementation of the intervention are done on a regular, ongoing basis. Evaluation of the planned intervention outcomes and the determination of the planned impact on the identified problems and needs are also strong distinguishing features of the phase-approach. All the outcomes of formal and informal evaluations are fed back to the study or intervention to influence further planning and implementation.

The research aim and various objectives and outcomes will now be revealed.

### **3.2 RESEARCH AIM**

The overall research aim of this study was *to devise a model for nutritional interventions in rural areas*.

In order to fulfil this aim, baseline data from a selected community was obtained and analysed specifically with the intention to identify nutritional needs or problems and to address one of these needs and problems by implementing nutritional interventions. The other needs would be addressed by other researchers (post-graduate students).

The identified nutritional needs and problems were indicative of the content around which the design and implementation of relevant interventions would revolve. Evaluative research was also planned in terms of process and outcome to construct a generic model. This model was of significance to understand the relevant factors that should be considered to address nutritional

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problems in order to contribute to the improvement of health and nutritional status, specifically with reference to children younger than 10 years of age.

The **assumptions** that underscored this study were the actual presence of nutritional problems in the selected community; that these problems can be defined as needs; and thirdly that the community members would be willing and competent to be persuaded to address these needs. I also assumed that we (the research team) would be allowed entrance to the farm and that the people would be interested in our study and willing to participate.

Certain **limitations** and constraints were envisaged before the start-up of the study. The specific community had not been identified when the proposal of the study was written, but certain problems regarding *communication* were foreseen. The rural communities that we had in mind as target population are predominantly African, speaking any of the local languages. We knew that we would be using interpreters and risk the loss of deep rooted meanings and linguistic nuances. Other possible obstacles were foreseen to be *non-commitment* of certain community members. *Time* was also an issue, because community development and PAR approaches demand time investments. All the members of the research team were full-time employed and had only a certain number of hours available for research. *Logistics*, such as the distance to travel to the community was another problem, implying only well-planned, pre-scheduled visits.

### 3.2.1 Goals and objectives

The goals were set in terms of four phases that need to be conducted. Each goal (phase) consisted of various objectives, stated for the research team to execute during the course of the study and intervention.

#### 3.2.1.1 Phase 1: Situation analysis

- Explaining the overall aim of the research study to all involved stakeholders (e.g. farm owner, community members, other farm workers like managers, health and agricultural workers from local government)
- Getting consent and commitment from all involved stakeholders
- Describing the community in terms of
  - ⇒ demography
  - ⇒ socio-economic profile
  - ⇒ geography
  - ⇒ existing resources

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- ⇒ structures and services available
- Describing the nutritional situation in terms of
  - ⇒ nutritional status of female household members
  - ⇒ nutritional status of children
  - ⇒ household food security
  - ⇒ hygiene and sanitation practices of household members
- Identifying specific nutritional problems
- Assessing the various identified nutritional problems
- Executing further inquiry into the assessed nutritional problems
- Translating those problems into felt/real but addressable needs
- Identifying the most appropriate means and strategies for intervention
- Establishing a basis for the designing of a suitable intervention.

### **3.2.1.2 Phase 2: Design**

- Presenting the identified needs and problems to the household and community members to reflect local values and agreement
- Involving the household and community members in prioritising the identified needs and problems as far as possible
- Identifying a key informant in the community in agreement with the attending community members to assist with the implementation of the intervention
- Developing clearly conceived goals and objectives for the intervention in collaboration with the involved participants
- Designing the facilitation plan (strategies, messages, learning activities, resources and outcomes) for the intervention guided by the set goals and objectives
- Choosing the most appropriate programme format including procedures, methods, techniques and support material for implementing the facilitation plan
- Designing the evaluation plan in terms of process and outcome.

### **3.2.1.3 Phase 3: Implementation**

- Preparing of the team, participants and the ambience to enhance learning
- Conducting, coordinating and integrating the facilitation plan
- Revising by monitoring and giving feedback to the community
- Repeating and reinforcing the messages.



### 3.2.1.4 Phase 4: Evaluation

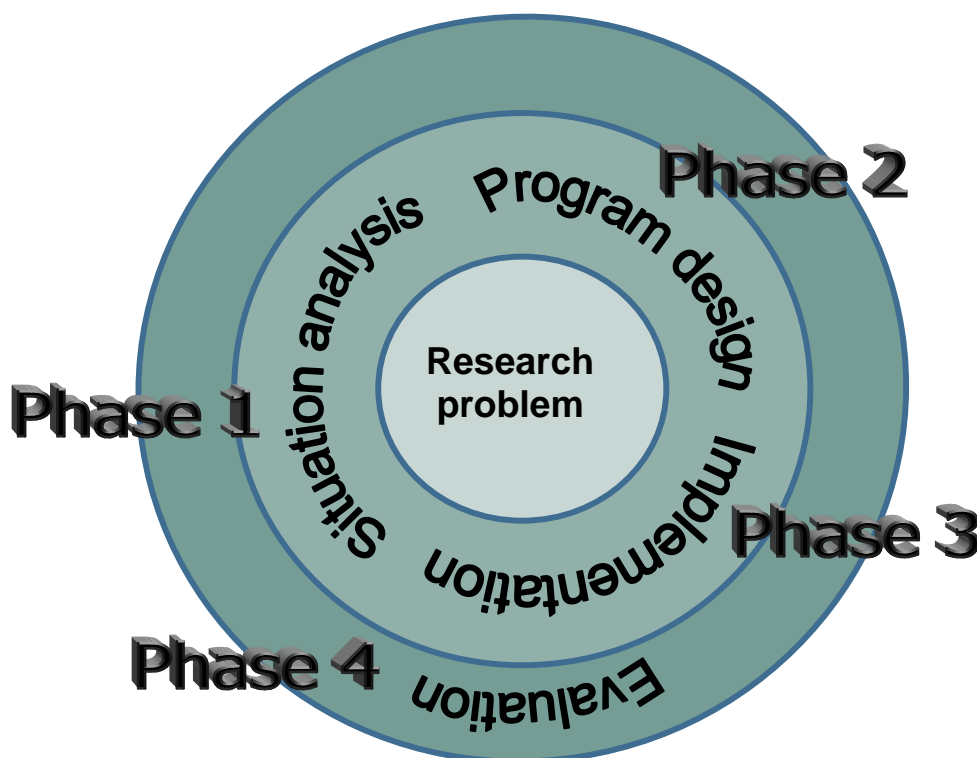
- Assessing the implementation of the interventions in terms of the pre-set goals and objectives (process evaluation)
- Determining the outcomes of the interventions as it occurred in the targeted commercial farms in terms of improvement of household food security (impact evaluation) (Impact evaluation will only be done on a limited scale, because some of the outcomes will only become evident after a longer period of implementation)
- Empowering household and community members (females specifically) as active participants in programme planning, implementation and evaluation
- Enabling household and community members to critically analyse their own particular situation and problems
- Establishing community ownership of the intervention.

### 3.2.2 Research outcomes

- A generic model for nutritional interventions on commercial farms
- A basic field of knowledge regarding household food security on commercial farms in South Africa, including academic knowledge and local knowledge (also referred to as traditional/insider wisdom and expertise)
- Improved household food security as experienced by adult female community members
- Socially meaningful research results (as experienced by the participants)
- A detailed dissemination report (as evaluated by the study leaders and external examiners)
- A set of educational material regarding identified needs for each household in the community
- Publications as a means to communicate research results to international and national health, economic development, and/or environmental policy-makers, academics and the public
- Community ownership of the intervention
- Support, mentoring and degree-based training of students from previously disadvantaged communities
- Capacity building through providing opportunities for interested scientists (local and foreign) for career development in the health, environment and social sciences, with specific reference to the methodological tools in use
- Strengthened capacity at community level through improved nutrition, better health, lower medical cost, improved learning abilities, productivity, and better quality of life.

### 3.3 FOUR-PHASE MODEL

Various models and approaches as cited in the literature were considered as parameter to guide the research design process (Allen & Gillespie, 2001; Andrien, 1994; Caffarella, 1994:18; Dennill *et al*, 2000; Endres, 1999). A particular model was constructed (see Figure 3.1), drawn from the vast array available, that fitted in with the values, preferences and belief systems of the research team as well as the approaches integrated into the research design of the study. The model was also integral to the research aim, namely to address specific nutritional needs and problems by implementing relevant, effective nutritional interventions. This four-phase model encompasses four interdependent but connecting sub-processes, namely: needs assessment (situation analysis), planning (programme design), implementation and evaluation. This model was considered comprehensive and practical to follow in order to address the research problem. It also gave a different, but more distinct meaning to the myriad of activities involved in planning this research study. At the same time it addressed the entire continuum of processes involved in developing valid and reliable interventions for rural communities. The model hence had a dual function by being used as reference for both constructing the research plan and the relevant intervention.



**FIGURE 3.1: FOUR-PHASE MODEL FOR RESEARCH DESIGN**

Underlying the model is the PAR paradigm, implying that participants were involved in collaborative needs identification, assessment and analysis as well as the design and implementation of interventions to respond to these needs. Participants were therefore involved

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in all four phases of the study. A distinguishing feature of this model is that it should not be used as a blue print or recipe, but as a reference. The knowledge produced should always be linked to the actual context of the study or the intervention. This reference model is also compatible with the deployment of a wide variety of research methods and techniques based on the particular situation.

All the activities included in the four-phase model are considered small steps in a long journey towards behavioural change, development and improving nutritional status. Although some activities will fail, these failures will provide lessons through reflection and analysis which make it possible to attempt the next step.

### 3.4 CONCEPTUALISATION

Knowles (1990:5) said: *“If you want to understand my thinking, you have to go along with my definitions”*. Language is contextual and therefore you have to adopt the word that is most meaningful to an event or activity within a particular context. Concepts integral to this research study all have specific contextual meaning – ‘nutritional’, ‘intervention’, ‘model’ and ‘rural communities’.

Although Participatory Action Research (PAR) swathed the research process of this study, the content part (as reflected in the title of the thesis) is grounded within the concept of ‘nutritional interventions’. The denotations of this concept are found within the broader discipline of ‘nutrition’, which is simplistically defined as: *“the science of foods and nutrients and other substances they contain, and of their actions within the body including ingestion, digestion, absorption, transport, metabolism and excretion”* (Whitney & Rolfes, 2002:2). According to this definition, nutrition as a science forms part of the natural sciences. To examine nutrition from a holistic point of view, it should also find a place in the social sciences. A broader definition would therefore include the social, economic, cultural, agricultural and psychological implications of nutritional behaviour. This study was concerned with these broader aspects of nutrition and therefore found a secure home within the social sciences.

At this stage it may be useful to differentiate between terms that are often used interchangeably in the field of interventional efforts. When is an action called an intervention, a project or a programme? What are promotions and how does it differ from interventions? Social interventions are defined as *“structured and more permanent social actions aimed at changing something in the social world for the better”* (Mouton, 1999:9). We intervene in

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a situation when we believe that the normal course of events has gone wrong, e.g. when certain forms of social services (health, care, sanitation) are perceived to be less than acceptable or declining. Interventions are also defined as “*sets of actions and decisions that are structured in such a way that their successful implementation would lead to clearly identifiable outcomes and benefits*” (Babbie & Mouton, 2001:88). McKenzie and Smeltzer (2001:8) refer to health interventions as “*systematically planned health promotion programmes*”. The term nutritional intervention, as used throughout this study, refers to all planned actions to address nutrition and nutrition-related problems and needs. It is thus used as an encompassing term including activities like education, promotion and communication. Preference is given to the term ‘nutritional’, instead of ‘nutrition’, because (in my opinion) it includes all other aspects related to nutrition such as water, hygiene, sanitation, food usage, and food gardening.

Connotations of ‘household food security’ were used in the construction of measuring instruments and semi-structured schedules. It also formed part of the methodology, content of the educational messages and support materials. It was envisaged during the designing phase of the research study that only certain aspects of food security would be addressed, depending on the assessed needs and particular situation in the community. Nevertheless, the concept of ‘household food security’ was used as the starting point from which all other aspects of this study departed.

A ‘model’ is defined in 13 different ways (Merriam-Webster, 2004). It can denote to a set of plans for a building, a structural design of a house, a miniature representation of something, a person who is displaying clothes, an analogy used to help visualise something that cannot be directly observed and a system presented as a mathematical description of an entity. In this study none of these definitions were directly reflected in the way that the term was used. “*An analogy used to help visualise something that cannot be directly observed*” is probably the most accurate description within the context of this study. As used in this study, it is synonymous to a framework, being a basic conceptual structure.

There are always differences between what people say and what they do, or within research projects, between the rhetoric and practice. Several unexamined concepts may be plugging the gap between rhetoric and practice (Nelson & Wright, 1995:14). One is the continued use of the word ‘community’, as if it covered a homogeneous, idyllic, unified population with which the researcher can interact without any problems. Too often homogeneity of interests is assumed, where an intervention, however participatory, will benefit some people while others lose out.

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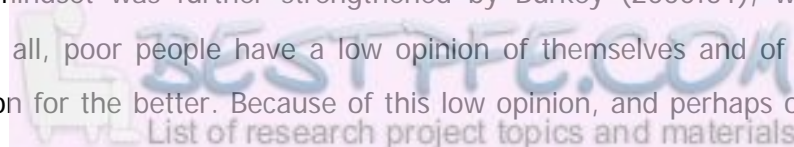
'Community' is a concept often used by organisations, rather than the people themselves, and it carries connotations of consensus and needs determined within parameters set by outsiders. Shifts in power between community members who engage in participatory development processes need to be examined carefully and discussed with them.

'Rural communities' in this study, referred to people working and living on commercial farms. It included farm workers and their extended families, but excluded the farm owner, his family as well as any farm manager that was employed. In South Africa, these farm workers are usually black Africans. A commercial farm was defined as one where agricultural products were yielded on a large scale contributing directly to the economy of the country.

### 3.5 STUDY POPULATION AND SAMPLE

No intervention, whether initiated by outsiders or by the people themselves can hope to succeed unless it contains a strong element of human development and empowerment. Empowering women is also a key issue in achieving household food security (Adato & Feldman, 2001; Quisumbing & Meinzen-Dick, 2001; Quisumbing *et al*, 1995) and increasing women's education is a key ingredient for women's empowerment (King & Alderman, 2001). Women are also key agents of human development (Balit, 1999:4). They can improve the quality of life in rural communities by improving family nutrition, ensuring the use of safe drinking water and teaching their children good health practices. Investing in women's education increases women's capabilities, expands opportunities available to them and empowers them to exercise choices. There is also evidence that not only women, but also their families, their countries and the world by extension, will benefit in terms of improved food and nutrition security (Gittinger, 1991; Quisumbing & Meinzen-Dick, 2001). Women's education leads to lower fertility and child mortality and can thus be seen as the single most important policy instrument to increase agricultural productivity and reduce poverty. Women are generally responsible for food production and food preparation in developing countries. Interventions aimed at improving household food security should therefore target women.

I had a certain mindset and opinion when I approached the informants of the study. In the words of Kotze and Kotze (in Wetmore & Theron, 1998:39) – *"It is precisely those who have learnt to survive with virtually nothing at their disposal who possessed valuable knowledge"*. This mindset was further strengthened by Burkey (2000:51), who wrote that many, although not all, poor people have a low opinion of themselves and of their ability to change their situation for the better. Because of this low opinion, and perhaps out of fear, the



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poor do not assert themselves. They remain shy, passive and withdrawn. Their dependency relationship with others, who are stronger, diminishes their self-confidence and initiative. If not oppressed by the more powerful, they are oppressed by their own limited knowledge and poverty. Their lack of knowledge and information prevents them from competing successfully for their fair share of resources and keeps them from effectively utilising the few resources that they do control. Although often aware of their limitations, they do not know how to acquire knowledge or gain access to information.

Against this background, the study population was chosen and the sample group approached.

The study population group was the members of a community living on a commercial farm, approximately 15 kilometres from the popular tourist town of Clarens in the North Eastern part of the Free State province of South Africa. This area was considered rural, because it is remote and lack basic facilities (municipal water, sewage and garbage removal systems). The farmer was seen as the gatekeeper for access to the households on the farm and thus also as 'access agent' to the sampling unit, the households. In order not to interfere with farm activities, we decided on the adult female community members from the various households as unit of analysis and spokespersons for the community. These females were further seen as informants on nutritional practices of household members and specifically the young child. Although stated and seen as 'research objects', these women were full participants in the research process, contributing to planning, implementation and evaluation of the intervention. The intervention as such was the object of study when the process of design and implementation were assessed to ensure successful outcomes. The unit of observation then, were the women seen as participants but ultimately owners of the intervention.

As mentioned previously, a striking and frightening statistic is that the most severely affected children live on commercial farms in South Africa. Collaboration with the farmer (owner of the commercial farm) was the only way to reach these children. Most of the farmers' wives are members of the South African Women's Agricultural Union (SAWAU). It was therefore obvious to approach this national women's organisation as a vehicle to reach the children. This organisation is very dynamic, has a track record of being influential in farming communities, is keen to participate and it has a current membership of approximately 13 000 members. Furthermore, a large number of the commercial farmers' wives, usually attend the biannual regional conferences. During the national and regional conferences, the president of the SAWAU called on the members to participate in the project.



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A particular member was interested to participate in the study. We visited their farm and started with the negotiating process. We, however, experienced certain logistical problems but the specific women referred us to another possible farm. We negotiated access to that farm via family relations and other convenience matters. This particular farm was consequently selected because the village was accessible and reachable. The workers on the farm are from the Southern Sotho ethnic group, speaking the local traditional language.

The young child (birth to 10 years) living on the farm was the target group of this study, although the actual informants were female household community members. The research team also included other individual members of the households as informants, mainly to better understand the living conditions and environmental factors influencing the child. Other key-informants that were used as data sources included the previous and current owners of the farm, staff involved in rendering local health services and the teachers from the local farm school.

All adult women living on the farm were invited to participate as informants in the study. The following criteria, however, did apply namely that they should be:

- older than 18 years of age
- a permanent resident of the household and the community/farm
- familiar with the community and the surrounding areas
- interested in food and nutrition.

Although the sample was purposeful, it can also be considered a theoretical sample. The study, as it progressed, set down criteria and informed me on which information to collect next and where to find it (as advised by Babbie and Mouton, 2001:287).

### **3.6 METHODOLOGY**

Within the PAR paradigm, one should be very 'open-minded' about what is considered data. Reason (1994:334) states that data can include a whole range of expressions (including songs, dances, sound clips, graphic images) as well as the more orthodox forms (written text obtained from interviews and observations). Involving participants mainly produce data, because local information is considered to be more relevant than aggregated data. It includes descriptive records as well as records of each participant's experience, including judgments, reactions and impressions of what is going on (Babbie & Mouton, 2001:326; Coffey & Atkinson, 1996:5).



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A methodologically driven view of PAR finds itself submerged in different research methods and techniques from various qualitative and quantitative origins. There are actually an unlimited variety of data-gathering techniques suitable for use in PAR (Babbie & Mouton, 2001: 325; Fals-Borda, 1988). A PAR project mobilises theories, methods and information from whatever source the participants jointly believe to be relevant to reach the research objectives (Greenwood *et al*, 1993:178). Such an eclectic model implies that research approaches can be tailored to each specific situation and structured differently in different settings.

One of the basic tools of PAR is dialogue. Dialogue requires participation and is action-orientated. The aim is not to substantiate like conventional tools, but to sensitise; not to explain but to conscientise and learn; and not to plan but to strategise a process based on a continuous cycle of analysis-action-reflection (Burkey, 2000). In PAR, group interviews are commonly employed. These are also referring to as dialogue sessions. Through dialogue, participants are helped to develop knowledge by learning from their own reality and specifically by learning to critically analyse their own particular situations and problems. Dialogue ensures that participants and researchers are searching together for possible solutions. The respondents in this study were illiterate. We could therefore not ask them to keep any records themselves. The data, however, was still mainly verbal in nature. Individual interviews were recorded in writing by the researcher and fieldworker. Field notes represented information obtained from observations; recorded group discussions were transcribed; transcripts represented data from household trials and dialogue sessions; the household food security scale and other assessments were also done in writing.

The research design, as based on the four-phase model, with its aim and various objectives and outcomes was integrated into a methodological framework (see Figure 3.2), which served as a reference model throughout the research project and intervention process.

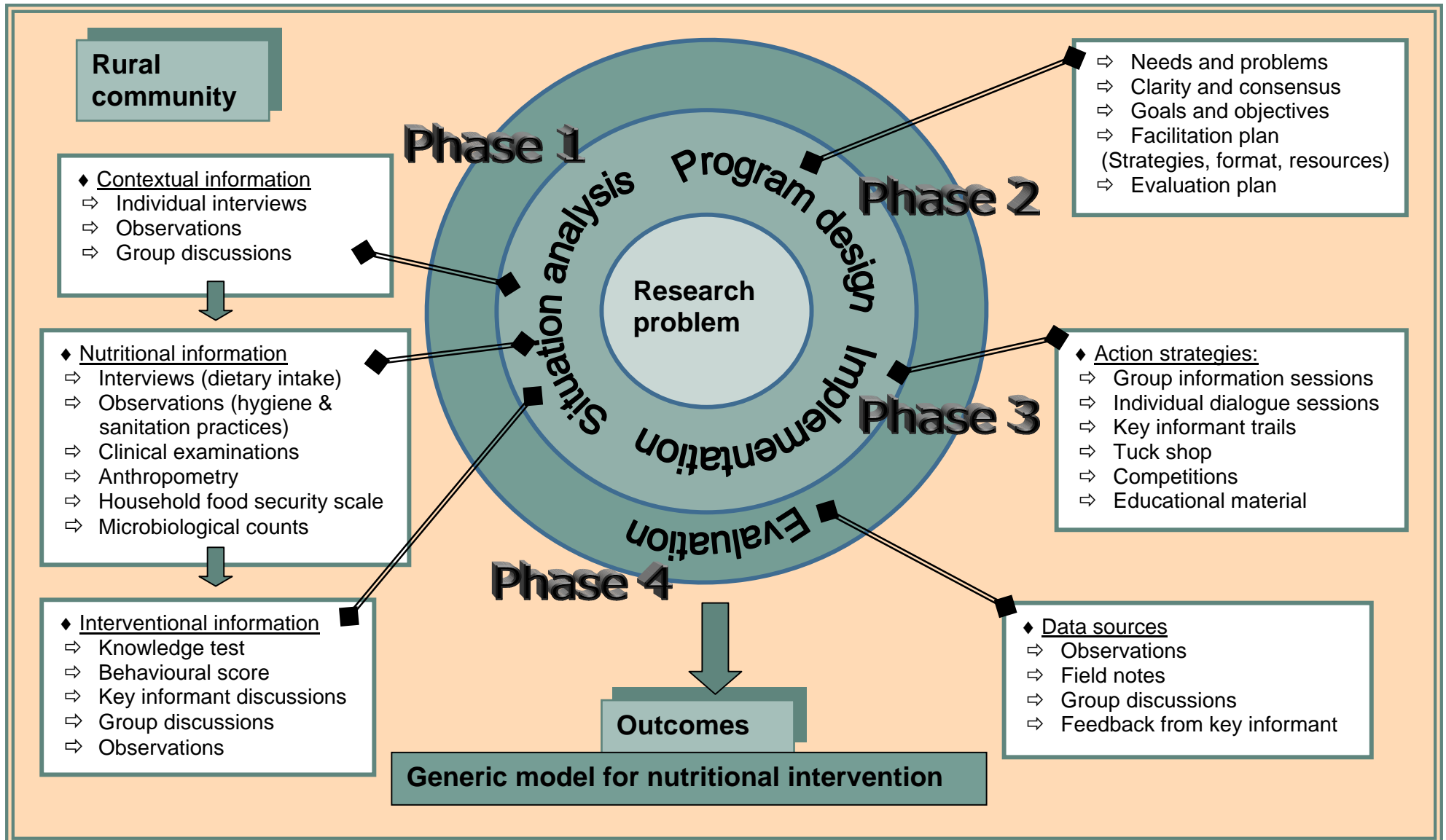


FIGURE 3.2: METHODOLOGICAL FRAMEWORK FOR THE STUDY

The methods and techniques used in this study are now described in terms of each of the four phases.

### 3.6.1 Phase 1: Situation analysis

*“Many programs conduct a baseline survey before beginning program activities so that changes in the prevalence of attitudes and practices can be measured in order to evaluate program effectiveness”* (Dicken, Griffiths & Piwoz, 1997:1.2).

The first phase of the study is considered an empirical study with a primary data design, because baseline data was collected. Phase 1 is also considered descriptive with an aim to provide information for needs assessment. A qualitative approach was used referring to the natural setting in which the situation analysis (needs assessment) was conducted. The views of the community inhabitants on the importance and contents of an intervention beneficial to their community were considered vital. There was also a concern to define and specify the needs and problems in such a way that it would assist the design of appropriate interventions. The needs and problems of the community were described in detail and length, in order to capture the sense of their views. This was, however, very idealistic, bearing in mind the language, cultural and race differences that existed between the participants and certain members of the research team. An attempt to overcome these barriers was to use a key informant from the community and a field worker familiar with the area and the local language.

The first phase of the study was done on three levels. These are described in full detail in chapter 6, but will for clarity reasons also be mentioned here. Level one was also considered the contact-making phase, through which contextual information was obtained. Level two was an investigation into the nutritional situation. On level three, information specifically relevant to the proposed intervention was obtained.

#### **Contact making**

Phase one started with the researcher's entrance into the area. Swanepoel and De Beer (1997:71) said that the secret to success at this phase is to be as unobtrusive and as natural as possible. We wanted to get acquainted with the people, to display empathy with and interest in the people's situation. The contact-making phase had three main goals, namely:

- for the people to know and accept the research team for what they are and has come to do
- to earn acceptance from the people

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- to know the people and their circumstances
- for the people and the community to identify and describe their needs and problems.

Contact making, however, could not be rushed. The community members had to accept the research team's bona fides before the study and the intervention could commence. The researcher attempted this through informal talks, friendliness, a keen interest in the people and their circumstances and by just being present.

The following data-collecting methods were used during the contact-making phase of this study, namely individual informal interviews, observations, and group discussions. Because the research team was interested in understanding and describing the situation of the community, this phase can also be described as contextual in nature. Ideographic research strategies attained preference, with no intention to generalise findings to a larger population.

***Individual, informal interviews*** were conducted mainly because of the low literacy level of the study population. Data was obtained during household visits and included collaborative efforts of the research team. Written and voice recordings were made.

Direct, simple ***observation*** was also done in this study, supplemented by extensive field notes. A structured observation schedule was designed, pre-tested and used to gather information regarding the following aspects:

- Social structures and resources in the community
- Household structure and resources
- General hygienic practices of household members
- Cleanliness of clothes, washing water, and hands
- Methods and ways of food transport and supply
- Food production (if applicable)
- Food purchasing (where, what, how much)
- Storage before and after preparation
- Food preparation and serving
- Environment in which the respondents live
- Environmental safety aspects like the presence of rodents and insects in the food preparation area.

The schedule was based on the literature (FAO, 1997: 56-69; Latham, 1997: 15-21). Four dimensions with different indicators were identified as being part of the concept of household

food security. The indicators were used to verify that relevant aspects of household food security are covered during data capturing. Recordings of empirical observations as well as the team member's possible interpretation of it therefore also formed part of the observation technique.

A ***group interview technique*** was employed as a summative activity, but also to elaborate on the purpose of the study and further planning. This technique was chosen from the normal repertoire of qualitative research, because it encouraged the involvement of participants and provided the opportunity for the researcher to investigate further and deeper into the phenomena under study (Babbie & Mouton, 2001:292).

### **Nutrition situation**

The nutrition situation within the community was determined in terms of the children's *nutritional and health status, household food security as well as hygiene and sanitation practices of caretakers and other community members*. These indicators are well accepted within the study field of community nutrition (Endres, 1999; FAO, 1997; Latham, 1997:9). Individual interviews and observations were once again deployed as research techniques, with caretakers being the main information source. The nutritional status of the target group was determined in terms of dietary patterns, clinical examinations and anthropometrical indicators.

An ***interview schedule*** was used as guidance to investigate dietary patterns. The following aspects were included:

- Habitual food intake
- Food production and availability
- Food practices (preparation, preferences, distribution, serving, storage)
- Food preservation.

Probing regarding health status was also included in the interview schedule. The probes revolved around deaths and diseases within the community, availability of growth charts and breastfeeding practices. The available growth charts of the children were also assessed for birth weight, growth patterns and major health problems. The nursing sister of the visiting mobile health clinic was also interviewed regarding vital statistics of the district. Basic clinical examinations were also done whereby the children were screened for any prominent physical signs and symptoms of nutritional deficiencies. A framework, as proposed by Charney and Malone (2004: 42-44; 54-60) and Latham (1997: 209-210), was used to guide this activity.

Household members were asked about their perception of *food insecurity*, using an assessment scale. This scale was originally constructed by Kendall, Ohlson & Frongilla (1995), adapted and previously used in the National Food Consumption Survey (Labadarios, 2000) (see Addendum A). The tool is described as a sound national measure for food insecurity and hunger and appropriate for standard, consistent use on national and local levels. The scale composed eight questions that investigate whether adults and/or children in the household are affected by food insecurity, food shortages, perceived insufficiency or altered food intake due to constraints on resources. Answers on each of the eight questions were scored, then summed and converted to percentage. The scale has further shown to be a stable, robust and reliable measurement tool. This scale was tested for usability in the particular community.

**Anthropometrical indicators** are considered highly sensitive to food and nutrition insecurity and relatively low in cost to construct (Khan & Riely, 1995: 63-68). Anthropometry was therefore done - specifically weight and height measurements and head circumferences of all children under 10 years of age living in the community as well as those attending the local farm school. These measurements were used to reflect the adequacy of food intake, growth and overall health and welfare. Weight-for-age (w-a), height-for-age (h-a), and weight-for-height (w-h) indices were used to evaluate the extent and magnitude of malnutrition in the group of young children. These indices were expressed in terms of percentiles, which is the rank position of an individual on a given reference distribution, stated in terms of what percentage of the group is equated or exceeded by the individual (Lee & Nieman, 2003:172). International reference data, developed by the US Centres for Disease Control and Prevention (CDC), were used.

**Hygiene and sanitation practices** were uncovered mainly by observations. These observations were quantified using three dimensions of personal, household and environmental hygiene. Indicators relevant to each of these dimensions were compiled from the literature (Ahmed *et al*, s.a; Almedon, Blumenthal & Manderson, 1997; Billig, Bendahmane & Swindale, 1999; Curtis, Cairncross & Yonli, 2000; Daniels *et al*, 1990). A score was attached to each indicator. A maximum of ten marks could be scored within each category, revealing excellent hygienic practices. More than eight marks were considered to be very good and between five and seven as good. A score of three or four were indicative of poor hygienic practices and less than three as very bad. Hygienic conditions were also determined using total microbiological counts on Rodac plates on various surfaces in the households, including mugs, plates, dining room tables, toilet seats, kitchen cloths, hands, clothes and food preparation bowls. The scoring procedure will be revealed in more detail in Chapter 6.

### **Interventional information**

The group's knowledge and behaviour regarding hygiene and sanitation issues were assessed, based on items identified from the literature. Key informant and group discussions followed these testings. Another observation technique was employed on a separate, unannounced occasion, whereby the fieldworker did friendly, informal household visits. She was instructed to observe the hygiene and sanitation practices of all the households without recording anything directly on paper. Recordings only took place after each visit.

This specific phase is discussed in Chapter 6.

### **3.6.2 Phase 2: Design**

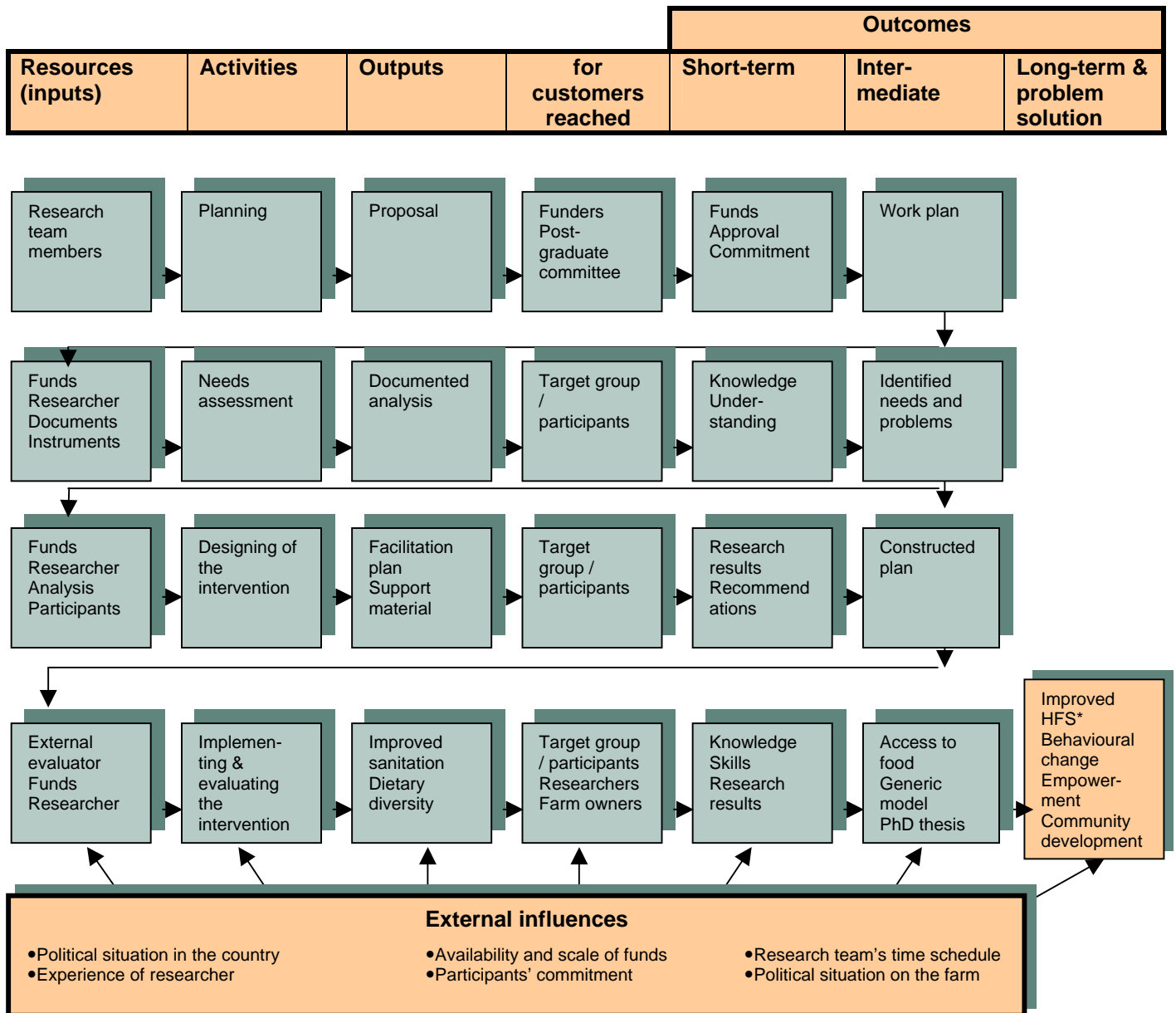
*“No single intervention or mix of interventions should ever be prescribed in isolation from a participatory process of problem assessment, causal and capacity analysis and program design”* (Allen & Gillespie, 2001).

The design of the nutritional intervention was based on the outcomes of the situation analysis (needs assessment). This design phase had a given starting point by being needs-based and participatory-action orientated. The focus of this phase was on tailoring the needs and problems of the community and constructing it into relevant, effective, appropriate community-based, nutritional activities to improve the household food security status of the community. This tailoring process was done in writing based on the 'logic model' of McLaughlin and Jordan (1999) as work breakdown structures of the study (see Figure 3.3). This figure depicted the sequence of activities that were necessary to execute the study. The people responsible for carrying out all these activities were primarily members of the research team, who were post graduate students enrolled at the University of Pretoria and their various project leaders within the Department of Consumer Science.

An effective designing process begins with clarity and consensus on its purposes, its scope, and the circumstances in which it functions well (Allen & Gillespie, 2001). During group discussions, consensus was reached regarding these issues. Other objectives of the designing phase were to develop clearly conceived goals and objectives for the intervention, to set up an action plan for the intervention guided by the set goals and objectives and to choose the most appropriate means and strategies for the intervention.



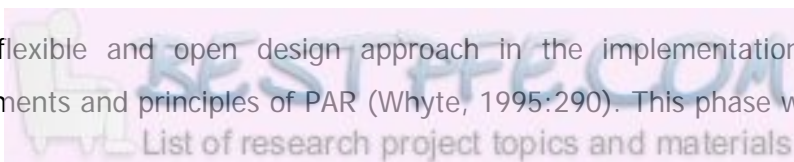
It was foreseen at the time when the research proposal was written, that the programmes would include small-scale agriculture production (vegetable gardens, possibly also fruit trees and livestock), food and nutrition education (processing and storage of food surpluses, food safety) as well as personal food hygiene, natural resource management, and income generation from food surpluses. Each programme would be the focus of a series of discussions with a key informant from the community, designed to learn from the community itself.



**FIGURE 3.3: WORK BREAKDOWN STRUCTURE OF THE STUDY**

### 3.6.3 Phase 3: Implementation

This study had a flexible and open design approach in the implementation phase, with eminence to the elements and principles of PAR (Whyte, 1995:290). This phase was considered



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the 'action' moment of PAR in which the action is deliberate, strategic, happening in reality and not as an experiment. Implementation was done by means of the following action strategies:

- Group information sessions
- Key informant trials
- Individual dialogue sessions
- Tuck shop
- Competitions
- Training sessions
- Home vegetable gardening
- Educational material.

Each of these strategies is discussed in detail in Chapter 7.

#### 3.6.4 Phase 4: Evaluation

*“Whether an evaluation is complex or simple, it should be rigorous in relating evaluation design to decisions”* (Allen & Gillespie, 2001:69).

The research design applicable in this phase was dual in nature. Process evaluation was done, using a naturalistic evaluative research design, with the purpose of generating knowledge (qualitative approach) and to make certain judgments. This knowledge was particularly used to develop a generic model and to inductively construct theory. A limited-impact evaluation was also done within a quantitative paradigm, using certain scoring systems. The items in the scoring instrument were derived from the literature (Almedom *et al*, 1997; Rietbergen-McCracken *et al*, 1998:120).

The changes in certain conditions like nutritional status, natural environmental awareness, health care, childcare knowledge as well as impact assessment (regarding social and environmental impact on the targeted rural communities) were monitored. Capacity building was measured in terms of the number of completed post-graduate studies made. A tract record of involved scientists was kept to oversee career developments made. Capacity at community level was measured in terms of improved nutritional status (recording anthropometrical measurements of children), following health statistics from the visiting mobile clinics on an ongoing basis, tracking school attendance and job performance of members. Community ownership of the project should be measured by monitoring it over an extended period of time.

This part of evaluative research was administered as an empirical study, using mainly primary data with a hybrid mixture of numerical and textual data and a medium degree of control and

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structure (Mouton, 2001:160). More specialised design types applicable were a quasi-experimental outcome design (as it presents the changes in certain social conditions like nutritional status, care, knowledge) and impact assessment (regarding social and environmental impact on the targeted rural communities). A reflexive control design was also distinguished because the target group who 'received' the intervention was compared with themselves before, during and after the intervention (Rossi *et al*, 1999:258).

The sources for data collection that were used to answer evaluation questions relevant to this needs-based, community-driven nutritional intervention were:

- Observations with field notes
- Group discussions
- Key informant feedback.

Originally the thought was to recruit and train some members of the community and the owner of the farm to keep a tract record of the intervention implemented on the farm. These records would have included notes on whether the intervention had been properly implemented, whether the target group had been adequately covered and whether the intervention was implemented as originally designed. Circumstances demanded another route. The principle researcher had to make unstructured observations and keep extensive field notes to assess whether the interventions had been well conceptualised and properly implemented. Notes specifically dealt with:

- Participant learning
- Programme structure (format, content, instructional method)
- Perceptions on programme outcomes (changes in people's knowledge, skills and behaviour)
- Planning process
- Impact on the individual households
- Impact on the community.

These notes also included information regarding possible codes and categories for data analysis, indications of process, incidents and illustrations of ideas.

In the true spirit of PAR, all stakeholders were asked to collaborate in the evaluation process using focus group discussions as technique. A focus group was defined as "*a carefully planned discussion designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment*" (Kreuger, 1988 in Lewis, 1995). This technique was chosen from the normal repertoire of the qualitative research, because it encouraged the

involvement of participants and provided the opportunity for the researcher to investigate further and deeper into the phenomena under study.

The number of participants usually depends on the objectives of the discussions. Smaller groups are preferable when the participants have a great deal to share about the topic or have had intense experiences related to the topic of discussion (Kreuger, 1988 in Lewis, 1995). For the purpose of this study, the aim of the discussions was to get as much participation from the community as possible. It would therefore be essential for all the participants to also take part in the group discussions. This all-inclusive group would represent the members of the community and all members of the research team. An interview guide, based on certain formulated evaluation questions, provided direction to the discussions. The outcome of the focus groups was to reach consensus on the 'success' and outcomes of the intervention.

The evaluative report (see Chapter 8) further included information on anthropometry (weight and height measurements, head circumferences) of all children under the 10 years of age and dietary intakes of households (with the focus on micronutrient intake). These intakes were compared with well-accepted standards such as the DRI's and RDA's. Size and number of vegetable gardens established, yields that were obtained from the gardens, the use of correct cultivation methods, and knowledge of vegetable production were also recorded.

### 3.7 DELIMITATIONS

*“A single project, no matter how well designed and executed, can seldom result in a cure for long-term problems experienced by a community. Developing culturally appropriate health education materials and processes is important for improving health in a community, but health education cannot alone cure social injustice or health disparities”* (Arcury, 2000:47).

The study was restricted to only one farm with a small number of inhabitants who formed the target population. The delimitations of the study were set in terms of a particular cultural group and a particular geographical area. The intention was not to generalise to larger populations but to learn from the experience. The study was therefore designed to be a learning process. All lessons learned from this process would be incorporated into a generic model for nutritional interventions in rural communities on commercial farms. This model was in the form of a visual presentation and included recommendations on how to assess nutritional needs on commercial

farms and to intervene accordingly. The users of this model are anticipated to be academic scholars and researchers.

### **3.8 CONCLUSION**

The four-phase model referred to in this chapter (Figure 3.1) had the dual function of being used as reference for constructing the research plan as well as the relevant nutritional intervention. This study invested in the well-being of rural women specifically because of the belief that to empower women is the key issue in achieving food security in households, families, communities and nations. Research methods and techniques were chosen to fit in with the PAR paradigm followed in this study and were indicated in terms of the various four phases. One particular outcome of this study was to construct a generic model for nutritional intervention on in rural communities on commercial farms. This generic model included outcomes of the evaluation phase, the expertise of external evaluators as well as recommendations by stakeholders and other members of the research team. Ways and methods used to maximise the quality of the research process as well as the research results were applied throughout the study. These are discussed next in Chapter 4.

## *Chapter 4: Maximising the quality of data and results*

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*“The rationale of a research design is to plan and to structure the research study in such a way that the eventual validity of the research findings are maximized through eliminating or minimizing potential sources of error or threats to validity” (Mouton, 1996:108).*

## 4.1 INTRODUCTION

Objectivity, validity, and reliability can be considered methodological norms or requirements that a researcher must endeavour to satisfy unconditionally (Smaling, 1992:302). Although these strived-ideals were applicable to the whole process of research, it was for practical reasons, dealt with in this chapter. An in-depth revelation of the connotative meanings of these norms was beyond the scope of this writing. Some aspects, however, were exempted because of importance to this study.

A typology for these norms was constructed solely for the purpose of the discussion to follow (see Table 4.1). As an attempt to ensure objectivity, validity and reliability in this study, certain steps were taken to maximise the quality of the data and consequently also the results. These steps will become eminent throughout the discussion. 'Objectivity' is mentioned first because it applies to all the methodological approaches used in this study, namely quantitative, qualitative and Participatory Action Research.

Ethical and political issues also received attention in this writing, because research cannot be done at the expense of the human rights of the research participants. Any researcher needs to be aware of the ethical issues that relate to what is generally considered proper or improper in the conduct of scientific inquiry. 'What right has researchers to intervene in other people's lives?' is also a question that each researcher has to rationalise.

## 4.2 OBJECTIVITY

'Objectivity' is usually conceptualised in the literature as 'freedom from bias', which refers to reliable knowledge, checked and controlled, undistorted by personal bias and prejudice (Kvale, 1996:64). This definition implies that if good solid research is done, which has been systematically cross-checked and verified, then the data gathered can be considered as objective. Objectivity, however, can also denote the meaning of inter-subjectivity or 'doing justice to the object of study' (Smaling, 1992:307). Data must be intersubjectively testable and reproducible, in other words different observers should by ways of repeated observations of the same phenomena obtain the same information. Although one particular single interview and observation cannot be replicated, different researchers may, when following similar procedures, come up with closely similar information from the participants (Kvale, 1996:65). In this sense, objectivity may mean to reflect



the nature of the object under research, thus, letting the object 'speak'. Meanings like 'gaining trust' and 'establishing rapport' are used as means to gain objectivity.

Objectivity can further be understood as either that the researcher should be unbiased in his descriptions and interpretations, or that the researcher has to gain trust, establish rapport in order to get close to the study objects and to generate legitimate and truthful descriptions (Babbie & Mouton, 2001:273). In this study, the researcher will be respectful towards the participants and will attempt not to let the measuring instruments distort them in any way. The participants will also be allowed to speak freely without interruption.

The qualitative alternative to objectivity is 'confirmability', which refers to the degree to which the findings are the product of the focus of the inquiry and not of the bias of the researcher (Babbie & Mouton, 2001:278; De Vos, 2002:352). Lincoln and Guba (1985:290) removed the evaluation of the study from the researcher and place it on the data. Raw data, findings, analysis, interpretations, and recommendations were examined throughout this study in order to attest that it is supported by the data and thus internally coherent. This process was used to establish the confirmability of the study.

**TABLE 4.1: TYPOLOGY TO MAXIMISE THE QUALITY OF DATA AND RESULTS**  
(Adapted from Babbie & Mouton, 2001:276; De Vos, 2002:352; Smaling, 1992:316)

Approach	
Quantitative	Qualitative/PAR
Objectivity	Confirmability
Validity: <ul style="list-style-type: none"> <li>▪ External validity (Not applicable to this study)</li> <li>▪ Internal validity               <ul style="list-style-type: none"> <li>⇒ Content validity</li> <li>⇒ Construct validity</li> </ul> </li> </ul>	Validity: <ul style="list-style-type: none"> <li>▪ Transferability</li> <li>▪ Trustworthiness</li> <li>▪ Credibility</li> <li>▪ Social validity</li> </ul>
Reliability	Dependability
Triangulation	→

### 4.3 VALIDITY

A distinction can be made between internal and external validity.

#### 4.3.1 External validity

Within a quantitative paradigm, external validity, is concerned with the extent to which the research results can be generalised to the population or to other research groups not studied (Smaling, 1992:316). It embraces the concept of repeatability especially when referring to future repetition of the study in another context, target population or research field, called reproducibility or generalisability. This study does not claim external validity.

Within the qualitative paradigm, the alternative concept of 'transfential validity' is used, which means that the research results may be useful for other researchers who are either involved or interested in research of the same kind (in this case nutritional interventions for rural communities). Preconditions for transfential validity (also called transferability) are that the research report should contain an accurate description of the research process, that a logical argument for the choices of methods should be explicated and that the research situation and context should be portrayed in detail (Smaling, 1992:318). In a qualitative study, the obligation for demonstrating transferability rests on those who wish to apply it to the receiving context (Babbie & Mouton, 2001:277). Writings on this research study were transparent about the research process and it delivered arguments for all choices made. Dissemination of the process and the results obtained was done in as much detail as practically possible.

#### 4.3.2 Internal validity

Internal validity is considered a conditional methodological requirement for every research study (Smaling, 1992:316) and specifically refers to the validity within the research study. Different approaches to validation can be distinguished in the literature. Three main categories are eminent: content, criterion and construct validity with the possibility of including a fourth category, namely face validity (Babbie & Mouton, 2001:122, 123; Delport, 2002:167; Smaling, 1992:314, 315).

This study claims a high degree of content and construct validity. Only these two assumptions are discussed, as well as measures taken to maximise it.

### University of Pretoria etd – Green, F (2005)

- Content validity – (sometimes called substantive validity) refers mostly to procedures and instruments and is concerned with the extent to which a measurement covers the range of meanings included in the concept or intended object of study (Babbie & Mouton, 2001:122-123; Delport, 2002:167; Smaling, 1992:314,315). The question usually asked is: 'how well does this instrument or procedure measure what we want it to measure?' (Delport, 2002:167). In this study a thorough literature study was done focusing on nutritional interventions, household food security, as well as hygiene and sanitation practices, which gave background to the broader design of the research study. The connotative meaning of all the concepts included in this study also relate to the research problem as well as the construction of measuring instruments. Content validity is also a judgmental process, which was done in this study by the involved study leaders and members of the research team.
- Construct validity – (sometimes called conceptual or concept validity) involves the degree to which an instrument successfully measures a theoretical construct. It is also described as the quality of the conceptualisation or operationalisation of the relevant concept, implied by the procedure (Smaling, 1992:315). Relevant questions that should be answered are usually: what does the instrument mean, what is it measuring; how and why does it operate the way it does? (Delport, 2002:167). Cook and Campbell (1979:64) also mentioned three threats to construct validity, namely: inadequate pre-operational explication of constructs, mono-operation bias and mono-method bias. In this study construct validity was strived for through precise explication of the constructs and employing different data collection methods. The outcomes of group discussions and observations were used to enhance the construct validity of this study as well as for triangulation purposes.

Validity of the results of a PAR study are gauged, first by the extent to which the new knowledge is applied to inform collective action and second by the degree to which a community moves towards the practice of a self-sustaining process of democratic learning and liberating action (Burkey, 2000:64). Other constructs that more accurately reflect assumptions within the qualitative paradigm are: 'trustworthiness, 'credibility' and 'social validity'.

#### **Trustworthiness**

The relevant question is simple: how can a researcher persuade others that the findings of an inquiry are worth paying attention to or worth taking note of? Greenwood and Levin (1998:81) use the term 'credibility', which according to them, refers to the arguments and the processes

necessary for having someone trust research results. Knowledge should be credible to the group generating it, as well as to external outsiders, not participating in the study. Communication processes are a vital component in creating trustworthy knowledge. Researchers should deliberately plan and structure ways for communication to take place that will effectively support an open and inclusive meaning process (Greenwood & Levin, 1998:114).

Trustworthiness was acquired through the following procedures of maximising credibility:

- Prolonged engagement – I terminated data gathering only when data saturation occurred
- Persistent observation – I pursued various viewpoints and approaches derived from the literature to describe the nutritional situation within the community
- Triangulation – data was gathered using different viewpoints, methods and techniques
- Referential adequacy – written tests, measuring scales, audio taped, transcribed discussions and completed observation schedules were available as documents of the research process and outcomes
- Peer debriefing – perceptions, insights, analyses and interpretations were shared with an acculturated colleague
- Member checks – the data, results and interpretations were taken back to the participants of the study.

### **Credibility**

'Credibility' is also seen as an alternative to internal validity (De Vos, 2002:351; Lincoln & Guba, 1985:290). The goal is to demonstrate that the inquiry was conducted in such a manner, as to ensure that the subject was accurately identified and described. According to Smaling (1992:317), content validity in qualitative research (credibility) can be ensured by preparing a comprehensive register of data, notes of relevant events and the state of affairs. These notes should be studied on a regular basis in order to establish categories and the importance there-of to the research study. I therefore spend much time writing extensive field notes, which were also used as a measure of triangulation.

### **Social validity**

Within PAR, another type of validation came under scrutiny, namely 'social validation' (Fals-Borda, 2000:8). This procedure involves validation of findings with all the participants. Analysed data was taken back to the participants to check whether that was actually what they had said and meant. It is also considered a rigorous process of 'checking the facts' with or by participants themselves.

Social verification was made possible in this study by using a dialogical method. This refers to testing the coherence of arguments being presented by means of activities such as dialogue, discussion, argumentation, and consensus (Reason, 1994:48). The measure of social verification also featured as part of triangulation.

#### 4.4 RELIABILITY AND DEPENDABILITY

The notion of reliability is often associated with the concepts accuracy, consistency, stability and repeatability (Delpont, 2002:168). However, according to Smaling (1992:311) these terms are not considered to be the core meaning of reliability but would rather curtail or alter the concept. The core meaning according to Smaling is the absence of random sources of error. In this sense, reliability is rather seen as 'dependability' (De Vos, 2002:352) and an aspect of methodological objectivity, because the striving for objectivity includes the avoidance of distortions.

Measures to obtain reliable results were as follows:

- Attributes relating to me (main facilitator/**researcher**) that could have an effect on data collection were the affiliation I belonged to (University of Pretoria) and differences with the participants in the study. Usually, when a researcher is from a respectable affiliation (like Universities and research organisations), participants are likely to be better motivated to participate and to be more truthful in their replies. Because most of the members of the research team in this study were affiliated with the University of Pretoria, this particular aspect did not presumably pose a serious problem to data collection. Racial and language differences did create a distance between the participants and me and did possibly lead to a significant degree of response bias. My unconscious prejudices, expectations, attitudes, opinions, and beliefs also could have influenced the final data. I had to be very careful not to let any orientation influence the participants, whether positively or negatively.
  
- All **participants** in a research study are usually aware of the situation and tend to react to it, a phenomenon known as reactivity or the Hawthorne effect (Mouton, 1996:141, 152). This reaction can manifest in resistance, supplying inaccurate information, stubbornness, or behaviour modification in order to create a better impression on or deliberately misleading the researcher. Memory decay or interview saturation can also be perplexing variables. Tiredness on the side of the researcher and participants and the motivation level of the participants could also influence the validity of the collected data. In this study, I made the data collection ordeal

as meaningful as possible by emphasising the benefits of the research study (and particularly the intervention part) to the community during all gatherings and doing it over an extended period of time (18 months).

- Reliability is a prerequisite for measuring validity. An **instrument** simply cannot measure accurately if it does not consistently produce similar readings. Within this study a standardised household food security scale was used, which enhanced the possibility of collecting reliable data in a quantitative sense. This scale was also pre-tested to ensure that the participants would truly understand the statements. Concerning the qualitative part of the research, a different, less technical approach was needed. One of the major concerns regarding measuring validity is to accurately identify the indigenous connotations of the subjects under study. Because the participants themselves generated these connotations, it was assumed that it was an accurate reflection of their world (Mouton, 1996:130).
  
- I also had to be sensitive towards the **research context** in order to avoid bias, especially relating to the incidence of poverty, hunger, unemployment and suffering. Local and cultural habits and customs were also taken into account when executing the research by being sensitive and non-judgemental. These customs related to the habits of drinking traditional beer on a frequent basis, eating with hands, appearing to be very inactive by sitting in the sun all day.

#### 4.5 TRIANGULATION

The concept refers to the use of multiple methods to investigate the same research question. Triangulation looks for 'convergent validity', in which several methods give the same results. For example, anthropometrical measurements, analysis of blood samples, and clinical examination might all be used to determine that a person is malnourished. One can endeavour to achieve objectivity, validity and reliability in both quantitative and qualitative research with the aid of triangulation. The aim of triangulation is simply to study the object of research in at least two different ways (Smaling, 1992:319). Six 'types' can be distinguished, namely:

- Data triangulation – using two or more kinds of data sources
- Method triangulation – using two or more research methods/approaches
- Researcher triangulation – working together with other researchers
- Theoretical triangulation – elucidating research material

- Mental triangulation – establishing different ways of thinking and endeavour in diverse forms of role-playing
- Multiple triangulations – using more than one form of triangulation.

(Babbie & Mouton, 2001:275; Glaser & Strauss, 1999:108, 112).

Richardson (2000:934) proposed the term 'crystallisation' instead of 'triangulation', which is illustrated by looking at a crystal from various angles. It refers to a combination of "*symmetry and substance with an infinite variety of shapes, substances, transmutations, multidimensionalities and angles of approach*". In this study, however, the term 'triangulation' was still used.

Measures used for triangulation in this study were 'peer reviews', referring to the checking with fellow researchers whether the collected data or the interpretation there-of did not contain any random errors. 'Social verification' (Fals-Borda, 1991a:8) or 'member checks' (Smaling, 1992:313) was also used. Extensive field notes were an important measure, specifically within the qualitative paradigm. I kept two sets of notes – one for describing the environment in which the study was taking place and the other containing theoretical memos. These memos included observations, which were used to either contradict or enhance my original ideas, analyses and findings.

#### 4.6 ETHICS AND POLITICS

*"The right thing to do is not always evident. In many cases, what is right for me may not be right for other people. In some cases, doing the right thing might involve placing the greater good above specific benefits that might accrue to me. In many cases, ethical choices involve a trade-off or compromise between interest and rights of different parties"* (Babbie & Mouton, 2001:520).

The above citation summarises ethical and political issues in research. Although the researcher has the right to search for true accounts of social phenomena, it cannot be done at the expense of the human rights of the research participants. Any researcher needs to be aware of the ethical issues that relate to what is generally considered proper or improper in the conduct of scientific inquiry. An in-depth discussion of all ethical issues is beyond the scope of this writing and attention was only given to aspects as it applied to the study.



#### **4.6.1 Informed consent**

No person was forced to participate in the research study. Although this norm is important, it must also be considered that participation in the study was important for behavioural change and community development to take place. In the light of this, community members were thus motivated to participate. The attention was on the motivation and I took care not to manipulate the participants in any way. The nature of the research study and all other implications at stake were also revealed in order to make the decision to participate an informed one. I communicated the aim and goals of the study, what exactly their participation would entail and how long it would take. I attempted to obtain appropriately, informed consent from prospective participants and to appropriately document it. Most participants were illiterate. The field worker, who could speak the local language, was asked to explain the procedures to the prospective participants. Participants also received incentives as sign of good will and as motivation for voluntarily participation.

#### **4.6.2 Deceiving participants**

Overt research was done, in other words I made my identity and the affiliation to which I belong known to the participants as well as to all other community members. There was no reason to deceive participants about the purpose of the study because no sensitive issues were at stake.

#### **4.6.3 Privacy**

The invasion of privacy was justified because the research outcomes would be published solely for academic purposes to an academic audience. Although these arguments could be challenged, it was my perspective and therefore it was sufficient. I did, however, not deliberately impose on the participants' privacy or persuade information in such a way that the participants were undignified. Anonymity of the participants could not be guaranteed, since they would be personally interviewed and observed and would become part of the research process. Personal or any sensitive information would however, not be made public. Identification numbers was used on the schedules and other instruments and a master identification file was created to link the numbers to the participant's name. This file would have only been used for legitimate purposes. Confidentiality could therefore be assured.

#### **4.6.4 Harm**

Not harming people in a social research context is easy in theory, but often more difficult in practice. Harm can be done as a result of the actual process of doing the research or through publication of the findings (Hammersley & Atkinson, 1996:268). This issue is of importance to the

study because participants can be considered 'more vulnerable' to the process of research, because of their low socio-economic status and illiterate level. The issue of hunger was also a very stressful and sensitive matter. In case of change, the participants may be 'forced' to consider aspects of their lives, which they do not normally consider. There were scientific grounds for this study to be conducted, which reasonably outweighed possible harm to be done. At the most, I attempted to abide by the norm of not doing harm. I have been sensitive to any situation that might let the participants feel uncomfortable, but still meet the goal of effective pursuing of research.

#### **4.6.5 Exploitation**

Whether exploitation is taking place is always a matter of judgment. In this study, the problem of exploitation was intercepted in the way of empowering the community members (participants) to become part of the research process. The goal was also that participants should realise their problems and needs within their own situation.

#### **4.6.6 Political issues**

*"The politics of research refers to the way in which the domains of science and politics meet and interact"* (Babbie & Mouton, 2001:546).

A call was made by Government in 1993 to direct science in such a way that overall quality of life can be improved and by contributing to the reconstruction and development of the 'new' society (Babbie & Mouton, 2001:535, 536). This study did react to that call for science in South Africa to meet the socio-economic needs of the post-apartheid society. Political issues were definitely at stake within this study and need further elaboration. It is my view that scientific knowledge entails an intervention in the social world, and that it is not merely an intellectual and speculative pursuit. This viewpoint can be termed 'strong interventionism' (Babbie & Mouton, 2001:537). Strong interventionism goes beyond the point of only producing knowledge. It also involves taking steps to use the knowledge actively by intervening in the lives of the participants. At the extreme point of strong interventionism, involvement with the participants might change into activism, which was definitely not the intention of this research study.

#### **4.6.7 Personal commitment**

I was committed to any possible ethical obligation towards the community members involved in the study as well as towards the scientific community. The implications were that all findings (whether it be positive or negative) were revealed, results were not misrepresented in any way, data was not

fabricated, and all contributions and sources were acknowledged. Shortcomings, limitations, and failures of the study were also made known when presenting the results. The findings were also reported in an open, complete and timely fashion to the scientific community.

#### 4.6.8 Personal endowment

I considered myself well equipped to execute the study in terms of experience and knowledge. I was employed with the Department of Health for six years, being involved in community nutrition and public health projects on national, provincial and district level. I also obtained a Masters degree in Dietetics with emphasis on nutrition education and behavioural change. A particular nutrition education model was contracted as part of the thesis. I also attended a myriad of courses and workshops relevant to this study field (e.g. project management, group facilitation). Literature studies were also performed as part of the course work of this thesis on adult education practices and evaluation models suitable for nutritional interventions.

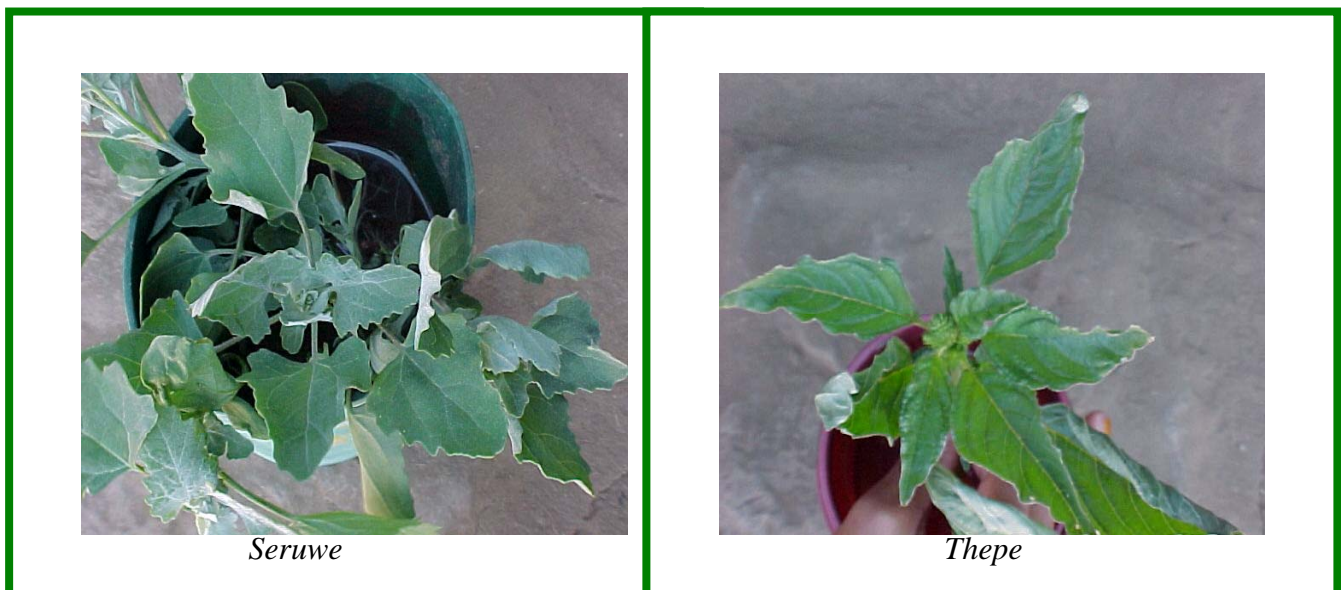
### 4.7 CONCLUSION

This chapter summarised all the issues that were considered and executed in an attempt to enhance the quality of the data gathered and results obtained to the best of the research team's ability. The study also received institutionalised support by the ethical committee of the Faculty of Natural and Agricultural Sciences in the University of Pretoria. This committee reviewed the research proposal and ensured that the rights and interests of the research participants were protected.



## *Chapter 5: Situation analysis*

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**FIGURE 5.1: SOME OF THE MOROGO VARIETIES ON ORANJE FARM**

*“You cannot teach a man anything; you can only help him find it within himself”*  
(Galileo, 1564-1642 in Self Improvement Online).

## 5.1 INTRODUCTION

Results from the National Food Consumption Survey (NFCS) (Labadarios, 2000) show that the majority of South African households are living in poverty and consuming a limited variety of foods (mainly staples). Findings from the NFCS also indicate that one out of two children has an energy intake less than two thirds of their energy needs, and that a great number of children consume a diet with too poor a nutrient density, in order to meet their nutrient (macro and micro) requirements. Stunting and underweight (the country's most prevalent nutritional disorders), are most severe in children one to three years of age, especially in those living in rural communities, and particularly those children living on commercial farms.

The above-mentioned findings were the main motivation behind this study and were used to demarcate the research field to rural communities on commercial farms. A research team from the University of Pretoria (Department of Consumer Science) conducted a 'situation analysis' in a community on a commercial farm situated between the towns of Clarens and Fouriesburg in the North Eastern Free State province. This team consisted of a senior researcher (also the supervisor of the study), the primary researcher (myself, the PhD student) and a fieldworker (a Master's student). A convenient sampling method was used to select this particular farm, which served as a starting point for this investigation.

The aim of this study was to conduct a situation analysis, in order to verify the national finding of the existence of nutritional problems on commercial farms. Certain assumptions underscore this study. Firstly, that nutritional problems are actually present on the farm; secondly that these problems can be defined as needs within the community, and thirdly that the community members are competent and able to be persuaded to address these needs. Specific objectives were stated as (a) to describe the community, (b) to identify particular nutrition problems, (c) to translate those problems into addressable needs, and (d) to establish a basis for designing suitable interventions. The process included making contact and obtaining access to the community, becoming knowledgeable about internal and external contextual factors (culture, available structures and resources), establishing funding, and ensuring support from the participants, research team members, farm owner and other stakeholders. Assessed needs and problems were discussed with the community, and priorities were set. The specific designing process did not form part of the 'situation analysis' and is therefore not discussed in this chapter.



The young children (birth to 10 years) living on the selected commercial farm formed the target group, although the actual informants were the female heads of the households where these children live. Twenty children were within this age group. There were 18 homesteads on the farm, but a female head count of only eight could be made. Other adult female members of the households were also included as informants (n=15) mainly to better understand the living conditions and environmental factors influencing the child. Other key-informants who were used as data sources included the previous and current owners of the farm, staff involved in rendering local health services and the teachers from the local farm school.

## 5.2 THEORETICAL BACKGROUND

'Situation analysis' within a particular community can be defined as a process of getting involved in a community, with the aim of assisting community members to learn more about their own current situation, problems and needs, and to facilitate the development of goals and strategies for solving these problems. Problems identified within a community can only become concrete needs once they have been defined as such. Any assessment process should therefore demarcate the parameters of the how, when, and where of the identified problems. The process is also an effective means of assisting local people in their own problem-solving activities (Butler & Howell, 1980). In this study, 'needs assessment' was seen as part of 'situation analysis'.

Reasons to secure accurate information about the problems or needs of a community are several. The main reason is usually to assist them in making decisions about appropriate interventions, in order to solve these problems. A 'situation analysis' is further considered a tool for program planning, and is necessary for establishing priorities regarding particular issues in a community, to consider various strategies, and to identify resources and obstacles to their use. While priorities are considered, goals, specific objectives and strategies are created to meet these prioritised problems (Endres, 1999:252).

The literature is replete with definitions related to the 'needs' concept. Various views of this concept are depicted in the literature to follow. From an educational point of view, Caffarella (1994:75) and Tyler (in Boone, Safrit & Jones, 2002:143), define a need as the difference between the present condition of an individual or group and a more acceptable norm. Needs may also be arranged from the lowest and most fundamental to the highest (Maslow, 1987:17). Within this hierarchy, a higher-level need (like self esteem) cannot be achieved until the individual has attained some level of satisfaction of the needs below it. These lower level needs

are considered basic to human existence, and include aspects relevant to this research study, such as nutrition and security. An individual cannot satisfy any higher-level need until the preceding needs are satisfied.

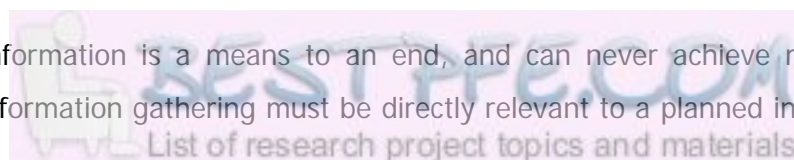
Within the field of evaluative research, a 'situation analysis' answers questions about the social conditions in a community, which a program intends to address. Diagnostic activities are usually involved, such as assessing the nature, magnitude and distribution of a social problem. The extent to which there is a need for intervention to address the problem, and the implications of these circumstances for the design of the intervention are also included in this definition (Rossi *et al*, 1999:63).

Anthropologists differentiate between felt and real needs, where a felt need may refer to what a person would like to have. The standard or norm held by the community as being realistic to ensure a quality of life, usually influences felt needs. These needs however, are not necessarily a true reflection of the community's real needs. Real needs are considered those, when viewed objectively, (as by an independent observer) that should be met within a community to meet a specified aim. Meister (1972: 117) claimed that there are no felt needs in traditional African communities, but rather needs that are justified or dictated by tradition. Felt needs imply a measure of independence on the part of the individual, who freely expresses what he thinks, and such freedom is taboo in traditional communities. The result is that a list of only local objectives is prepared, where joint action will be required to achieve them. People also cannot want something that they do not know exists, and the more underprivileged people are, the less able they are to formulate ideas for their own development (Batten, in Wasserman & Kriel, 1997:80; Bradshaw, 1972: 640).

The possibility does exist that community members can be educated or trained to experience an identified or assessed need as a felt need. The needs that emanate from this interaction are known as induced felt needs, persuaded needs, or educated needs (McKillip, 1987:12; Wasserman & Kriel, 1997:80). Within the assumption that community members can be assisted to develop the capacity to desire the things they really need, the process of 'needs assessment' as part of 'situation analysis' for this study was performed.

### 5.3 DATA GATHERING

The gathering of information is a best to an end, and can never achieve meaning as an isolated exercise. Information gathering must be directly relevant to a planned intervention and





must be done by the people participating in and carrying responsibility for the intervention. This is imperative for effective 'situation analysis'. Through participation, local knowledge is used as a solid base for development. If people do not participate in their own development, they have no affinity for developmental efforts and their results. The huge problem of sustainability of interventions is resolved if the affected people participate, knowing that they have a stake in the effort and the results. (Swanepoel & De Beer, 1997:5). The methodological approach followed throughout the study will now be further highlighted.

### 5.3.1 Approach

Participation is one of the core principles of 'Participatory Action Research' (PAR), and implies that the subjects of study (respondents/participants) are integrated in the research by participating fully and actively in the research process. Research is thus transformed into an interactive communal enterprise (Collins, 1999:18; Fals-Borda, 1988:150). Scholars of PAR seem to agree that different degrees of participation can be discerned. At the one end of the scale, there is the position where participation means 'consulting' participants on the central aspects of the research study. The middle position on the scale reflects the view of PAR functioning as a 'partnership' between researcher and participants, with decision-making and control being shared by all stakeholders. At the other extreme of the scale is the realm of what is termed 'participant control' referring to the participants who are in full control of the inquiry. The degree of participation that may be possible within a particular research study, is a function of a combination of factors. It will not be reasonable to demand full scale PAR to be achieved in all cases, or even the same degree of participation. Participation should, however, always be enhanced as much as possible.

Principles that also form part of PAR which were applied in this study are the following:

- The role of researcher as change agent
- The democratic nature of the research relationship
- How local knowledge is incorporated into the research
- Knowledge, generated for purposes of action
- Ownership by the participants
- Empowerment of the participants (Babbie & Mouton, 2001:314; Whyte, 1995:290; Whyte, 1991).

PAR is further cited as a cyclical, reflective process. The different elements and aspects can therefore not be arranged in a consecutive order. It may start with the awareness of a problem, including exploring a need for inquiry and deciding what the purpose of research would be. This may evolve from interactions with members and groups in the field or community. Decisions

and findings, however, should make sense to the participants, and deployed in terms of their own language and in relation to their own perceptions and values (Seymour-Rolls & Hughes, 1995). This research study included the PAR activities, but followed the sequence as depicted in the information pyramid (Figure 5.2). The PAR activities, with its revolving principles, formed part of the data-gathering process on each level.

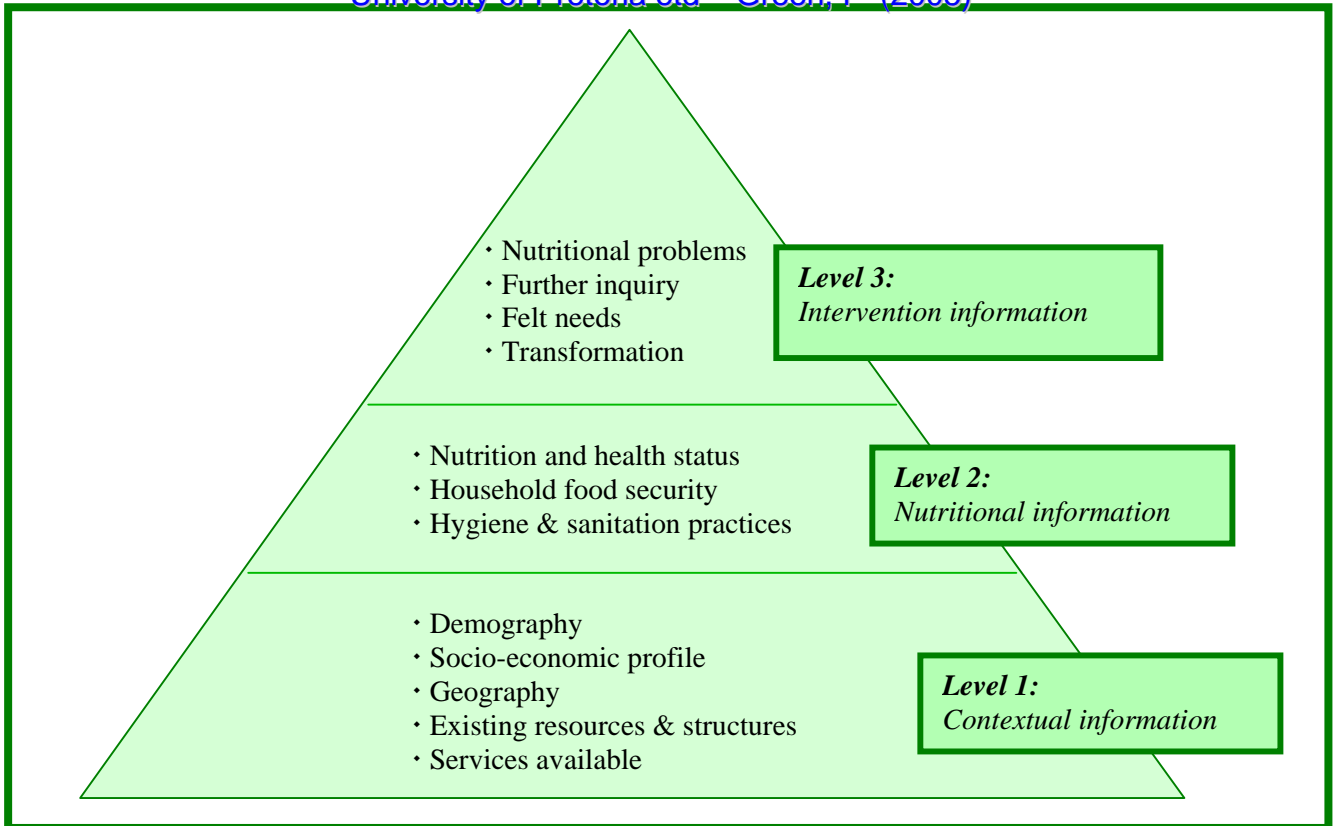
Recognising the values of PAR in situation analysis-assessment studies, various data-gathering activities were undertaken. The methodologies used within each data-gathering level are revealed in the next session. Data analysis was mainly interpretative, involving descriptions of the phenomena. The aim was to write objective accounts of fieldwork experiences within the specific context of nutrition intervention. Results follow subsequently.

### 5.3.2 Various types of data required

Before commencing a 'situation analysis', one has to decide which information is relevant to acquire. Various types of information can be useful to describe the nutritional situation of a community. These types of information include clinical examinations, anthropometrical data, dietary surveys, vital statistics, food availability, economic data, socio-cultural data, and scientific information relevant to food such as nutrient content, biological value and the presence of toxic or harmful factors such as aflatoxins and goitrogens (Latham, 1997:308). For this study, certain types of data were chosen and structured into a pyramid. The pyramid resembles the one used by Chopra and Cloete (2001:13) (see Figure 5.2) and was used to guide the data-gathering process of this study.

Information on a specific community and situation has little value if it is not seen against the milieu of all its external influences. Information on *level one* was required to place the proposed 'situation analysis' in context. Information was retrieved during contact-making sessions with the community, and was used to describe the community in terms of the indicated dimensions in Figure 5.2. These contact-making sessions were also purposeful to sensitise the community and the research team towards possible nutrition problems and needs.

Information on the next level specifically revolved around the nutrition situation within the community. Indicators used were nutritional status and health status of community members, household food security, and hygiene and sanitation practices within the community. These indicators are well accepted within the study field of community nutrition (Endres, 1999; FAO, 1997; Latham, 1997:9).



**FIGURE 5.2: INFORMATION PYRAMID TO GUIDE DATA GATHERING**

Conclusive information from *level two* was needed at *level three* to identify the felt and real/assessed needs of the community. The research team also required this information for further inquiry into these needs. The information was necessary to formulate and prioritise the different needs, and to provide direction regarding the planning and designing of a suitable, effective intervention. Level three also set the stage for the process to follow, namely to achieve consensus and agreement regarding the prioritised needs within the community. The identification and utilisation of key informants and various stakeholders was also considered to be useful to transform assessed problems into felt or real needs.

### 5.3.3 The first level of contextual information

The needs of the community were identified in a formal and in an informal way, applying various techniques and methods. The informal way was termed 'contact-making' and started with the researcher's entrance into the area and becoming acquainted with the community and its members. The contact-making phase was also a natural progression from entry to intervention, a process that should evolve naturally. Contact-making usually is a crucial relationship-building period, during which the stage is set for a community-based intervention to proceed. Momentum should be generated and sustained for motivation and enthusiasm to continue. Swanepoel and De Beer (1997:71) advised to be as unobtrusive and as natural as possible, displaying empathy with, and interest in, the people's situation.

Entrance to the farm was not disruptive but purposeful. The research team entered the community with the following strategy, namely to ensure that:

- Community members get to know and accept the research team for what they are and have come to do
- The research team get to know the people and their circumstances
- Community members get to a point where they can identify and describe their own needs
- The research team members are able to address the identified needs with a community-based intervention.

The following data-collecting methods were used during the contact-making phase of this study, namely individual interviews, observations, and focus group discussions. Ideographic research strategies attained preference, with no intention to generalise findings to a larger population.

### **Individual, informal interviews**

Interviews were conducted, mainly because of the low literacy level of the study population. The interview situation is unknown to the majority of African rural people (Babbie & Mouton, 2001:249) and the interview may therefore be expected to be quite different from the typical Western situation. Introductions are usually lengthy, discursive and probing. It may for instance take some time to establish good rapport. Because the entire research project depended on this establishment, the interviewer was trained to acknowledge this, and to attempt to counter for it as far as possible.

Data gathering also presupposes a certain familiarity with the subject's culture and language. One particular negative aspect concerning the utilization of the interview technique in this study was the aspect of language. This was a cross-cultural study, implying the presence of an interpreter for the largest part. The presence of an interpreter carries its own problems. Interpreters can obscure the true meaning of words and sentences. They can also change answers to suit whatever it is they want the interviewer to hear, especially if they have an interest in the matter. The research team chose and trained a postgraduate student from the same cultural group to act as a field worker and interpreter. The student, as part of the research team, also collected data for her own research project; therefore she also had an interest in the building of good relations with community members. She was further considered independent and unbiased, with a practical knowledge of the content of the study and of the interview technique.

A positive aspect of using in-depth interviews, however, is the objectivity of knowledge acquired with specific regard to freedom from bias, inter-subjective knowledge, and the nature of the object. Other strengths and weaknesses associated with this type of interview are functions of the competencies and skills of the person using this tool to elicit the required information. A good relationship with the participants is fundamental to good quality data. Aspects that received specific attention were the development of mutual respect, and being sensitive to differences in social class, gender, and ethnicity. A reciprocal relationship developed, whereby the research team helped some community members with personal problems. A young girl was raped during one of the visits, and the research team assisted them in arresting the offender.

Babbie and Mouton (2001:291) describes this process of understanding the meaning construction of others as a slow and delicate process. The researcher was sensitive to non-verbal cues from the participants, and noted any change in behaviour, for instance becoming uncomfortable or aggressive. The research team also gave attention to specific accentuated words, the interviewee's attitudes, reactions to what was said, and actions taken. The interviews were also recorded and analysed afterwards, with the assistance of a second interpreter. Results obtained during the contact-making phase are summarised in Box 5.1.

Eight women (female heads of the households) voluntarily participated in the interviews. These women represented eight of the eighteen households on the farm. Fifteen other adult females were also included as informants. These women were part of a second or third family living with the main household and also seen as caretakers of the young children. They were specifically invited to participate in the group discussions.

### **Observations**

While the interpreter directed the interviews, the other members of the research team were involved in observations following a structured observation schedule. Items on this schedule included environmental safety aspects such as the presence of rodents and insects in the food preparation area, personal hygienic practices when preparing food, and the cleanliness of clothes, washing water, and hands. It was also considered vital to make full and accurate notes during these observations (Babbie & Mouton, 2001:294). Recordings of empirical observations, as well as the team members' possible interpretation of it therefore also formed part of the observation technique.

### Group interview technique

This was employed as a summative activity and to elaborate on the purpose of the study and further planning. This technique was chosen from the normal repertoire of qualitative research, because it would encourage the involvement of participants, and provided the opportunity for the researcher to investigate further and deeper into the phenomena under study (Babbie & Mouton, 2001:292). It was therefore compulsory for all the participants in the study to also take part in the group discussions. In the true spirit of PAR, all the women from the village were invited to a group gathering in the school classroom. Fifteen women attended, and each one received an incentive in the form of a vegetable package afterwards. An interview guide provided direction to the discussions. Expression of opinions was encouraged, and the entire process was recorded. The outcome of the discussion was a keen interest in the proposed intervention, and everybody indicating a willingness to participate. The researcher did not create any expectations, but did indicate that the team would come back for feedback and for further planning.

### 5.3.4 The second level of nutritional information

The nutrition situation within the community was determined in terms of the children's *nutritional and health status, household food security, and hygiene and sanitation practices of caretakers and other community members*. Individual interviews and observations were once again deployed as research techniques, with caretakers being the main information source.

#### Nutritional status

The nutritional status of the target group was determined in terms of *dietary patterns, clinical examination, and anthropometric measurements*.

***Dietary patterns*** were investigated using an interview schedule. The following aspects were included:

- Food production and availability
- Food practices (purchasing, preparation, preferences, distribution, serving, storage)
- Food preservation.

See Box 5.2 for results.

***Basic clinical examinations*** were done to screen the children for any prominent physical signs and symptoms of nutritional deficiencies. A framework, as proposed by Charney and Malone (2004:42-44; 54-60) and Latham (1997:209-210), was used to guide this activity. Results are summarised in Box 5.2.

***Anthropometric measurements*** were used to reflect the adequacy of food intake, growth and overall health and welfare. Weight-for-age (w-a), height-for-age (h-a), and weight-for-height (w-h) indices were used to evaluate the extent and magnitude of malnutrition in the group of young children. These indices were expressed in terms of percentiles, which is the rank position of an individual on a given reference distribution, stated in terms of what percentage of the group is equalled or exceeded by the individual (Lee & Nieman, 2003:172).

International reference data, developed by the US Centers for Disease Control and Prevention (CDC), were used. The w-a of ten of the nineteen children (53%) fell under the 50<sup>th</sup> percentile, with two under the 5<sup>th</sup> percentile. A low w-a is indicative of underweight. The h-a of 12 children (63%) was under the 50<sup>th</sup> percentile, indicative of moderate stunting, whilst three children (15%) fell under the 5<sup>th</sup> percentile, indicating severe stunting. The w-h of five children younger than three years were plotted and two of them were under the 25<sup>th</sup> percentile, indicative of moderate wasting.

### **Health status**

Probing regarding health status was also included in the interview schedule. The probes revolved around deaths and diseases within the community, availability of growth charts, and breastfeeding practices. The available growth charts of the children were also assessed for birth weight, growth patterns, and major health problems. The nursing sister of the visiting mobile health clinic was also interviewed regarding vital statistics of the district. Results are also revealed in Box 5.2.

### **Household food security**

Food security at household level implies physical and economic access to foods that are adequate in terms of quantity, quality, safety and cultural acceptability, to meet each member's nutritional needs. Household food security depends also on an adequate income and assets, including land and other productive resources. It is ultimately associated with the ability of households or individuals to acquire a nutritionally adequate diet at all times (FAO, 1997:6). This definition therefore implies that safe and nutritious foods should be available and that household resources should be sufficient to meet costs. Household food security therefore relates to aspects of food production and availability, food practices, and food preservation. Secondly, household food security relates to household income and assets, and thirdly it can be described in terms of food safety, including hygiene and sanitation practices.



Household members were asked about their perception of food insecurity, using an assessment scale (see Addendum A). This scale was originally constructed by Kendall *et al*, (1995), adapted and used in the NFCS (Labadarios, 2000). The tool is described as a sound national measure for food insecurity and hunger and appropriate for standard, consistent use on national and local levels. The scale is composed of eight questions that investigate whether adults and/or children in the household are affected by food insecurity, food shortages, perceived insufficiency, or altered food intake due to constraints on resources. Answers on each of the eight questions were scored, then summed and converted to percentage. The outcome of the assessment appears in Box 5.2.

### Hygiene and sanitation practices

These practices were uncovered mainly by observations. The first observations were done in an unstructured way, by merely making field notes. These observations are indicated in Box 5.2. On another occasion, hygiene and sanitation practices were more structurally measured by using three dimensions of personal, household and environmental hygiene. Indicators relevant to each of these dimensions were based on the first observations but also compiled from the literature (Ahmed *et al*, s.a.; Almedon *et al*, 1997; Billig *et al*, 1999:22; Curtis *et al*, 2000:23). A score was attached to each indicator. Table 5.1 depicts the scoring guideline. A maximum of 10 marks could be scored within each category, revealing excellent hygienic practices. More than eight marks were considered to be very good, and between five and seven as good. A score of three or four were indicative of poor hygienic practices, and less than three as very poor.

Hygienic conditions were also determined using total microbiological counts on Rodac plates from various surfaces in all eighteen households, including mugs, plates, dining room tables, toilet seats, kitchen cloths, hands, clothes, and food preparation bowls. Staff from the Department of Food Science and Technology, University of Pretoria, was involved in these measurements. All the plates were overgrown (see Figure 5.3), that is too numerous to count, but indicating more than 300 bacteria per cm<sup>2</sup> for all surfaces. The measurements were repeated two months later where samples were taken from three households. All the samples were analysed at the analytical laboratory of the ARC. The environmental samples (tap handle at the borehole, inside of tap, inside of water containers, table surface, inner and outer surfaces of refrigerators) showed high coliform counts (>300cfu/ml) as well as presence of *Escherichia coli*, (*E. coli*) indicating a lack of general and personal hygiene practices (Prinsloo, 2003).

TABLE 5.1: HYGIENE SCORING GUIDELINE

Dimension	Max score	Typologies				
<b>Personal hygiene</b>	10	Clean nails =2	Clean clothes =2	Good body odour =2	No reported illnesses =2	No visible sores =2
<b>Household hygiene</b>	10	General clean appearance =2	Good ventilation =2	Washing facilities available =2	Clean kitchen cloth =2	Presence of soap =2
<b>Environmental hygiene</b>	10	Children use pit latrines =3	Rubbish removal in place =3	Pets at bay =2	Chicken kept in run =2	



FIGURE 5.3: EXAMPLES OF BACTERIAL OVERGROWTH ON PLATES TAKEN FROM VARIOUS SURFACES IN 18 HOMESTEADS

### 5.3.5 The third level of information for intervention planning

As indicated in Figure 5.2, information on the third level of the pyramid included (1) nutritional information (from level two), (2) further inquiry into assessed problems, (3) felt problems, and (4) transformation of assessed needs into a relevant intervention.

#### Nutritional problems

Analysis of information from the second level resulted in the identification of specific nutritional problems. Results are summarised in Box 5.2. Assessed needs were identified as hygiene and sanitation practices, perceived food insecurity, insufficient dietary diversity, and insufficient food coping strategies. Although sufficient food in terms of quantity were available in the village, the

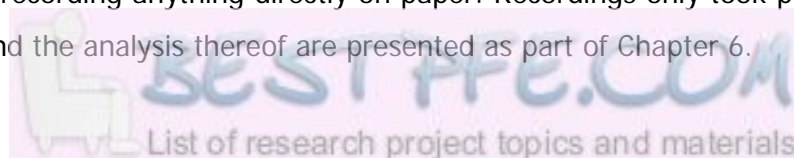
quality and variety was suspected to be a concern. This phenomenon is referred to as dietary diversity. Dietary diversity refers to the number of individual foods or the number of food groups consumed over a given period. The specific measurement and analysis of this problem was the project of another postgraduate student (Matla, 2004).

Food coping strategies refer to those strategies that are employed when there is insufficient food within the household or insufficient money to buy food. These can include altering the habitual diet (changing to cheaper/other food), rationing (skipping meals, skipping the whole day without food, maternal buffering), food seeking (borrowing food or money to buy food) or altering household composition (sending household members away to other family). The specific measurement and analysis of this problem was also assigned to another postgraduate student (Moopa, 2004). The problem of food insecurity was seen as part of all the other identified problems and would therefore be addressed as such.

### **Further inquiry**

The research team decided to do further inquiry into the hygienic and sanitary conditions of the community. The group's knowledge and behaviour regarding these issues were assessed, based on items identified from the literature. The assessment was done informally as a group discussion on the pertinent issues. These assessment forms are included in the thesis as Addenda C and D. Thirteen women voluntarily participated. The sanitation knowledge test consisted of 25 questions on which they could simply respond with a yes or no answer. The sanitation behaviour scale consisted of 25 statements to which they could indicate the degree of agreement (always, sometimes, or never). The possible responses were kept very simple, because all these participants were illiterate. They were assisted to indicate their answers with either a cross or a right mark directly onto the paper.

The responses were scored and calculated to percentage. The average total score achieved in the sanitation knowledge test was 78%, and 77% on the behavioural scale indicating a fairly good knowledge and well as good behavioural intentions. All the participants scored more than 72% in the knowledge test and more than 62% on the behavioural scale. The overgrowth of bacteria on the Rodac plates, however, contradicts these scores. An observation technique was employed on a separate, unannounced occasion, whereby the fieldworker did friendly, informal household visits. She was instructed to observe the hygiene and sanitation practices of all the households without recording anything directly on paper. Recordings only took place after each visit. The findings and the analysis thereof are presented as part of Chapter 6.



### **Felt problems**

The community members also expressed other felt needs and concerns. Felt or perceived problems often evolve around improving the economic structure in the short term (Endres, 1999:253), for instance to have or earn more money. Most of the interviewees (n=10) expressed their needs in monetary terms but also indicated a desire for the availability of water directly in their houses, a preschool, and to learn how to sew and make clothes. They also perceived the land available to be insufficient for agricultural purposes. The reason indicated was that the land is against a slope and therefore not good for irrigation.

### **Transformation of assessed needs into a relevant intervention**

Level three also set the stage for the next process to follow, namely to *verify* the findings with the community, to *prioritise* and to obtain consensus and agreement regarding the prioritised needs within the community. We organised a group meeting, during which feedback was given to the participating community members. The further inquiry clearly showed a need for behavioural change with regard to hygiene and sanitation practices. The need for improved hygiene and sanitation practices was therefore proposed, as the most urgent need to be addressed. This identified need, however, has to be transformed into a real need that can be addressed. This process cannot commence until at least some people have a positive attitude towards it. Therefore, some of the objectives of the transformation process were to be positive about the upcoming intervention, not to make empty promises, but to be enthusiastic about what the research team is in the position to offer. A key informant was identified to assist the transformation process. The community members unanimously elected a group leader during one of the group discussions. The research team considered this lady to be a key informant, and one who was also able to assist in the process of translating the assessed problem into felt need.

Four discussions at different times were held. With the help of the field worker and key informant, the process of sorting and prioritising problems and needs were set forth. Felt needs and problems (more money, making clothes, water directly available in their houses, a crèche and more land) were beyond the scope of the study as well as the capacity and skills of the research team. These needs, however, were discussed with the farm owner. He had certain logistical problems with meeting these needs. The community members were told why certain needs could not be addressed. We explained to them what we could do. They agreed on addressing the following identified needs – hygiene and sanitation practices, food security, dietary diversity and food coping strategies from which hygiene and sanitation was addressed first. The planning of this intervention is the theme of the next chapter.

## 5.4 CONCLUSION

*“If a way can be found to meet the identified needs of the community while also satisfying their perceived needs, interventions will succeed” (Endres, 1999:253).*

Within the realm of this quotation, a ‘situation analysis’ was conducted. The initial aim was to conduct a situation analysis, in order to verify the national finding of the existence of nutritional problems on commercial farms. Certain assumptions underscored this study. Firstly, that nutritional problems were actually present on the farm, secondly, that these problems could be defined as needs within the community, and thirdly, that the community members were willing and competent to be persuaded to address these needs. Specific objectives were stated as to a) describe the community, (b) identify particular needs and problems, (c) translate the nutritional problems into addressable needs, and (d) to establish a basis for designing a suitable intervention.

The community was described in terms of demography, socio-economic profile, geography, resources, infrastructure, and services available (see Box 5.1). Given the data from the ‘needs assessment’, the premise was made that nutritional problems are existent on the particular commercial farm under study. These problems were the poor hygienic and sanitary conditions and practices in the community, perceived food insecurity, insufficient dietary diversification, and insufficient food coping strategies (see also Box 5.2).

Findings from the National Food Consumption Survey (Labadarios, 2000) show that a great number of children consume a diet deficient in energy and of poor nutrient density. Thirteen percent of children in South Africa are severely stunted. On Oranje farm 15% were severely stunted. The average number of food items procured by the lower income households (< R1 200 per month) surveyed during the National Food Consumption Survey, was 8 and varied from 4 in the Free State to 13 in the Western Cape indicating widespread food insecurity. In this study on Oranje farm, the number of food groups consumed by female adults was measured (food group diversity score) as well as the number of portions eaten per day (food variety score) (Matla, 2004). The mean food group variety score was 9.48 (ranging from 4-12) and the mean food variety score 17.76 (ranging from 6-67). These findings indicated limited dietary diversity.

Food insecurity on national level was confirmed by results on the Hunger Scale questionnaire, which showed that food insecurity ranged from 48 - 91, 40 - 84 and 26 - 66% at the level of

the household, the individual and the child, respectively. In this study food insecurity were 59% on the household level as measured on the Hunger Scale questionnaire, ranging from 47 – 69%. The foods most frequently consumed by the low-income households on national level were maize (83%), salt (63%), white sugar (62%), tea (51%), fat (poly-unsaturated fatty acid oils) (42%), white rice (36%) and white bread (35%) (Maunder *et al*, 2000). On Oranje farm these foods were maize porridge (mealy meal), cow's milk, poultry (only on weekends or during special occasions), and certain vegetables (spinach, pumpkin, potatoes, beetroot and cabbage).

Felt problems were to have or earn more money, and to learn how to sew and make clothes. Wanting water directly available in their houses, the organisation and construction of a preschool as well as the perceived land insufficiency were also mentioned. Through a series of discussions and the assistance of the field worker and key informant, community members came to understand and accept the prioritising of the various problems. The focus of the research team on nutritional problems and the context within which an intervention would be implemented were also clearly explained.

One of the most important outcomes of this 'situation analysis' was a commitment by the research team to actually use the identified needs in the intervention planning process. The research team also needed to find out how the people perceived the assessed needs and started to change any negative feelings people have about their circumstances and their capacity to do something about these needs. Swanepoel and De Beer (1997:78) said that identifying needs could be a very negative act. People should be led to understand that they should not accept their abjection, but that they should start thinking positively about using their abilities and resources to do something about it. As soon as felt needs are expressed, the urgency of meeting these needs increased. Through the mere act of expressing a need, a person becomes sensitive and aware of such a need. The needs of all members of the community cannot be satisfied at the same time; the result is that several persons become increasingly more dissatisfied with their existing circumstances.

The following step was to design and implement a suitable intervention to address the identified needs. The findings revealed from this 'needs assessment' (situation analysis), were used to give direction to the designing and implementing process. The hygiene and sanitation situation within the community received priority. A food-based strategy to address perceived food insecurity, insufficient dietary diversity, and insufficient food coping strategies was also suggested, but was assigned to other postgraduate students.



**BOX 5.1: CONTEXTUAL INFORMATION**

The farm covers an area of 1500 hectares, producing a variety of commodities like crops (maize, wheat), cattle (milk and meat), sheep (meat), fruit (apricots, peaches, cherries), and walnuts.	
Demography	<p>There were 18 homesteads on the farm, from which only 10 inhabited young children. Nineteen children younger than 10 years were present.</p> <p>All the participants (n=23) were Southern Sotho, adult females, living within the community, and also speaking the local language. Only two women could understand Afrikaans and three English.</p> <p>The women were between 24 and 64 years of age.</p> <p>All except two interviewees had some formal education.</p> <p>The highest qualification varies between grade three (on primary school level) and one respondent's daughter-in-law who finished grade twelve (secondary school level).</p> <p>Households consisted of seven members on average.</p>
Socio-economic profile	<p>Labour on the farm is the main source of income providing jobs for 4 women and 12 men. Average incomes of R600 per month per household were calculated. These incomes included pensions and other maintenance received. In the households where members are working on the farm, they also received an additional allowance of an eighty-kilogram bag of maize meal per month</p> <p>Household incomes are mainly from wages, as at least one of the household members is employed on the farm. Farmers also are not in favour of people living on the farm if they are not employed there, but do tend to make exceptions for family members and people who have already been living there for a long time. The few products produced by them (vegetables, fruit) contributed to their income in an indirect way. Outside funds were also received. Three women received maintenance from their children's fathers who work in the cities, and two older people taking care of grandchildren received money from their children. Three pensioners received a grant of R650.00 per month, whilst the mothers (n=8) with children aged less than 7 years received maintenance of R140.00. The people do not have many assets. Apart from the house they live in, a television, maybe a fridge and a radio, they do not own anything else. Nobody reported having any savings.</p>
Geography	The farm receives an average rainfall of 780mm per year, mainly during the months of October until March. The climate is moderate. The farm is considered the warmest in the district. Constraints to farming are either droughts or hail. Frost only occurs on the lowest parts of the farm and snow about every year during June, July and August.
Resources	<p>All village members (farm residents) have access to land for cultivation on a small/household scale. There are also sheds for cattle, and poultry runs. Some members do own some implements like forks, spades, wheelbarrows, and hoes.</p> <p>A well/borehole 200m away is the only communal water source, and although they have unlimited access, the only way is to fetch it with buckets and carrying it back home. Electricity is available, although the people have to buy coupons. They mainly use it for light during the evenings. Wood fires are used for cooking in separate cooking rooms (kitchens).</p>
Infrastructure	The village is situated next to a secondary road (R711) between Fouriesburg and Clarens, and community members make use of public transport to visit either of the towns.
Services available	<p>An informant revealed that a crèche for the farm labourers' children existed previously, but unfortunately is no longer operational. There is a primary school on the premises, the nearest high school being in Fouriesburg. The primary school serves 48 children from different surrounding farms, teaching grades 1 to 6.</p> <p>After-school care is non-existent, but also not necessary since the school is next to the village with the majority of adult women unemployed, staying at home. Grandparents take care of children when mothers are working.</p> <p>There are primary health care clinics in both towns, and a mobile clinic visits the farm regularly. The following services are rendered at these clinics: treatment of minor ailments, tuberculosis, chronic diseases, family planning, integrated management of childhood illnesses, voluntary testing and counselling for HIV/AIDS and sexually transmitted diseases, immunizations, health education, mental health services, and maternity services. Routine vitamin A supplementation and deworming of children are also done.</p> <p>The nearest hospital is in Bethlehem, 60 km away.</p> <p>A spaza shop is available, selling sweets and icicles to the children as well as other commodities (soap, matches, dry beans).</p>



**BOX 5.2: NUTRITIONAL INFORMATION**

<b>NUTRITIONAL STATUS</b>
<b>Dietary patterns</b>
<p><u>Food production and availability</u> Household food gardens are present. Foods planted include mainly vegetables (spinach, pumpkin, potatoes, beetroot, cabbage), fruit (peaches, apricots), and maize. When drought is not a restriction, they also collect indigenous green leafy vegetables (<i>morogo</i>) from the field. Agricultural varieties like <i>thepe</i>, <i>sepidse</i>, and <i>sethokojane</i> (see Figure 5.1) are present, as well as roots like <i>moputswe</i> and <i>sewediwetla</i>. The men hunt rabbit with their dogs, but these and other wildlife have become scarce. Guinea fowls (<i>gaka</i>) are present on the farm but eaten only during dry and hungry seasons.</p> <p><u>Food practices</u> Foods most often eaten are maize porridge (mealy meal), cow's milk, poultry (only on weekends or during special occasions), and certain vegetables (spinach, pumpkin, potatoes, beetroot, cabbage). Some households do own cattle, but the farm owner limits them to only four animals per household. Some of the households (n=3) indicated that they do milk the cows, but more often buy milk from the farm owner. If ever a surplus cow's milk is present, they sell it to the Basothos from Lesotho, the neighbouring country. All farm workers receive a bag of maize meal (mealy meal) as part of their allowance/wage. Large families receive eighty kilograms and smaller ones receive 60 kg. All households own chickens. Although chicken eggs are available, the household members rather hatch them, and buy new chickens from one of the nearby farms.</p> <p>Only two household members reported that they followed the practice of giving preference to adult males in a household regarding food distribution. Males feel, especially when they are working (doing physical labour on the farm), that there should be meat present in their lunch boxes. "We feel ashamed if there is no meat", was one response. No meat to eat is seen as an indication of inferiority and that "things are not well at home".</p> <p>Some food taboos are still practiced, the main one being the exclusion of eggs from the diets of young girls during their initiation stage. Only married women are allowed to eat eggs. When pregnant and breastfeeding, women again abstain from eggs. Eating chicken intestines, especially chicken kidneys, is also not allowed during these life stages. Special food is usually prepared for funerals. They incur huge expenses for the slaughtering of sheep or cattle for the occasion.</p> <p><u>Food preservation</u> The interviewees reported to practice solar drying of leafy vegetables, mainly for the winter season, and if there is any surplus left. The elderly women in the community also bottle and dry peaches at the end of the season. Food is preserved mainly for household consumption. The quantities involved do not allow any selling.</p>
<b>Clinical examination</b>
Apart from symptoms of iron-deficiency (as indicated by a pale conjunctiva of lower eyelid, and pale nail beds), no other prominent physical signs and symptoms were observed in the children.
<b>Anthropometric indicators for children between birth and 10 years (n=20)</b>
The w-a of seven children (35%) fell under the 50th percentile, with only one under the 5th percentile. The h-a of 10 children (50%) was under the 50th percentile. Three children (15%) fell under the 5th percentile. The w-h of three children (15%) was under the 25th percentile.
(continued)

**BOX 5.2: NUTRITIONAL INFORMATION** (continued)

Anthropometric indicators for adult females (n=21) (Matla, 2004)					
Body mass index	%	Status	Body mass index	%	Status
>30	47.6	Obese	17-18.4	4.8	Possibly underweight
25-29.9	19	Overweight	16-16.9	9.6	Underweight
18.5-24.5	19	Normal			

**HEALTH STATUS**

The community members reported two deaths during the visited period – a male who had a stroke and a teenager with kidney failure. Growth charts of children were available, except in cases where the families had migrated from the cities. The problems indicated on the growth charts were an outbreak of scabies 5 years ago, some infections, and only one case of severe diarrhoea and vomiting. One woman (67 years of age) was very underweight. Nobody seemed to know what exactly was wrong with her. No other cases of severe illnesses and diseases were observed or reported. The mothers of young children reported to have breastfed their infants up to an age of two years. In two cases, the mothers indicated that they had given infant formula as supplements. A baby was born during the research period - the mother also breastfed her exclusively up to the age of six months.

**HOUSEHOLD FOOD SECURITY** (n=13)

All 13 participants reported feelings of food insecurity, as indicated by an average score of 59% in the assessment scale (see Addendum A). Average incomes of R600 per month per household were calculated. The people do not have many assets. Apart from the house they live in, a television, and perhaps a fridge and a radio, they do not own anything else. Nobody reported having any savings.

**HYGIENE AND SANITATION PRACTICES**

**Scoring** (n=13)

Instruments were constructed from the literature according to criteria to measure and observe practices. All participants obtained a very low personal hygiene score (x=2.6/10); a low household hygiene score (x=4/10); and a low environmental hygiene score (x=4.7/10). Participants attained a good sanitation knowledge score (x=78%), as well as a good sanitation behavioural score (x=77%) as measured by separate tests (see Addenda C and D). No particular illnesses related to food consumption were reported.

**Observations**

The following practices regarding hygiene and sanitation were observed and noted: Pit system toilets were present in the village, and were built by household members themselves. Most of the household members own dogs, which appeared undernourished. Chickens were allowed free access to most areas. Very small children were not wearing any nappies, and the smell of urine was very strong in certain houses. All children appeared very dirty. All the houses, except one, were filthy and desperately in need of cleaning. Washing of clothes was done either directly at the borehole, or in front of their houses in tin baths. Nearby wire fences were used for hanging out washing to dry. Garbage was disposed mainly by dumping on a communal site. No signs of burned garbage were observed, although the respondents indicated that they do practice burning and burying of disposed material. The environment around and close to the village was not kept neat and clean. Paper, plastic bags, old toys, implements and pieces of wire fencing were polluting the area.

**Microbiological tests**

Rodac plates were all overgrown, indicating more than 300 bacteria per cm<sup>2</sup> for various surfaces in the households, including mugs, plates, dining room tables, toilet seats, kitchen cloths, hands, clothes and food preparation bowls. A second microbiological analysis assessed high coliform counts (>300 cfu/ml) as well as the presence of *E. coli*. Analysis of water samples did not indicate any contamination, either from the source of water, or from the containers being used. Some food samples were also analysed to determine the presence of the most commonly recognized pathogens associated with food. *Listeria monocytogenes* was detected on one of the eggshells, while *Bacillus cereus* was detected in one of the eggs. The presence of *Staphylococcus aureus* on the chicken meat also indicated a lack of personal hygiene practices (Prinsloo, 2003).

## *Chapter 6: Designing the intervention*



*“Many interventions aimed at changing habits have failed because of inappropriate planning” (Andrien, 1994).*

## 6.1 INTRODUCTION

The above-mentioned statement was used as rationale for the course of designing and planning followed in this study. I agreed with Andrien (1994) in the belief that nutritional interventions can only be effective when it is based on an in-depth analysis of relevant problems and a clear concise definition of objectives and methods of communication. Other authors and researchers agree (Dennill *et al*, 2000:90).

The aim of this phase was to design a needs-based, participatory-action orientated intervention to address the assessed needs of the particular rural community involved. These needs were identified in Chapter 5 as (1) poor hygienic and sanitary conditions and practices, (2) perceived food insecurity, (3) insufficient dietary diversification and (4) insufficient food coping strategies. The transformation process that was followed from needs assessment to designing the intervention is summarised in Figure 6.1. Wolcott's (1994) term of transformation was adopted, which expands beyond the mere description, analysis and interpretation of data. It refers more to data management and includes an aspect of theorising. This chapter is devoted to this transformation process, starting with prioritisation and verification of the various assessed and felt needs. All the gathered information regarding this particular problem was also taken through an analytical and theorising activity.

## 6.2 GAINED DATA ON HYGIENE AND SANITATION

Information was obtained during the needs assessment phase using the following methods:

- unstructured observations
- structured observations
- scoring guideline
- knowledge test
- behavioural scale
- group discussions.

The findings are presented in a chronological order, following the order in which the facts were obtained. The first observations were done in an unstructured way. The research team merely noted the observed hygiene and sanitation practices and conditions. These observations are presented in Box 6.1 and summarised in Box 6.2. A structured observation guideline was used for

the next series of observations done three months later (see Box 6.3). On another occasion hygiene and sanitation practices and conditions within each household were scored using three dimensions of personal, household and environmental hygiene. Indicators relevant to each of these dimensions were based on the first observations but also compiled from the literature (Ahmed *et al*, s.a.; Almedon *et al*, 1997; Billig *et al*, 1999; Curtis *et al*, 2000) (see Table 5.1). Low scoring in all three dimensions showed that the intervention should include strategies to address all these aspects. Frequencies were computed and incorporated in the next data analytical step.

The participants' knowledge of hygiene and sanitation was measured by the sum of their responses (for the particular test, see Addendum C). Sanitation behavioural was measured by scoring their responses on a three-point scale (see Addendum D). These scores were attained through consensus among the three research team members involved. All the participants attained good scores in the test (mean=78%) as well as on the scale (mean=77%), indicating that transfer of information regarding basic hygiene and sanitation should be limited. The behavioural scale measured intentions to apply knowledge. Although the intentions might have been present, the outcomes of the microbiological tests and observations said otherwise. No particular food-borne illnesses or spurts of diarrhoea were reported, showing that the approach should be more focused on the health and dignity aspects of safe hygiene practices rather than prevention of disease.

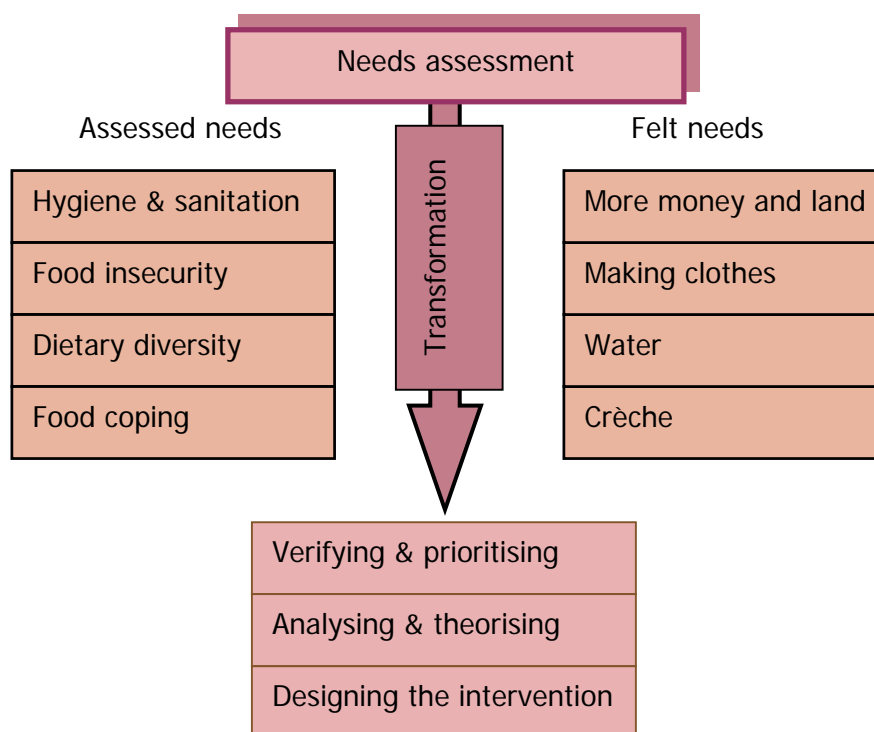
The findings were presented to the community members during a meeting to foster group discussions and to verify the findings. The various identified needs were also prioritised during these discussions. This process is discussed next. The group discussion was recorded, translated and then transcribed. Verbatim text was included in the following analytical activity.

### **6.3 VERIFYING AND PRIORITISING**

Felt needs were mainly non-nutritional (to earn more money, to have more agricultural land, to have water directly available in their houses and to have a crèche for the pre-school children). These needs could have had a bearing on nutritional status, but were considered beyond the scope of this study. The research team explained in elaborative terms why these needs could not be fully addressed. The next step was to prioritise the identified needs. The following statement of the FAO (Latham, 1997:331) guided us in the process of choosing a particular need as the problem to be firstly and urgently addressed:

*“If food, beverages, dishes or utensils are obviously unclean, if food looks or smells bad, if a food that is meant to be eaten hot is served cool or lukewarm, if the environment where the food is served has flies, cockroaches or evidence of rodents, or if food servers have dirty hands and clothes, then it is likely that the food being served is contaminated.”*

This statement exactly described the situation on Oranje farm. The observation was verified by high (>300cfu/ml) total microbiological counts on Rodac plates from various surfaces in all eighteen households, including mugs, plates, dining room tables, toilet seats, kitchen cloths, hands, clothes, and food preparation bowls, as well as the presence of *Escherichia coli*. Through group discussions and with the assistance of the field worker and key informant, the decision was made to address the hygiene and sanitation conditions in the community and practices of the community members by designing and implementing a suitable, effective intervention. Before the designing process could be initiated, all the information gained regarding this need had to be analysed and interpreted as summarised in Figure 6.1.



**FIGURE 6.1: PROCESS FROM NEEDS ASSESSMENT TO DESIGNING THE INTERVENTION**



## 6.4 ANALYSING

The analytical activity was valued as a process by which the researcher expanded and extended the data beyond a descriptive account (Wolcott, 1994:36). The gained information was more than mere writings of objective accounts of fieldwork experienced within the specific context of hygiene and sanitation and the designing of a suitable intervention. The process of analysis was not a distinct phase of the research process, but a continuous, reflective activity that informed and guided the processes of data collection, needs assessment, intervention planning, implementation and evaluation (Babbie & Mouton, 2001:328; Coffey & Atkinson, 1996:6; Collins, 1999: 58; Miles & Huberman, 2002:394). Data analysis was also interpretative, involving mainly qualitative descriptions of the phenomenon under study (hygiene and sanitation). Within the qualitative paradigm, analysis was also perceived as an inductive, data-led activity, with the emphasis on the search for emerging themes and patterns. I paid careful and systematic attention to the information in the various data sets to identify key themes and patterns. These themes and patterns were derived from the data itself, but also included aspects from the literature. The data was organised into categories and then sorted in terms of similarities and distinctions to discover themes and patterns in the categories.

The aim of this analytical activity was to identify the specific hygiene and sanitation practices and conditions that could be converted into messages as the content part of an intervention. Based on this aim, I selected an analytical strategy termed 'theme analysis', which describes recurring themes found in the data such as visual qualities, behavioural characteristics, discourse topics, or participants' expressed concerns (Aronson, 1994; Spradley, 1979). The data was explored to seek out themes and patterns as well as distinct features, dimensions, consequences and relationships with the phenomenon. The following practices and conditions considered to be unacceptable in terms of good hygiene were identified:

- Young children using the open veld to defecate, without adult supervision
- Hands not washed
- Filthy toilets
- Filthy kitchen cloths
- Uncovered drinking water
- No rubbish removal system.



The next step was to build a valid argument for choosing these themes. This was done by reading related literature and dispersing the findings with the literature in order to make logic inferences. This step was referred to as theorising.

## 6.5 THEORISING

Theorising is integral to analysis (Coffey & Atkinson, 1996:139). It is the extent to which you go beyond the data to develop ideas, create meanings and make sense. Theorising is also seen as a means of bringing some structure to existing assumptions and propositions about interventions (Boone *et al*, 2002:65). Theorising was done in the sense of having, creating and using ideas. Ideas that were drawn upon were a mixture of my own, respondent's views and those from other researchers reported in the literature. Ideas from the literature are presented first.

*What is development if it is not helping human beings to live in health and cleanliness with dignity?* (Simpson-Hébert & Wood, 1998:15).

This statement clearly links hygiene and sanitation with development, but hygiene and sanitation also have a well-recognised connection with health and nutrition (Latham, 1997:331). Apart from obvious reasons to practice good hygiene like general well-being, dignity and pleasantness, more health applied reasons are the prevention of food contamination and infection, the effect on growth and development of vulnerable children, the effect on environmental health and productivity (Appleton & Van Wijk, 2003:11; Billig *et al*, 1999:6; Okun, 1988:1463). Hygiene and sanitation practices refer to basic knowledge, skills and human behaviour as well as social and cultural factors concerning health, life-styles and environmental awareness. These include:

- personal hygiene (washing, dressing, eating)
- household cleanliness (kitchen, bathroom)
- community cleanliness (waste collection, common places) (WHO, 1993).

Poor hygiene, inadequate quantities and quality of drinking water, and lack of sanitation facilities cause millions of the world's poorest people to die from preventable diseases each year. Women and children are the main victims. Inadequate water, sanitation and hygiene account for a large part of the burden of illness and death in developing countries. Lack of clean water and sanitation is the second most important risk factor in terms of the global burden of diseases, after

malnutrition (Billig *et al*, 1999:6; World Bank, 2002b). Some commonly held wrong assumptions about hygiene and sanitation, which could be relevant for this study, are that:

- safe and adequate water supply is a pre-condition for good sanitation
- message-giving will change behaviours and automatically create demand
- sanitation improvements simply means building latrines
- traditional cultural beliefs and attitudes are a barrier to good sanitation practices
- improved sanitation has no immediate benefits
- children's faeces are harmless (Simpson-Hébert & Wood, 1998:9, 10).

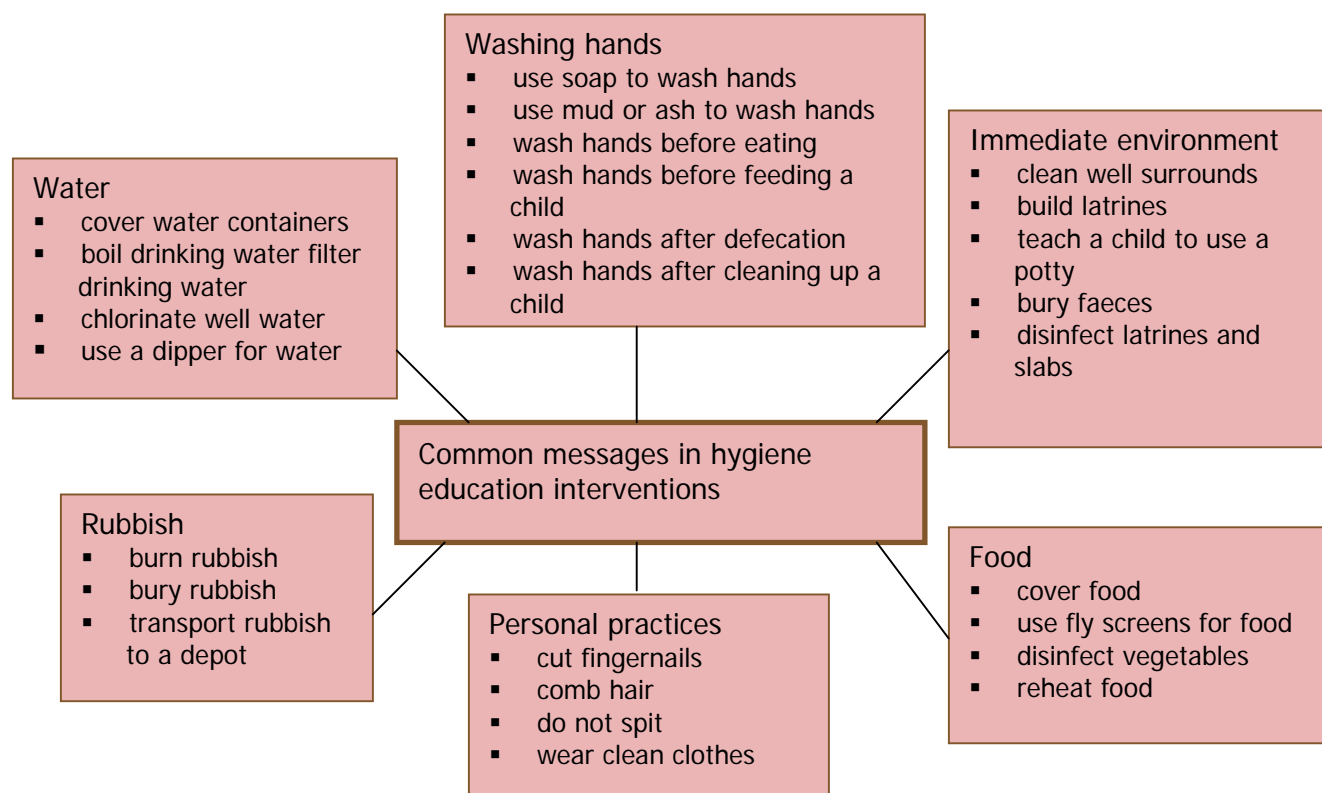
Changing hygiene and sanitation behaviour can never be quick or straightforward. These behaviours are often steeped in tradition, ritual and custom and the task of altering it may be much more difficult than that of simply providing sanitation facilities. Although recipes for behaviour-change programmes do not exist, very clear lessons have been documented that highlighted several common elements for successful programmes (Jenkins, 1998:105). Previous studies showed that standard approaches to encourage behaviour change do not work well. The limitations of studies based on knowledge, attitudes and practices, are well known (UNICEF, 1999a: 26).

In every household, but especially in those with less-than-ideal sanitation, some knowledge about food-borne disease is very important. It should be imparted in every school and should be an element of health education at every level. Many people in developing countries have very little understanding of the 'germ' concept of disease, which is that unseen organisms can cause serious illness. An important challenge for intervention planners is to ensure that people understand that micro-organisms do cause disease (Latham, 1997:331). However, we cannot assume that education about germs and diseases will lead directly to positive behaviour change. Education alone is also not enough. Whilst education about germs is a good thing to do, it does not necessarily lead to behaviour change (UNICEF, 1999a: 26).

Interventions to improve hygiene and sanitation aims to reduce people's exposure to diseases by providing a clean environment in which to live and measures to break the cycle of disease. This usually includes the hygienic disposing or management of human and animal excreta, refuse, and wastewater, the control of disease vectors and the provision of washing facilities for personal and domestic hygiene. Improved hygiene (hand washing) and sanitation (latrines) have more impact on health outcomes than drinking water quality. An increase in the quantity of water has a greater health impact than improved water quality, because adequate water supply makes it possible, or at

least more feasible for people to adopt safe hygiene behaviours (Billig *et al*, 1999:6; World Bank, 2002b). Interventions to improve hygiene and sanitation should involve both behaviours and facilities, which work together to form a hygienic environment (Okun, 1988: 1463; Simpson-Hébert & Wood, 1998).

In the study of Ahmed *et al* (s.a.), they concluded with the statement that unhygienic practices could be altered by a combination of a mother's proper understanding of the 'germ theory', of the detrimental effect of unhygienic behaviours on health, and of ways and benefits of hygienic practices. Analysis of the intervention data showed a highly significant positive correlation between the mother's understanding of sanitation and their rates of adoption of hygienic practices. They believed that if hygiene-related messages are need-oriented, specific, simple, feasible and suitable for the particular setting, that the potential for their adoption among the target population tends to be very high. The following are common messages in hygiene education interventions (grouped according to similarities but stated in no particular order):



**FIGURE 6.2: COMMON MESSAGES IN HYGIENE EDUCATION INTERVENTIONS** (Ahmed *et al*, s.a.; Almedon *et al*, 1997; Billig *et al*, 1999; Curtis *et al*, 2000:23; UNICEF, 2002:95; UNICEF, 1999a: 3; World Bank, 2002b)

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These messages can be quite confusing and intimidating and the only way for the change agent to make a sensible choice is to know the risk practices in the particular target area. Usually two messages are considered enough for effective communication (UNICEF, 1999a: 32). Iredale (2003) confirmed this statement by saying that “it is critical to focus on a few key messages”. The World Bank (2002b) has isolated four hygiene practices, considered critical:

- Hand washing using soap (or ash) before food preparation and after dealing with faeces
- Latrine use and safe disposal of children’s faeces
- Safe weaning food preparation
- Safe water handling and storage.

The World Health Organization (WHO, 1993:8) suggested three sets of hygiene practices:

- Safe disposal of faeces, particularly the excreta of young children and babies
- Hand-washing, after defecation, after handling babies, before feeding and eating and before preparing food
- Protecting water from faecal contamination, in the home and at the source.

Billig *et al* (1999:7) said that the most important hygiene messages concern the basic issues of hand washing, proper disposal of faeces and protection of drinking water. Curtis *et al*, (2000:30) concluded that hygiene promotion should focus on the elimination of human stools from the domestic environment and effective hand washing after stool contact.

All these findings and statements were used to generate ideas and to formulate themes for designing a relevant intervention. What counted as ideas were substantial – it had to make sense in the particular context of this study. Some contemporary accounts of theorising are expressed in terms of ‘theory building’, where ideas are brought together and systematically ordered (Glaser & Strauss, 1999). It was not assumed that theory was built in this study by the aggregation and ordering of themes and the transformation into messages. It was rather an intellectual activity whereby I speculated about the data, in order to create ideas, and to link my ideas with those of others, and so to move conceptually from my own research setting to a more general and abstract level of analytical thought. Theorising was therefore not seen as casual explanation but the translation of the identified themes and patterns into positively stated messages. For this intervention the following messages were chosen and/or formulated:

- Teach children to use toilets
- Wash hands with soap
- Keep toilets clean
- Wash kitchen cloths everyday

- After washing the kitchen cloths, hang them out in the sun to dry
- Cover drinking water
- Burn rubbish.

These core educational messages are considered action-orientated, specific, relevant to this community's needs, and according to global guidelines (UNICEF, 1999a).

## 6.6 THE DESIGNING PROCESS

There is a considerable body of literature on the methodology of programme design, which I am not going to replicate here. The conventional approach of lecturing people about hygiene, compelling them to install sanitation or even providing them with subsidised sanitation which they do not want and will not use, have proved unsuccessful (Cairncross, 2003:195). UNICEF (1999a: 15) used a certain approach, which combines the features of hygiene promotion into a simple, systematic plan. This approach has been termed 'formative research', with four basic principles eminent, namely to:

- start in the community
- find out about the problems
- find out why people want good hygiene
- build on how people communicate.

It begins with, and is built on, what local people know, do and want. The aim is to answer four key questions:

- which specific practices are placing health at risk
- what could motivate the adoption of safe practices
- who should be targeted by the program
- how can one effectively communicate with these groups?

These questions are linked to appropriate methods for informing intervention design.

Jenkins (1998:109) advocates the following steps in promoting hygiene behaviour change:

- understand what people do and why
- develop the behaviour-change project jointly with the community
- take a gender-sensitive approach
- address the real perceived needs of the people
- make use of all available resources
- make educational messages simple and accessible

- listen to the people
- transfer skills by doing, not just talking
- evaluate your work
- keep the community involved.

Ultimately, however, the people themselves must perceive a problem or need, decide on the solution and change their practices. Simpson-Hébert and Wood (1998:15) also recommend that hygiene and sanitation interventions should be designed in collaboration with key stakeholders. Simple, positive and attractive messages should be constructed for local channels of communication. Measurable behaviour change objectives should be set. Management, monitoring and evaluation goals complete the intervention. Olson (1998:114) agreed by stating that the objectives of hygiene and sanitation programmes could be achieved far more successfully by using participatory approaches. Although participatory approaches are considered more time-consuming, the overall benefits and savings have been tremendous as shown by various studies that have evolved over time.

There is an apparent paradox at the heart of hygiene promotion programmes, however. Whilst the hygiene promoter sets up the program for the sake of better public health, the community may be more interested in hygiene for the sake of the pleasure of cleanliness or the convenience of the target practices (UNICEF, 1999a: 26). Interventions should therefore focus on aesthetics and comfort rather than germs and diseases.

The research team developed goals and objectives, designed plans and activities, and chose means and strategies for the intervention, assisted by the key informant. The designing process that was followed consisted of three parts:

- Developing goals and objectives
- Constructing a facilitation plan
- Formulating an evaluation plan (Caffarella, 1994:18).

This process was structured (see Box 6.4) to organise thinking and planning. The structure was also used to display a summary of the designed intervention (see Box 6.5). The first row, *needs*, referred to the assessed and felt needs as identified in the community and decided to be addressed. The next two rows are used to set the overall *goal* and various *objectives* of the intervention. *Facilitation plans* for addressing each need and attaining each objective included the

*strategies* (learning activities, messages), *format* which included decisions on procedures, methods, techniques and support, as well as the *resources* needed. An *evaluation plan* to address the facilitation plan as well as a plan for the intervention was lastly indicated. Each part of the designing process will now be further clarified.

### 6.6.1 Setting goals and objectives

A basic condition for the success of any intervention is whether goals and objectives have been clearly formulated (Mouton, 1999: 103). Goals should not be 'political slogans' such as 'to improve the quality of life', 'to help people', 'to empower teachers', 'or to make schools more effective'. Goals should meet two requirements. Mouton (1999:103) said: "*they should be linked to a strong theoretical paradigm and they should be empirically measurable*". Program goals that are theoretically plausible are more likely to produce the desired outcomes (all other things being equal). If a programme had not embedded its goals in a broader, international paradigm or framework, the translation into concrete objectives will be totally inadequate. The fact that the goals can be justified and explained within a more encompassing theoretical framework, gives it a certain plausibility and coherence.

The **goals of this intervention** were to understand and describe the specific nutritional needs and problems on a commercial farm and to address these needs and problems by designing and implementing an effective, relevant nutritional intervention. The research team involved in this study wanted to design, implement and evaluate an effective, appropriate intervention to address these needs. These needs were identified (see Chapter 5) as poor hygienic and sanitary conditions and practices, perceived food insecurity, insufficient dietary diversity, and insufficient food-coping strategies. The particular needs of hygiene and sanitation received priority and are dealt with in this chapter.

**Objectives** should be set separately for each need. It is cited that objectives are the steps to be taken to pursue the goal. Objectives can actually be described as, "the bridge between needs assessment and intervention planning" (McKenzie & Smeltzer, 2001:82). Objectives can be set in terms of various elements. Endres (1999:264) recommends an ABCDE model that includes the following elements:

- A. An *audience* that will exhibit the change in behaviour
- B. *Behaviour* desired from the audience
- C. *Conditions* under which the behaviour is expected to occur, e.g. intervention



- D. *Degree* to which the behaviour will occur daily or weekly, and the degree to which the audience will comply
- E. *Evaluation method and tools* to measure whether the behaviour has been achieved.

McKenzie and Smeltzer (2001:87) emphasise similar elements, namely outcome (what will change), conditions (when change will occur), criterion (how much change) and target population (who will change).

The **objectives** related to the identified, prioritised need in this intervention were formulated as follows:

- *Encouraging and motivating* all adult female community members to *participate* in the intended intervention and to *collaborate* with the research team in order to adopt safer hygiene and sanitation practices after a 12 month intervention period
- Improving the hygiene and sanitation *conditions* within the community after a 12 month intervention period, as measured according to set criteria and indicators
- Improving the hygiene and sanitation *practices* of at least 80% of the female adult group after a 12 month intervention period as measured according to set criteria and indicators.

All the objectives were set for adult female community members (described in Chapter 3 as the target group) to practice after the intervention had commenced. These practices would then be evaluated by the research team according to set criteria and indicators and by using methods such as observations with field notes, group discussions and key informant feedback. These stated objectives needed a specific facilitation plan, format and evaluation plan, which will now be conferred.

### 6.6.2 Designing a facilitation plan

The facilitation plan was based on the set goal and objectives and consisted of various strategies to attain the goals and objectives. These strategies included learning activities and the actual messages (content) transferred, the particular format and resources needed to implement the strategies. The strategies and content of the facilitation plan were primarily based on the outcomes of the analytical activity. Certain practices and conditions were observed and measured, indicating which messages and focus points to include.

### 6.6.2.1 Strategies

Strategies refer to the specific activities that were planned. Strategies are usually selected to bring about behaviour change and should be mediated by local knowledge and contexts. There is a trend in community studies and interventions towards more participatory approaches and the inclusion of learners as part of the selected strategies. There is also growing recognition to include strategies that are designed to create supportive environments for behavioural change and to sustain the effects of interventions. Furthermore - strategies should also be designed to strengthen local ownership and to develop structural and institutional support (Smith, 1997). These recommendations also apply to nutritional interventions (Smith & Smitasiri, 1997).

**Within the nutritional context**, most researchers and authors (Allen & Gillespie, 2001:94; Andrien, 1994; Smith & Smitasiri, 1997) advise on a selection of strategies that go beyond communication activities and include those that address the factors determining nutritional behaviour. They further advise not only to focus on existing problems, but also to aim at promoting and enhancing nutritional health. Depending on the situational analysis, such strategies might include increased access to more affordable foods, nutrition education for school children, feeding programmes and nutrition education for parents in schools and day-care settings, or the provision of affordable, nutritious food at worksites.

Key strategies mentioned by Allen and Gillespie (2001:94) are: growth monitoring and promotion, integrated care and nutrition, communications for behavioural change, supplementary feeding for women and young children, feeding at schools, health-related services, micronutrient supplementation and food-based strategies. Strategies such as social mobilisation and community development may also have value and relevance to increase local community control over nutritional issues and provide social support for improved nutrition (Smith & Smitasiri, 1997). Within such strategies, social health indicators as well as epidemiological factors are considered, which move nutrition education towards a focus on people and health rather than disease.

Case studies done in developed countries show the diverse socio-economic and cultural conditions from which nutrition problems arise and in which nutritional interventions need to operate (Smith, 1997). The reviewing of case studies is valuable because it highlights difficulties that can occur, provide examples of good practice that can be shared and give insight in a range of strategies and approaches, which can be considered as options. The case studies described in Smith (1997)

illustrated a wide range of information, education and communication strategies, including strategies for structural and environmental support.

Strategies can include information processes as well as the more conventional communication processes. Information dissemination is generally designed to inform unilaterally, for example through print and broadcast channels, whereas communication strategies use interpersonal, face-to-face channels such as group discussions, home visits, training and counselling (Smith, 1997). The issue, however, is no longer which channel to choose or which channel is best, but how to use a combination of channels to improve and support nutritional behaviours.

Nutritional interventions are further concerned with modifying social communication to bring about middle or long-term changes in the behaviour of populations. When interpersonal communication forms part of the proposed strategy, it has a complementary role, reinforcing other activities aimed at changing the behaviour of an entire social group. To achieve this goal, an intervention must be based on a thorough study of behaviour, attitudes and the practices of the social group concerned (Andrien, 1994).

Although nutrition interventions cannot contribute directly to change structural factors such as poverty, income level, employment and educational status or the social impacts of race, gender, age, disability or ethnicity, it must consider these impacts in the design, development and implementation of the programme (Smith & Smitasiri, 1997). This requires programme planners to move away from individual behaviour change and information transmission as the only approach, and to consider in their planning environmental supports, organisational change, advocacy and policy development, and particularly working collaborative across sectors and within social networks. There is a growing recognition, therefore, of the need to include strategies designed to create supportive environments for behavioural change and to sustain the effects of interventions through strategies designed to strengthen local ownership and to develop structural and institutional support. Strategies should go beyond communication activities and encourage planners to consider a variety of strategies to address the factors, which are determinants of nutritional behaviour.

If nutritional interventions are to be truly effective, they must focus on bridging the gap between people's mere awareness of health and nutritional aspects and their actual behaviour regarding health, food and nutrition. Such information therefore must be delivered in a form, that people can

in fact use it to improve their current health and nutrition practices. Interventions should be designed to go beyond merely delivering information to people, but should first of all support individual behaviour change, before success can be achieved with broader efforts (Shafer *et al*, 1996:1187).

Face-to face education, either in groups or on one-to-one bases, has been the traditional approach to nutritional interventions, but its effectiveness has been seriously questioned (Smith & Smitasiri, 1997). Evaluations of successful nutritional interventions confirm that those that have an impact on behaviour depend on social context and interpersonal interaction to provide participants with the opportunity to practice the new behaviours and learn to solve their own nutrition problems over time. Environmental support, organisational change, advocacy and policy development, and particularly working collaboratively across sectors and within social networks, were other factors considered when planning broader interventions.

Other strategies reported to support nutritional interventions are:

- Local communities that are committed to allocating land for vegetable gardening. Community action can be critical for the sustainability of nutrition improvement
- Day care centres with a policy to serve only nutritious food
- Schools with a policy to allocate specific time to nutrition education
- Government with policies which incorporate nutrition education goals into agriculture, and make nutrition education mandatory in schools
- Social marketing methods such as media, advertising and sponsorships to raise awareness of nutrition issues in the community, influence public opinion and give nutrition education a higher profile
- Advocacy to influence decision makers to support nutrition promotion and to mobilize social support
- The process of creating broad social support will often be the first stage in effective positive changes
- Achieving organisational commitment to support improved nutrition. Collaborating with organisations and sectors such as local government, social organisations, worksites, educational organisations, health centres and cultural groups to support nutritional improvements (Allen & Gillespie, 2001; Frankle & Owen, 1993:220; Smith & Smitasiri, 1997).

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Strategies selected to bring about behaviour change should be mediated by local knowledge and contexts (Smith, 1997). There is a trend towards more participatory approaches and the inclusion of learners in all aspects of programs. Community participation is a necessity because nutrition behaviour is deeply entrenched in the fabric of socio-cultural life. Participation can be obtained by incorporating representatives of the target population in the planning committees, and by systematically involving them at all stages of the intervention (Andrien, 1994).

**Within a sanitation context**, the following strategies for interventions on a community level were reported:

- Advocacy (Nyoni, 2004)
- Community mobilisation (Iredale, 2003)
- Community teams (Ahmed *et al*, s.a.; Ferrell, 2002:4; IRC, 2004a)
- Demonstrations (Nyoni, 2004)
- Games (Iredale, 2003), e.g. three-pile sorting, pocket charts (Almedon *et al*, 1997)
- Health clubs (IRC, 2003a)
- Healthwalks to foster spontaneous informal conversations and discussions (Almedon *et al*, 1997).
- Household credit schemes (Varley, 1998:133)
- Innovative technologies (Simpson-Hébert & Wood, 1998:203-263)
- Mass campaigns (Appleton & Van Wijk, 2003:19)
- Poems and folk songs (Ahmed *et al*, s.a.)
- Promotion through children (Simpson-Hébert & Wood, 1998:161, 185)
- Social marketing (IRC, 2004b; Mehra, 1998:51; Sanitation Connection, 2002)
- Training of health promoters (Iredale, 2003).

The WHO (1993; s.a.) has also published a list of lessons learned during decades of efforts to improve sanitation, namely that:

- It needs to be addressed holistically, including improvement of facilities, environmental conditions and behavioural change
- It should be demand-driven and the community should be fully involved in the process
- High risk groups should be identified for better targeting of funds and efforts
- It should be a component of other health-promotion or disease control programmes
- Awareness needs to be raised and sanitation set as a priority in national and local governments and also in the population at large

- Systems have to be sustainable
- Cost-sharing and cost-recovery need to be addressed carefully.

There is also considerable mention in the literature of integrating hygiene and sanitation intervention with different other services in the area (social services, school feeding, health care, growth monitoring, agricultural extension, water safety, public works) (Iredale, 2003; IRC, 2003b; Nyoni, 2004).

**Within this study**, only those elements from the literature that fitted the particular community and intervention were considered. Decisions were also made on how best to incorporate these components into the designing and implementation phases. *“Care should be taken not to try and cover too many issues at once – focus on what’s important to the community”* said Nyoni (2004). Iredale (2003) confirms by stating that it is critical to focus on only a few key messages. In order to limit the number of messages included in the facilitation plan, I decided to focus on the specific problems that were observed in more than 70% of the participants (six or more from the eight cases) (see Box 7.6).

#### **6.6.2.2 Format**

Although nutritional interventions cannot contribute directly to changing structural factors such as poverty, income level, employment and educational status, or the social impacts of race, gender, age, disability or ethnicity, it must take these impacts into account in the design, development and implementation of the program (Andrien, 1994; Smith & Smitasiri, 1997). Physical infrastructure, such as housing and transport, must also be considered in planning. All of these factors can, in turn, relate to the factors that have an impact on the individual and his vulnerability to nutritional risk. Along with inter-generational and familial factors, they can influence nutritional status, self-esteem and motivation (Andrien, 1994).

In this study ‘format’ refers to procedures, methods and techniques used, as well as necessary support activities. Various learning experiences, such as group or individual work or work within the community are also implicated, for example lectures, brain storming, group discussions, role playing, individual research, field trips, large-group debriefing, or small group debriefing. All adults vary in their comfort levels and varied formats provided ample opportunity to find a comfortable approach for each participant (Dirkx & Prenger, 1997:67, 76). The selection of methods and techniques were based on what was appropriate for the target group and the setting. Aspects of

contextual learning were also included, which referred to learning that the participants found meaningful, relevant and significant to their situations and life experiences (Dirkx & Prenger, 1997:19). The emphasis was on personal meaning within the act of learning. Learning was made meaningful by grounding it in the life experiences of the participants.

The following six strategies with various learning activities were planned:

- Information sessions with a mini-lecture, slide-show, game, information sheet/activity and discussion
- Individual dialogue sessions (face-face counselling; based on the outcomes of the previous information session)
- Key informant trials (home visits, fact finding trips; encouraging good behaviour; problem-solving)
- Tuck shop (supplying various affordable cleaning agents; non-profit selling)
- Competitions (cleaning-up the environment; cleaning the houses and latrines)
- Educational support material (personalised poster).

### 6.6.2.3 Resources

Resources can be categorised as human (labour, skills), materials (food, supplies), operational (money, time, utilities, information) and facilities (space and equipment) (Almedom *et al*, 1997). The various resources that were needed to implement the intervention are summarised in Table 6.1.

### 6.6.3 Designing an evaluation plan

Evaluation was not viewed as a general managerial function to track performance with corrective action. It was rather seen as a regular procedure undertaken throughout the life cycle of the intervention and an activity interlinked with the other phases. This procedure required assessments of the process and outcomes of the intervention in the context of its stated objectives. Evaluation was further considered a necessary support activity and an instrument for refining or restructuring the facilitation plan. No single evaluative model was selected as a blue print for constructing the evaluation plan. The evaluation plan stemmed from the activities undertaken and served to underscore the objectives, as suggested by Dirkx and Prenger (1997:77). A variety of methods were chosen that were meaningful to the study as well as to the participants. Methods for both process and outcome evaluation were included in the planning decision (Smith & Smitasiri, 1997).



**TABLE 6.1: RESOURCES NEEDED AND USED IN THIS STUDY**

Category	Resources used in this study
Human	Main facilitator and research team Participants Key informant Farm owner and staff working on the farm Skills in conducting research, interviewing, observing, PAR Skills in facilitating group discussions Skills in translating English to Southern Sotho (and vice versa) Skills and knowledge of participants Ability to speak Sotho
Materials	Incentives in the form of cleaning agents, vegetable packs Competition prizes Donated items for the tuck shop Utilities (Personal computer with word processing and Power Point software, paper and cartridge ink for printing data gathering instruments and results; digital camera and photos taken; scale, measuring tape) Subsistence (in the form of food, drink and accommodation for the research team)
Operational	Analysed/summarised data (regarding needs and problems) Information regarding the specific farm and community members living on the farm Funds for travelling and accommodation of the research team Funds for data analysis (micro-biological tests), nutritional status Funds for educational material Remuneration for field work, translations and transcriptions Time to do site visiting and conducting research (usually three consecutive days) Time to design the research plan, test educational material
Facilities	School class room Conference centre Transportation (suitable rented vehicles and fuel)

Although the evaluation phase of the study is presented in depth in Chapter 8, the formulated plan to evaluate the process of implementation as well as the measurements of objectives and outcomes is revealed here. The evaluation plan in this study related to the implementation of the facilitation plan to address hygiene and sanitation is formulated and set in Table 6.2.

**TABLE 6.2: EVALUATION PLAN FOR THE HYGIENE AND SANITATION INTERVENTION**

Criteria	Indicators	Method
<b>Process of implementation:</b>		
Encouragement Motivation Participation Collaboration	% women encouraged, motivated, participating and collaborating Willingness to participate Enthusiasm	Group discussions Field notes
<b>Outcomes:</b>		
Safer hygiene and sanitation practices	% reduction in unhygienic practices	Key informant feedback Observations
Improved hygiene and sanitation conditions	% improvement in sanitary conditions	Key informant feedback Observations

Specific criteria and indicators of success were derived from the literature (Almedon *et al*, 1997; Billig *et al*, 1999:22; Curtis *et al*, 2000:29; Samanta & Van Wijk, 1995; WHO, 1993).

## 6.7 SUMMARY

The design of the intervention was based on an in-depth analysis of the nutritional situation on Oranje farm. The most urgent need to be addressed was revealed as the poor hygienic and sanitary conditions and practices. The aim was to design a needs-based, participatory-action orientated intervention to address this particular need. Three steps were followed, namely to develop goals and objectives, to construct a facilitation plan and to formulate an evaluation plan. This designed intervention is summarised in Box 6.5, where-as the implementation phase is revealed in the next chapter.

**BOX 6.1: UNSTRUCTURED OBSERVATIONS REGARDING HYGIENE AND SANITATION PRACTICES**

“The people don't practice personal hygiene, don't wash themselves, don't brush their teeth, and don't wash their hands after defecation. Children do not use the pit latrines but go to the veld”, was said by one of the participants.

Faeces were observed within 5 meters from the houses. The children were sent to the veld by their parents when in need to urinate or defecate. Most of the times the children were not accompanied by any adult. Grass (*lengana*) or cardboard was used to clean anal surfaces.

Dustbins were not used by any of the households to collect garbage. People used plastic bags in stead, which are thrown on a communal site. Again, no signs of burying or burning of disposed material were observed. The wind also scattered some rubbish through the veld.

Animal droppings were observed all around the village. Only four of the 18 households attempted to keep their yards clean, sweeping with grass brooms.

Dogs are not always kept at bay, and were allowed to enter the cooking area.

All the children appeared very dirty, and were wearing dirty clothes. They also indicated that they had not bathed within that particular week.

During food preparation times, no surfaces were cleaned when fresh vegetables were cut. Hands were also not washed before preparation started.

In one household, the feeding of a 6-month baby was observed. The caretaker cleaned the child's dirty nappy, and directly started to feed her again, without washing her hands in-between. The baby food was also left uncovered, with flies all around the food. Within the same household, buckets with drinking water without lids were seen, and people eating from the same dish with dirty hands and dirty nails. Dogs were lying next to the preparation area.

People indicated that they do not have money to buy soap. When they cleaned, they only used cold water. Sometimes, when dishes and pots are washed, the water may be warmed. Pots were not scrubbed, and no abrasive such as 'steel wool' or any other replacement was observed.

In one particular house, the bed and laundry were very dirty. A child was observed with visible worms dripping from the nose. The child also had dry dermatitis, oedema, and skin lesions. The house was described as 'smoky and smelly'. Only four of the 18 houses could be described as domestically clean, based upon the observed criteria (see Table 6.1).

With regard to the usage of drinking water - hands were touching the drinking water when mugs were used to scoop. No spoon with an extended handle was observed to prevent hands from touching the drinking water.

The day of the visit was also communal 'washing day'. Four women were observed at the communal tap, boiling water in a conga. The children carried the dirty laundry from the houses in plastic containers. Laundry was hand washed with powder soap and left to sun dry on the fences. The washing water in the basins was very dirty.

### BOX 6.2: SUMMARY OF HYGIENE AND SANITATION PROBLEMS IN THE COMMUNITY WITH POSSIBLE STRATEGIES

Observed problem	Planned intervention strategy
<ul style="list-style-type: none"> <li>▪ Food prepared with dirty hands</li> </ul>	Information session Individual dialogue sessions
<ul style="list-style-type: none"> <li>▪ Animals entered cooking areas</li> </ul>	Information session
<ul style="list-style-type: none"> <li>▪ Filthy and worn kitchen cloths (*)</li> </ul>	Individual dialogue sessions Tuck shop Educational support material
<ul style="list-style-type: none"> <li>▪ Uncovered drinking water (*)</li> </ul>	Information session Individual dialogue sessions Educational support material
<ul style="list-style-type: none"> <li>▪ Children appeared dirty, wearing dirty clothes</li> </ul>	Information session
<ul style="list-style-type: none"> <li>▪ No toilet facilities for young children (*)</li> </ul>	Information session Educational support material
<ul style="list-style-type: none"> <li>▪ Observed human and animal faeces</li> </ul>	Information session
<ul style="list-style-type: none"> <li>▪ Filthy pit latrines (*)</li> </ul>	Tuck shop Competitions Educational support material
<ul style="list-style-type: none"> <li>▪ Improper garbage disposal (*)</li> </ul>	Information session Educational support material
<ul style="list-style-type: none"> <li>▪ Environment polluted with waste</li> </ul>	Competitions

(\*) These problems were also observed during the structured observations as indicated in Box 6.4.

**BOX 6.3: STRUCTURED OBSERVATION GUIDE**

Date: April 2003

See anyone defecating? (Who? Where? Describe?)

Describe pit latrines:

Observed faeces

Amount of flies

Working condition (seats and doors)

Covering seat

Spider webs

Toilet paper or other cleaning matter

Do the young children (between 1-5 years) also use the pit latrines? Yes/No

If yes, does someone help them

If no, where and how do they dispose their stools and urine?

Hand washing facilities

Inside house

Within walking distance of house

Next to latrine

Presence of soap

Water collected per day for household use

Number of containers

Size of containers

Assess volume (in litres) of containers

Number of people for whom the water is collected?

Who usually collects the water?

For which purposes are the water used?

Water separately only for hand washing?

Describe how hands are washed (techniques)

Water separately only for drinking?

If yes, where is the container kept?

Is the container covered?

Distance between water supply and village (meters)

Description of water supply

Presence of soap in the house?

If yes, how much?

Which type(s)?

For which purposes do you use it?

How often do you wash the household members' clothes?

Do you have a kitchen cloth? Yes/No

If yes, can I please see it? Describe

**BOX 6.4: STRUCTURE TO ORGANISE THE DESIGN PROCESS**

<b>Needs</b> (of the community):			
<b>Goal</b> (of the intervention):			
<b>Objectives</b> (of the intervention):			
<b>Facilitation plan</b> (for addressing each need):			
Strategies: ★ Learning activities ★ Messages (content)	Format: ★ Procedures ★ Methods, ★ Techniques ★ Support	Resources: ★ Human ★ Operational ★ Material ★ Facilities	
<b>Evaluation plan:</b>			
	★ Criteria	★ Indicators	★ Method
Process			
Outcomes			

### BOX 6.5: SUMMARY OF THE INTERVENTION DESIGN FOR HYGIENE AND SANITATION

<b>Needs</b> (of the community): ⇒ poor hygienic and sanitary conditions and practices			
<b>Goal</b> (of the intervention): ⇒ addressing the identified nutritional needs of the community members living on the farm			
<b>Objectives</b> (of the intervention): <ul style="list-style-type: none"> <li>▪ improving the hygiene and sanitation conditions within the community and practices of adult female community members,</li> <li>▪ improving food insecurity of community members,</li> <li>▪ improving dietary diversity of community members</li> <li>▪ improving food-coping strategies of community members...</li> </ul> ... as observed by the research team and expressed by the participative group			
<b>Facilitation plan</b> (for addressing the first stated need):			
<b>Strategies:</b>		<b>Messages (content)</b>	
<ul style="list-style-type: none"> <li>▪ Group information sessions</li> <li>▪ Individual dialogue sessions</li> <li>▪ Key informant trials</li> <li>▪ Tuck shop</li> <li>▪ Competitions</li> <li>▪ Educational support material</li> </ul>		<ul style="list-style-type: none"> <li>▪ Teach children to use toilets</li> <li>▪ Use soap to wash hands</li> <li>▪ Keep toilets clean</li> <li>▪ Wash kitchen cloths everyday</li> <li>▪ After washing the kitchen cloths, hang them out in the sun to dry</li> <li>▪ Cover drinking water</li> <li>▪ Burn rubbish</li> </ul>	
		<b>Format (learning activities)</b>	
		<ul style="list-style-type: none"> <li>▪ Mini-lecture, slide show, game, information sheet/activity and discussion</li> <li>▪ Face-to-face counselling</li> <li>▪ Problem solving</li> <li>▪ Home visits, fact finding trips</li> <li>▪ Non-profit selling</li> <li>▪ Personalised poster</li> </ul>	
<b>Resources:</b>			
<ul style="list-style-type: none"> <li>▪ Human (research team, participants, key informant, farm owner, staff working on the farm), skills in conducting research, interviewing, observing, PAR, facilitating group discussions, translating English to Southern Sotho (and vice versa), ability to speak Sotho, skills and knowledge of participants</li> <li>▪ Material (incentives, prizes, donated items, utilities, subsistence)</li> <li>▪ Operational (gathered data, funds, remunerations, time)</li> <li>▪ Facilities (school class room, conference centre, transportation)</li> </ul>			
<b>Evaluation plan:</b>			
	<b>Criteria</b>	<b>Indicators</b>	<b>Method</b>
<b>Process</b>	Encouragement Motivation Participation Collaboration	% women encouraged, motivated, participating and collaborating Willingness to participate Enthusiasm	Group discussions Field notes
<b>Outcomes</b>	Safer hygiene and sanitation practices Improved hygiene and sanitation conditions	% reduction in unhygienic practices % improvement in sanitary conditions	Key informant feedback Observations Key informant feedback Observations



**BOX 6.6: SPECIFIC HYGIENE AND SANITATION PROBLEMS IN THE COMMUNITY AS OBTAINED WITH A STRUCTURED OBSERVATION GUIDE (n=8)**

Dimension	Problem	Observed frequency (n)	Planned intervention strategy
Personal hygiene	Dirty nails and hands	2	Not addressed
	Dirty clothes	7	Tuck shop Information session
	Bad, smelly body odour	1	Not addressed
	Bad behaviour (pricking nose, scratching skin, drying hands on clothes)	4	Not addressed
	Visible sores and wounds	0	Not addressed
Household hygiene	Uncovered drinking water	6	Information session Individual dialogue sessions Educational support material
	Bad ventilation	5	Not addressed
	No washing facilities available	5	Not addressed
	Dirty kitchen cloths	6	Individual dialogue sessions Tuck shop Educational support material
	No presence of any soap	1	Not addressed
Environmental hygiene	Children defecating in open veld	6	Information session Educational support material
	Filthy pit latrines	7	Tuck shop Competitions Educational support material
	Dirty, polluted yard	3	Competition
	Animals present in cooking area	4	Not addressed
	Improper garbage disposal	6	Information session Educational support material

## *Chapter 7: Implementation*

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**FIGURE 7.1: FIELD WORKER BUSY WITH AN INDIVIDUAL DIALOGUE SESSION**

## 7.1 BACKGROUND

*Ingrained ideas and behaviour patterns cannot be changed all at once* (Burkey, 2000:69).

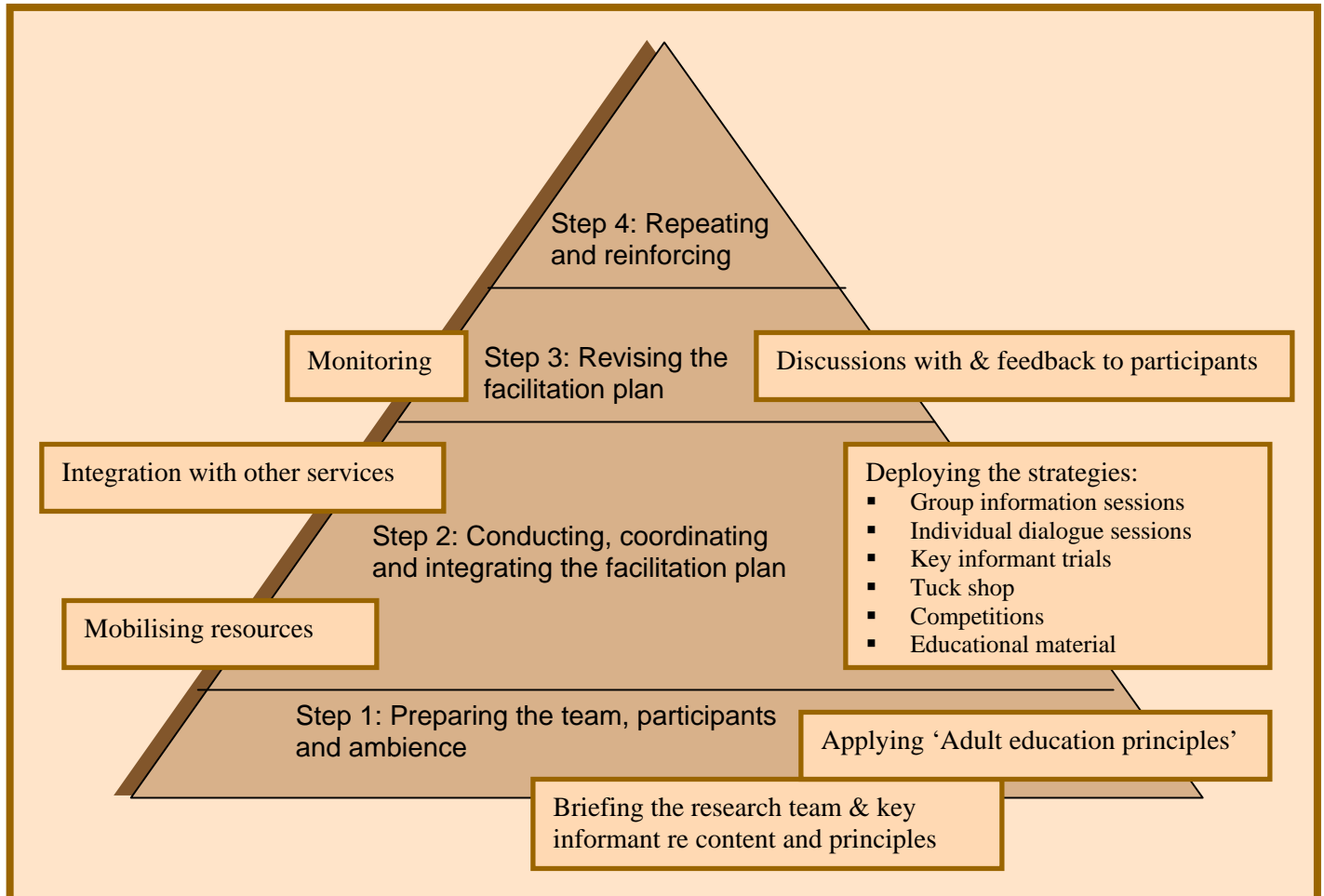
This statement certainly also applies to hygiene and sanitation practices. Behavioural change takes time and change is a gradual process. The ideas and behaviour of both the participants and the researcher will most probably change over time. McKenzie and Smeltzer (2001:85) wrote that if those in the target population are going to adopt and maintain a health-enhancing behaviour to alleviate a health problem or concern, they must first be aware of the health concern. Second, they must expand their knowledge and understanding of the concern. Third, they must attain and maintain an attitude that enables them to deal with the concern. And fourth, they need to possess the necessary skills to engage in the health-enhancing behaviour.

These four aspects were incorporated in the outcomes, when objectives for the implementation phase were set. The objectives for the implementation phase (as outlined during the research design in Chapter 3) were:

- Preparing the team, participants and ambience to enhance learning (including briefing of the research team and the recruited key informant in terms of content, messages to be conveyed and adult education principles to be applied)
- Conducting, coordinating and integrating the facilitation plan and action strategies (including the mobilising of resources, application of strategies and the integration of the program with different other services in the area like social services, school feeding, health care, growth monitoring, agricultural extension, water safety, public works)
- Revising the facilitation plan according to the outcomes of monitoring activities and giving feedback to participants
- Repeating and reinforcing the messages until a satisfactory effect has been reached.

The outcome of the preparation for transfer of learning was to make the research team and the key informant *aware* of the hygiene and sanitation situation on the farm and how it would be addressed. Increased *knowledge and understanding* of hygiene and sanitation was the outcome of step 2. The participants should also have a positive *attitude* towards behavioural change and the necessary *skills* to change their hygiene and sanitation practices after the facilitation plan was revised and adapted (step 3).

The implementation phase with its various activities and outcomes are summarised in Figure 7.2. Implementation was done in four consecutive steps, as depicted within the triangle. The various activities are presented in the rectangular blocks.



**FIGURE 7.2: SUMMARY OF IMPLEMENTATION ACTIVITIES**

These four steps will now be discussed in further detail.

## 7.2 PREPARING THE TEAM, PARTICIPANTS AND THE AMBIENCE

This step included the preparing of the research team and the recruited key informant in terms of content and messages to be conveyed. The content and messages were already planned (see the facilitation plan, 6.6.2). Personally I felt that this was not sufficient. I firmly believe that interventions will be more successful if we focus more on the way that content and messages are communicated. A set of educational principles was needed that could be applied to interventions.

Because the target group was all adult females, this set of principles was derived from theories on adult education (De Beer & Swanepoel, 1996:11-17; Gravett, 2001:35-50; Green, 2002; Merriam & Caffarella, 1999:302). A constructed set of principles (Green, 2002) was adopted in order to enhance communication and learning. These principles are categorised into those applying to the **adult learner**, the **learning situation** and the **learning process**.

In terms of the **learner** (referred to as the participant in this study), the following aspects were secluded: *experience, needs, motivation, proficiency* and *concern*. *Experience* underlies all learning. Prominence was placed on techniques that tap into the experience of the participants, such as group discussions and problem solving activities. Experience can also have a negative effect on learning by hindering the accepting of new ideas and behaviours. Being sensitive towards the participant's current situation was therefore of utmost importance. We were especially sensitive when the various hygiene and sanitation messages were transferred. We have also assisted participants in becoming aware of the *need* to know, understand and apply these new practices. Certain needs were identified (see Chapter 5). These were translated into felt needs with the help of the key informant during group discussions.

Coupled with the principle of needs is the participant's motivation. Although the participants were treated with external motivators such as incentives and meals, more potent motivators were to assist them in creating a desire to improve their current hygiene practices and sanitary conditions by focusing on health and dignity aspects. Regarding the *proficiency* principle, I firmly agree with Knox (1986:15) that all adults have the 'capability to perform satisfactory if given the opportunity'. Implementing the strategies of competitions and support of the local tuck shop created opportunities. A 'teachable moment' occurred with the birth of a baby, which was used to demonstrate the importance of hygiene and sanitation and the link to children's optimal growth. The last principle that relates to the adult learner is the *concern* that they might have about their ability to learn sufficiently. These concerns were underpinned by adjusting the physical setting to make the participants feel special, by maintaining a slow rate, providing frequent comfort breaks and by generally being sensitive.

The particular *ambience* as part of the **learning situation** was adjusted by making the participants feel at ease, accepting them and giving them freedom of speech. I also treated them with respect and gave support when necessary. Other aspects of the learning situation are social roles and learning styles, which did not particularly receive any special interest in this study.

The **learning process** involves activities like *construction of meaning, interaction, participation, liberation, self-directedness* and certain *responses*. Activities such as games were included to stimulate *cognitive activity*. During the group discussions, *interaction* and *participation* were encouraged. I tried to listen to and understand the opinions of the participants and fostered a spirit of critical reflection, contributing to the *liberation* and empowerment aspects of the learning process. *Self-directedness* is not a natural characteristic of adult learners. It can rather be seen as a process of voluntarily engaging in a learning experience (Cranton, 1992:55). In this sense, self-directedness was achieved, because participants only engaged in the planned activities on a voluntarily basis. *Responses* that would result in learning were encouraged, such as to let the participants be reflexive (practice problem-solving) and to let them take part in experiential learning (to go home and try out the new practices learned).

### 7.3 CONDUCTING, COORDINATING AND INTEGRATING

*Interventions can only be effective when fully integrated into a broader program with well-defined strategies for communication* (Andrien, 1994).

#### 7.3.1 Mobilising resources

The actions of implementing, coordinating and integrating called for the mobilising of resources. The resources that were used are presented in Table 6.1. This action refers to all the arrangements that needed to be employed. For each expedition to the research site (Oranje farm), I had to make the following standard arrangements:

- Setting a time that suited all the members of the research team
- Organising for the necessary funds to be allocated and made available
- Getting permission from the farm owner
- Preparing documents and visual aids needed for the information sessions
- Arranging accommodation, transport and food for the research team
- Buying incentives, prizes and tokens of appreciation.

When arriving at the farm, the most important resource to activate was the participants. The field worker was assigned this particular task, mainly because she could speak the local language. She

has a very sparkling personality and usually succeeded in the task of getting the participants together or setting-up appointments. Local venues were used for gatherings.

At the end of each visit, a token of appreciation, relevant to that particular part of the intervention and to the local cultural context, was offered. These included fresh vegetables, cleaning agents and disinfectants or toys for the children. The participants were also treated to a meal, tea or cold drinks and biscuits. These actions were incorporated as an attempt to encourage the participants and to keep them motivated and enthusiastic. It also reinforced the team spirit and the shared ownership of the intervention.

### **7.3.2 Deploying the strategies**

Several strategies at a time are more effective than one alone, said Curtis *et al* (2000:29), therefore six strategies were eminent, which formed the core of the facilitation plan. These strategies are discussed in further detail.

#### **7.3.2.1 Group information sessions**

Information-giving and listening activities were balanced with discussion and internal processing. Time and space were allowed for participants to *process* the received information by giving them frequent breaks and physical activities to prevent them from getting overwhelmed. The *pace* was balanced in order to avoid passivity and boredom but be sensitive to fatigue. Much has been said about *participation* in this study. Although a very important issue, participation was never forced. Some people do learn more from watching and listening. *Norms and boundaries* were set regarding the direction of discussions. *Good sense and judgment* were used in the relationship with the participants. A strong sense of authenticity carried over respect and fostered communication and learning (Dirkx & Prenger, 1997:46).

The participants were invited to several information sessions on various occasions. These gatherings were held either in the school classroom or in a close-by conference room. The first session was in the form of a mini-lecture, however, it was done in a very informal way, encouraging participation and feedback from the group. Information regarding the existence and spreading of germs were introduced. A slide-show was prepared as visual aid. None of these people has ever seen a slide-show and it was therefore experienced very positive and informative. A game was introduced to visualise the spreading of germs. A ball covered with glue and glitter was passed around. The glitter represented germs. As the ball was passed, glitter stayed on their



hands. They could visualise the spreading of germs in that way as well as the difficulty of washing it off. Glitter usually does not wash off easily!

An activity sheet on domestic hygiene (Addendum E) was also used as an instructive tool. This tool showed a drawing of a person preparing food in a kitchen. Certain bad hygiene and sanitation practices and conditions were illustrated, which were:

- Presence of a cat in the kitchen
- Person smoking while preparing food
- Open tin
- Presence of a mouse in the kitchen
- Overloaded dustbin with flies
- Raw chicken thawing on a cupboard
- Food boiling over on the stove
- Drippings on the floor
- Mixing fish and raw vegetables
- Dirty kitchen cloths and clothes.

The activity was to find ten 'mistakes' in this drawing, relevant to hygiene and sanitation practices. After encircling the mistakes, self-assessment followed, which flowed into a discussion. Throughout the process they were encouraged to verify their findings, make comments, and differ from and teach one another. Each mistake was discussed. The discussion that followed showed that most participants had a good idea of what sanitation practices in a kitchen should be. The activity sheets were collected and the items (mistakes) ranked in terms of frequency of correct reporting (see Box 8.4). Assessment of the activity sheets showed that eleven of the participants (91%) scored 50% and more on the activity sheet; five participants (42%) scored 80% and more; three participants (25%) scored 100%. During the discussion, more attention was paid to the lower reported mistakes. It became apparent that the dirty kitchen cloth and clothes were not that clearly illustrated on the drawing, which could explain the low reporting. They were ignorant about the reasons why fish and raw vegetables should not be prepared on the same surface and with the same utensils. The drippings of food on the floor did not bother them, because they reported intentions of cleaning it up after food had been prepared.

### 7.3.2.2 Individual dialogue sessions

In the context of this study, dialogue sessions referred to individual visits on the household level, discussing the implementation of the messages in an unstructured, informal way. Dialogue is a key notion in collective research techniques and PAR in general, given that participation is perceived in terms of a 'continuous dialogue' (Babbie & Mouton, 2001:327). Through this dialogue sessions, participants were assisted to develop new knowledge by learning from their own reality and specifically by learning to critically analyse their own particular situations and problems regarding hygiene and sanitation. These dialogue sessions were chosen as a strategy because dialogue can ensure that participant and researcher will search together for possible solutions to nutritional problems (Babbie & Mouton, 2001:328). It also reinforced the messages aimed at changing the behaviour of the group (Andrien, 1994).

The dialogue sessions were held on a separate occasion together with the field worker (see Figure 7.1). Emphasis was given to the outcomes of the previous information session, regarding the activity sheet that was interpreted and completed. We focused on those 'mistakes' that were reported least (> 75%), which were: raw chicken thawing on a cupboard, food overcooking on the stove, drippings on the floor, mixing fish and raw vegetables and dirty kitchen cloths and clothes.

### 7.3.2.3 Key informant trials

Although this method is the core of a consultative research approach, it is said to be also applicable within PAR (Dicken *et al*, 1997:1.3). This strategy involved a series of visits to the households to encourage the improvement of current hygiene and sanitation practices and conditions. The key informant (Figure 7.3) implemented these trips. These trips were therefore also referred to as key informant trials. The basic process of a fact-finding trip is outlined as follows:

- An initial home visit to gather in-depth information on identified practices and behaviours
- Analysis of practices to identify experienced problems
- Identifying a short list of recommended behaviour changes that would help to address the specific problems and that would be feasible for the participant. (An assessment and counselling guide was used to identify appropriate recommendations)
- A follow-up visit with the participant to present several options for improving the specific practices under investigation. The key informant also had to negotiate the choice of one or more options that the participant was willing to try during the following month

- Another follow-up visit to find out whether the participant tried the new practice(s), what happened when she did, whether she was willing to continue the practice, and why or why not.

I held several meetings with her to discuss this particular strategy as well as the content part of the trial. She was asked to promote the core messages (as designed in Chapter 6 and incorporated in the personalised poster). She was illiterate, so I had to rely on dialogue, visual images and her memory as training techniques. She visited the participatory members weekly for one consecutive month and asked them to try out the new target practices and improve current conditions. We held several follow-up sessions throughout the 18-month intervention period to discuss the progress of the participants. Feedback from the key informant was used to reinforce the messages and evaluate the process and outcomes (see Chapter 8). It was also incorporated into the constructed model (see Chapter 10).



**FIGURE 7.3: KEY INFORMANT IN FRONT OF HER HOUSE**

#### 7.3.2.4 Tuck shop



A number of affordable cleaning agents were donated to contribute to the existing tuck shop in the community. These items were chosen to encourage good behavioural practices. The tuck shop owner was instructed to sell these items on a non-profit basis. The rationale was that these items should be more readily available to participants and that they could obtain these items at a lowered price (less than 20% as those available from town). Although the shop owner was also illiterate, she was briefed regarding basic business management, for example to keep stock of these items, how to calculate selling prizes and where and how to purchase new stock. She also had a daughter-in-law who had completed her secondary school education, who assisted her in the daily management of this tuck-shop.

**FIGURE 7.4: TUCK SHOP IN THE HOUSE OF THE KEY INFORMANT**

#### 7.3.2.5 Competitions

*Transfer skills by doing, not just talking* (Jenkins, 1998:111).

On three occasions, the pre-school children living in the community were asked to clean up the environment. The child who presented the largest bag filled with rubbish (plastic bags, paper and product packages) received a monetary prize. The children were all very eager to participate. An adult male resident, voluntarily showed them how to burn this rubbish. A competition for the cleanest household was also launched. The scoring guide used during the needs assessment phase was used as assessment form for the competition. The guide was constructed according to good behavioural practices as stated in the literature (see Table 6.2). Each member of the research team assessed the participating households according to the set criteria. Scores were compiled. A maximum of 10 marks could be scored within each category, revealing excellent hygienic practices. More than eight marks were considered to be very good, and between five and seven as good. A score of three or four was indicative of poor hygienic practices, and less than three as very poor.

The team conferred and chose participants to receive first, second and third prize. These prizes included items to encourage the newly adopted, recommended, hygiene and sanitation practices.

### 7.3.2.6 Educational support material

*Make educational messages simple and accessible* (Jenkins, 1998:110).

It is always necessary to use support material, whatever the scope of the intervention, as it serves to reinforce face-to-face communication. The difficulty, however, lied in obtaining an optimum balance between quality and price. The ability of educational materials to promote desired behaviour changes depends on its understandability and appropriateness to the audience. Simple, but concise, inexpensive educational materials that were attractive to both the community members and the researcher was used. The field worker participated in developing these teaching aids, to ensure that it was culturally acceptable. Staff from the Department of Telematic Learning and Education Innovation at the University of Pretoria did the graphic outlay, design and printing (see Addendum B). The material was personalised by attaching a photo of each participant to her own poster.

The focus of the posters was to change key behaviours. Unsanitary practices and conditions (as observed and measured) were translated into understandable messages, which were imprinted on the posters. Being aware of the messages is, however, not the same as understanding and practicing them. As Almedon *et al* (1997) stated: "*hygiene promotion messages and activities are not received by people in a vacuum. Rather they are assessed, accepted, modified, or rejected by people within the context of their existing health concerns and beliefs....*". The participants were therefore encouraged to implement the messages. Some of the community members even agreed to be photographed while they were doing it. While taking pictures, the research team further motivated the participants to sustain these healthy behaviours. We also emphasised the reasons for practicing these behaviours and tried to ensure that the means for doing so were available and affordable. Supplying the necessary building material assisted some members, who did not have the money to construct a toilet, but only after they had done the labour part of it. Another example is that cleaning agents were made available at the tuck shop at a cheaper price.

Each of these seven core summative educational messages is discussed next.

### Message 1: Teach children to use toilets

Latrine ownership on its own is not enough to prevent disease, but had to be associated with safe stool disposal behaviour (Curtis *et al*, 2000:24). This message is also part of UNICEF's 'Facts of Life' stating that all faeces should be disposed safely; using a toilet or latrine is the best way (Appleton & Van Wijk, 2003:19; UNICEF, 2002:95).



In many communities, young children do not use latrines, either because they are afraid or reluctant to use it (Billig *et al*, 1999:16). In this community the young children (<5 years) were using the open veld with no adult supervision whatsoever. No facilities (not even pots) were available to them and neither did they use any cleaning materials.

**FIGURE 7.5: CHILDREN VERY PROUD OF THEIR OWN TOILET**

The key informant initiated the construction of a toilet specifically for the use of small children, as seen in Figure 7.5. This toilet was convenient enough for small children to use by themselves. A photograph of the children using the toilet was not taken for obvious personal reasons, but they did express happiness and relief that they did not need to go to the open veld to defecate anymore. All community members with small children were encouraged to assist their children in using this toilet and to teach children to associate the practice with privacy and also dignity.

### Message 2: Use soap to wash hands

The promotion of soap to wash hand is an intervention that appears to be both effective and feasible (Appleton & Van Wijk, 2003:19; Billig *et al*, 1999:7; Curtis *et al*, 2000:26, UNICEF, 2002:95). However, it is not reasonable to expect the use of soap to wash hands on every conceivable occasion (Curtis *et al*, 2000:25). The cost of soap limits hand washing by the family in many settings. Water availability is likely to have an impact on the frequency of hand washing as well. Accessible, plentiful supplies of water facilitate and encourage better hygiene in general and more hand-washing in particular.



Abundant water is not available on Oranje farm and therefore the emphasis was on washing hands particularly after defecation, before cooking and before feeding young children.

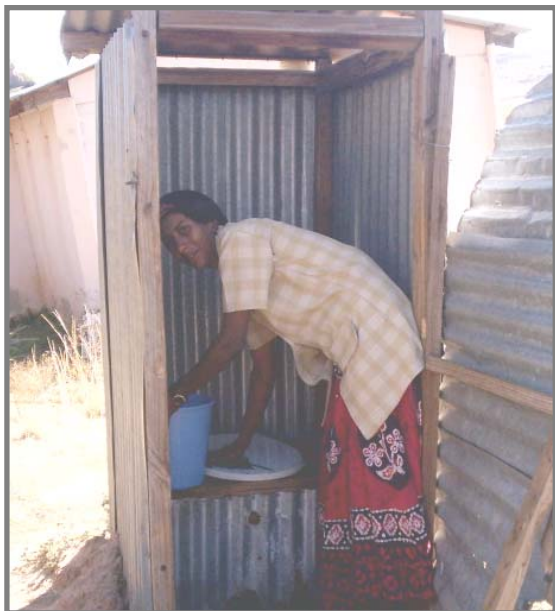


Soap is available in the local shops and is relatively cheap. Alternatives for soap (e.g. ash) were therefore not emphasised. Results from the sanitation knowledge test also indicated that they were not aware that any alternative to soap could be effectively used. No attention was given to the specific hand washing technique (e.g. to rub hands together at least three times).

**FIGURE 7.6: PARTICIPANT IMPLEMENTING MESSAGE 2 (use soap to wash hands)**

### Message 3: Keep toilets clean

Modest improvements in sanitation like clean pit latrines can have substantial effects on health, especially in rural areas with low levels of education (Billig *et al*, 1999:6, 15).



Clean pit latrines in this study meant that there should not be any faeces on the floor, seats or walls, few flies, absence of spider webs, presence of cleaning material (any kind of paper or grass). The message also included that the toilet must show signs of regular use and that it must be functioning (having a door for privacy and a roof for protection from the elements).

Two of the household in the community did not have any toilet facilities. Building material was sponsored and donated after the labour part had been done (digging of the holes).

**FIGURE 7.7: PARTICIPANT IMPLEMENTING MESSAGE 3 (keep toilets clean)**



### Message 4: Wash kitchen cloths every day



This message was included because of the observed filthy kitchen cloths in most households. It was also backed by the study of Larson and Duarte (2001:123) who found that sponges and dishcloths are particularly prone to support high microbial populations. They also stated that high levels of microbial contamination are usually present in the ambient home environment, but which does not necessarily mean that there is an associated risk of clinical infection.

**FIGURE 7.8: PARTICIPANT IMPLEMENTING MESSAGE 4 (wash kitchen cloths every day)**

### Message 5: After washing the kitchen cloths, hang them out in the sun to dry



**FIGURE 7.9: PARTICIPANT IMPLEMENTING MESSAGE 5 (after washing the kitchen cloths, hang them out in the sun to dry)**

### Message 6: Cover drinking water

It is common in hygiene promotion programmes to promote the boiling or disinfection of water for drinking. But boiling water is expensive and there is little evidence that such practices are useful (Curtis *et al*, 2000:27). Abundant water (quantity) has more impact than pure water (quality). The

benefits of better water delivery are numerous. Increasing the quantity of water allows for better personal and domestic hygiene practices, like hand washing, food washing and household cleaning. Raising the quality of drinking water reduces the ingestion of pathogens (Billig *et al*, 1999:6).



Water contamination at the source may represent a greater hazard than contamination in the home. This is because new pathogens coming from outside the home may have more impact on health than pathogens that are already circulating among family members. UNICEF also incorporated this message into the published 'Facts of Life' stating that water containers should be kept covered to keep the water clean (Appleton & Van Wijk, 2003:20; UNICEF, 2002:95).

#### **FIGURE 7.10: PARTICIPANT IMPLEMENTING MESSAGE 6 (cover drinking water)**

Water quality in the home can be improved by using only a protected water source for drinking purposes, by keeping water storage vessels clean, covered and out of reach of young children and domestic animals, by boiling water where practical, or by putting water in clear plastic containers and exposing them to sunshine for several hours (Almedon, *et al*, 1997).

#### **Message 7: Burn rubbish**



*"Safe disposal of all household refuse helps prevent illness"* (Appleton & Van Wijk, 2003:20; UNICEF, 2002:95).

No communal or organised municipal disposing system is in place – therefore this message was considered crucial for environmental health. The children play in the area, which could imply a health risk if rubbish is not burnt or disposed efficiently. The message was combined with efforts to cleanup the area (as in competitions), to separate biodegradable items (peels, leftover food) for use as compost or animal feed.

#### **FIGURE 7.11: PARTICIPANT IMPLEMENTING MESSAGE 7 (burn rubbish)**

### 7.3.3 Integrating with other services

The intervention was integrated with food-based strategies, which were mainly focused on home vegetable gardening (see Figure 7.12). The aim of this strategy was to increase the production and consumption of vegetables and thereby to improve dietary diversity. The focus was on dark, orange-fleshed sweet potato, because it is one of the few crops that are an excellent source of both energy and important nutritive substances. Furthermore, this crop has several advantages. It produces a high yield in terms of calories per unit area per time unit. Sweet potato has low demand on soil nutrients and is not labour intensive (Hagenimana & Low, 2000:414).

Still adding to the advantages is that it is a hardy crop, being more drought-tolerant than most other vegetable crops. The storage roots may be stored in the ground. The tops may also be consumed as a green vegetable. Improved cultivars have been developed at the Agricultural Research Council (ARC)-Roodeplaat Vegetable and Ornamental Plant Institute and the best suitable cultivars for the specific area were chosen (Niederwieser, 2004).

The ARC team implemented this part of the intervention. Soil samples were first taken and an



assessment was made on the current status of the home gardens. An area of land was available at the local school (close to the community), which served as the demonstration garden and nursery. The demonstration garden was prepared. Fertiliser was bought from the nearest town and worked into the soil. A 5 000 litre water tank was donated to the community for watering the demonstration garden. Filling it with water was negotiated with the farm owner. He provided a water tanker and the water to be pumped into the tank at the demonstration garden site. The farm manager organised it and one of the farm workers (also a member of the community) was responsible for carrying out the task.

**FIGURE 7.12: DEMONSTRATION GARDEN OF ORANGE FLESH SWEET POTATOES**



A vegetable garden team was selected and an unemployed male, living closest to the demonstration garden took responsibility as leader of the team for taking care of the demonstration garden. The community member's gardens were visited, seeds and fertiliser were handed out and they were motivated to prepare the gardens and plant the seeds. The community members were provided with sweet potato seedlings as well as seeds for other vitamin A rich-crops (spinach, carrots, butternut). A meal was provided consisting of vitamin A-rich foods sources (mango juice, spinach relish with tomato as accompaniment to stiff maize porridge, the traditional staple food item, together with a popular protein dish, namely stewed chicken).

Training sessions were also a very important part of the implementation phase. In effect - implementation could not commence before training of community members had not been completed. Trainers from the ARC performed these training sessions, following a well-constructed training plan. The training was task orientated and provided the community members with the necessary skills and knowledge needed to perform the task of planting and maintaining the gardens. Aspects that were dealt with at the training sessions included preparation of the soil, irrigation systems, and fencing of the gardens. The local agricultural extension officer was invited and took part in the training sessions. A nursery of sweet potatoes was established on the school grounds. The local agricultural extension officer did follow-up visits. After reports of hail damage, the ARC provided seeds again.

A strong nutrition education component is critical in order to achieve improved dietary diversity (Allen & Gillespie, 2001:116). The research team constructed a framework for an informal discussion on the importance of vegetables in the daily diet. The inclusion of vitamin A-rich sources (like those included in the home vegetable gardens) was emphasised.

Other strategies planned were home preservation techniques. These techniques were simple low-cost techniques and already part of the traditional food practices like sun drying of indigenous vegetables and bottling of fruit. It was further extrapolated to include the products from the vegetable gardens, especially the orange-flesh sweet potatoes. It is foreseen that a student will develop certain products suitable for this community, which can also be used as income-generating activities.

Some more outflows of this intervention should be the addressing of the other identified needs. The addressing of perceived food insecurity, insufficient dietary diversity, and insufficient food-coping strategies was assigned to other post-graduate students. Staff from the local health services was informed about the intervention on Oranje farm. They did not take any further interest in our invitation to participate.

## 7.4 REVISING

### 7.4.1 Monitoring activities

*Interventions should be regularly monitored in order to maintain the energy, momentum and action created by the inquiry* (Andrien, 1994).

This statement was used to substantiate regular visits, which improved the possibility of a more sustainable intervention. The monitoring activities also fed into the evaluation phase to be discussed in chapter 8. Monitoring usually assist with decision-making aimed at:

- improving the intervention
- the impact on the intended beneficiaries (participants)
- ensuring accountability to all stakeholders (Ewang, 1998:164).

Two key areas are mentioned about which a monitoring system should give feedback, namely performance and process. To monitor performance means to assess the use of resources and the production of outputs. Monitoring of process, on the other hand, assesses the efficiency and effectiveness of implementation (Ewang, 1998:164). The distinction between monitoring and evaluation is sometimes less evident, especially if evaluation is seen as a regular procedure undertaken throughout the life cycle of an intervention, as was the case in this study.

Monitoring activities were therefore based on improving the intervention process and to ensure efficient addressing of the specified need (hygiene and sanitation).

### 7.4.2 Discussion with and feedback to participants

A single intervention, no matter how well designed and executed, can seldom result in a cure for long-term problems experienced by a community. Developing culturally-appropriate health educational materials and processes is important for improving health in a community, but health education alone cannot cure social injustice or health disparities (Arcury, 2000:47). In planning for

the implementation of the intervention, some of the challenges that might arise were anticipated. Effective ways to address these challenges were also developed.

There will always be some problems to encounter. The whole spectrum of animosities, friendships and interest articulation that usually exists among people, was present in this group as well. Another inherent weakness of groups is that the introverts, the inarticulate and the insignificant are prone to keep quiet while the natural leaders, the elite and the extroverts dominate (Swanepoel & De Beer, 1997:103). Groups should not be too large as the problems pertaining to them become more manifest as they increase in size. Groups should not exceed six people. The researcher also had to apply group dynamic techniques to get the group to participate in conversations.

Burkey (2002:70) further stated that there is a risk of backsliding and even disintegration, if a certain momentum is not maintained. Unless a group moves on to a new problem after having made an advance, negative forces such as individualistic ambitions may inhibit a forward-moving process. Further development may stagnate unless they go on to attack the next problem, which may be usurious. As the strategies were implemented, the facilitation plan was continuously revised and adapted. If behaviours did not improve sufficiently, other learning activities were incorporated or the same strategies were prolonged. The tuck shop owner, for instance needed more training and support. Another individual session was held with her to do that. Feedback from the key informant also guided us to make more home visits and do more personal counselling.

The particular messages on the posters were also tested and revised. They were also translated into Sotho for better understanding by the participants and other members of the community. The field worker and key informant played an active role in defining the messages, making the messages culturally and socio-economically relevant. A checklist was also consulted which has been drawn from the *'Principles of better sanitation programmes'* and *'Features of better sanitation programmes'* (WSSCC Working Group on Promotion of Sanitation in Simpson-Hébert & Wood, 1998) (see Addendum F). This list sets best practices to be followed that could help improve the quality of sanitation programmes and can be used to advance and sustain sanitation improvements.

## 7.5 REPEATING AND REINFORCING

The timing, duration, and breath of an intervention modify its effect. Generally, the longer an intervention, the more frequent the interpersonal contact, the greater its benefits (Allen & Gillespie, 2001:123). This study was done over a two-year period. The intervention part as such, was continued for an interrupted time of 12 months. The facilitation plan was implemented at three different sessions (December 2003, March 2004 and August 2004).

## 7.6 CONCLUSION AND RECOMMENDATIONS

I can say with confidence that the objectives that were set for the implementation phase were sufficiently attained. The members of the research team and the recruited key informant were prepared for transfer of the intervention activities to take place. They were briefed regarding the messages to be conveyed as well as adult education principles to apply. This preparation can be summarised in the statement of Knox (1986:38) that *“effective teaching depends on being responsive to the learners in the program, not to adults in general”*. Resources were successfully mobilised to implement the facilitation plan in order to reach the aim of improving the hygiene and sanitation practices and conditions in the community. This facilitation plan was constantly revised and adapted as the intervention went along. It was also further integrated with agricultural extension in the form of home vegetable gardens.

People's participation in development activities should be seen not only as a means to an end, but an end in itself. Once a successful participatory development process is initiated, it should become a continuous process with no visible end to it. The only thing that should end is the intervention of the researchers who should withdraw as soon as the people themselves can maintain the development process on the basis of their own initiatives (Burkey, 2002:70).

Evaluation is a necessary component of the design and implementation of programs. Evaluative research in this study was done within the naturalistic paradigm for generating knowledge. Participatory aspects, however, were also eminent. Further aspects of evaluative research will become apparent when the evaluative phase of the intervention is dealt with in Chapter 8.



## *Chapter 8: Applied evaluative research*

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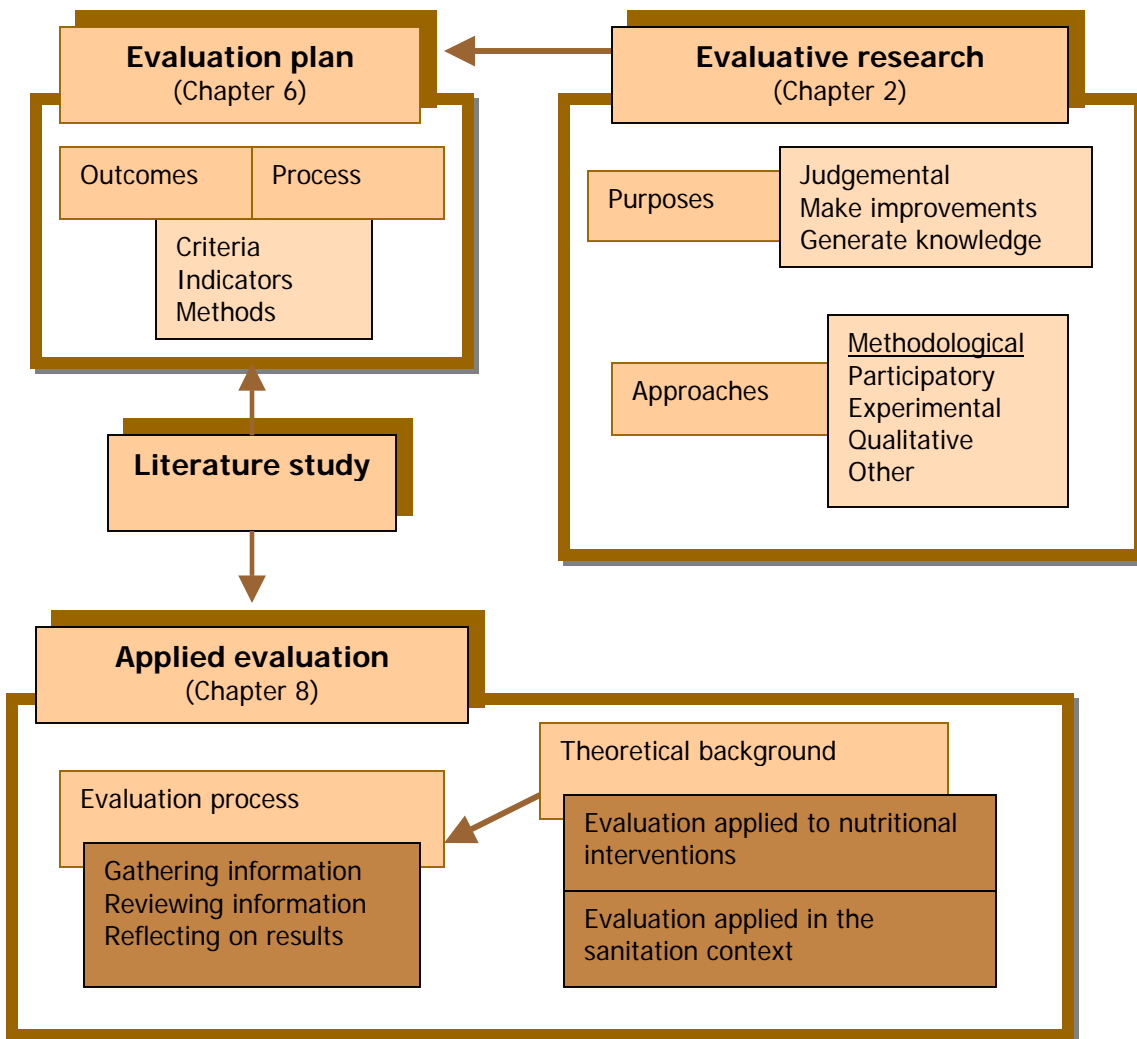


## 8.1 INTRODUCTION

*“Evaluation is, much more than a mere analytical exercise, but part of a holistic approach to successful program implementation”* (Sahn, Lockwood & Scrimshaw, 1988).

This chapter includes reflections on evaluation, with specific reference to application within the nutritional and sanitation context. ‘Evaluation’ as research activity is discussed in Chapter 2, in terms of various purposes (why it is done) and methodological approaches (how it is done). A literature study also shed light on the notion of the underlying theoretical constructs of ‘evaluation’ and ‘evaluative research’. It became apparent that evaluation is also a research activity and that evaluation, as applied to interventions, clearly fits into this research framework. The literature study also notes the basic forms of evaluation, how evaluation differs from the activity called ‘monitoring’, and various evaluation models available that can channel evaluative studies. Throughout the reviewed literature, two distinct categories or types of evaluation were noticed. The first relates to the evaluation of process (also referred to as formative or implementation evaluation), the other to outcome (also called summative or impact evaluation). The literature study is incorporated into this chapter as theoretical background.

These reflections were used to set up an evaluation plan (indicated in Chapter 6 as part of the facilitation plan) and to apply the plan within the context of this particular study. The plan briefly positioned criteria, indicators and methods for both the process and the outcomes of the intervention. How the plan was executed is revealed in this chapter. The evaluation plan was implemented through actions of gathering and reviewing information and reflecting on the results. The chapter concludes with indications on how feedback on evaluation results was given to the community and reported to other researchers. The outline of the concept ‘evaluation’, as it was dealt with in this study, is represented in Figure 8.1.



**FIGURE 8.1: CONCEPTUAL FRAMEWORK FOR 'EVALUATION' AS DEALT WITH IN THIS STUDY**

## 8.2 THEORETICAL BACKGROUND

The literature studied revealed that nutritional interventions in South Africa have been done ad hoc and its impact on health behaviour change has not been extensively evaluated. Nutrition surveys also suggest that nutrition education has not made much impact on achieving optimal nutritional status for South Africans. There is a definite need to know why certain interventions are successful and others not. Although interventions differ regarding target groups, goals and manner of implementation, the ultimate aim is usually to benefit the health of all. In that sense, it will not only be cost effective, but essential to know whether interventions are effective and why. Information regarding interventions should therefore be collected in a credible manner to tell if it is potentially

useful, accepted by the people involved and in the end made a significant impact on health behaviour and nutritional status.

### 8.2.1 The notion of evaluation

Evaluation is often mistaken for other related assessment tools such as monitoring or performance appraisal. The concept further conjures up images of judgment, faultfinding, threat, insecurity, punishment, interference and emotional trauma (Ewang, 1998:163). It appears not to be easy to provide a comprehensive definition of evaluation. The definitions offered by Cronbach (1963), Scriven (1967) and Glass (1969) stated that evaluation is the gathering of empirical evidence for decision-making and for the justification of the decision-making process. Stufflebeam (1971) said that it is the process of delineating, obtaining and providing useful information for judging decision alternatives (Murphy, 1989:454).

Smetherham (1981) described evaluation as *“the collection of useful information on the basis of which decisions can be made about feasibility, effectiveness and value of an organisation, institution, project or programme”* (Ewang, 1998:164). Ewang himself (1998:165) views evaluation as a periodic assessment of the relevance, performance, efficiency and impact of an intervention in the context of its stated objectives. If evaluation is seen as a research activity (as is the case in this study), then the description of Rossi *et al* (1999:4) is also worthy to be taken note of. They see ‘programme evaluation’ as *“the use of social research procedures to systematically investigate the effectiveness of social intervention programs that are adapted to their political and organizational environments and designed to inform social action in ways that improve social conditions”*.

From all the above-mentioned revelations, it is clear that ‘evaluation’ is a necessary component of the design and implementation of programmes. Evaluation is, however, much more than a mere analytical exercise, but part of a holistic approach to successful programme implementation. Evaluative research (as it is often called) is done to assign a probability statement of causality to the relationships of an intervention in a community context and the observed impacts, in order to determine the viability and replicability of a given programme design (United Nations Report edited by Sahn *et al*, 1988). Posavac and Carey (1997) wrote the following about programme evaluation: *“... the most basic form of program evaluation is an examination of the program itself - its activities, the population it serves, and how it functions. It includes an assessment of how*

*much effort in the form of human and physical resources is invested in the program and whether the effort is expended as planned”.*

At this point it may also be necessary to distinguish between the concepts ‘monitoring’ and ‘evaluation’. Monitoring has been defined as a continuous, routine checking of progress throughout the life of an intervention (Rietbergen-McCracken *et al*, 1998:119; Sen, 2001). Monitoring further appears to have three important functions, namely that it:

- Helps staff to make decisions aimed at improving the intervention
- Allows management to decide what impact the intervention is having on the intended beneficiaries
- Ensures accountability to all stakeholders (Ewang, 1998:164).

Two key areas are mentioned about which a monitoring system should give feedback on, namely performance and process. To monitor performance means to assess the use of resources and the production of outputs. Monitoring of process, on the other hand, assesses the efficiency and effectiveness of implementation (Ewang, 1998:164).

The specific differences between the two concepts ‘monitoring and evaluation’ are also indicated as follows:

- Monitoring is a general managerial function, where-as evaluation is rarely executed by the leaders
- Monitoring implies that performance is tracked on a regular basis with corrective action as a logistical consequence; evaluation is an occasional activity to reflect on performance in a diagnostic sense (Sen, 2001).

Evaluation is therefore dependent on an efficient monitoring system. It can only be facilitated if information is regularly collected, properly analysed and stored. Without proper feedback from the monitoring staff, no evaluation can be done correctly (Sen, 2001). The distinction between monitoring and evaluation is sometimes less evident, especially if evaluation is seen as a regular procedure undertaken throughout the life cycle of an intervention.

Two basic forms of evaluation can be distinguished, namely *summative* and *formative* evaluation. Summative evaluation refers to the examining of the outcomes of a programme and is also sometimes termed outcome or impact evaluation. Monitoring of procedures and activities to improve programme design and the delivery of services are called formative evaluation. This term is also used interchangeably with ‘process evaluation’, ‘implementation evaluation’, ‘process

implementation' and 'programme monitoring' (Sahn *et al*, 1988). The task of summative evaluation is to estimate the difference between two conditions – one in which the intervention is present and one in which it is absent (Rossi *et al*, 1999:258). It also aims to answer questions of whether an intervention programme has been successful and effective or not, and whether the intended short- and long-term outcomes have materialised. A strategic issue is to isolate the effects of extraneous factors, so that observed differences can safely be attributed to the intervention. Control conditions therefore have to be established to isolate the effects of extraneous factors and that the observed differences safely be attributed to the intervention.

Formative (also called process or implementation) evaluation aims to answer questions of whether an intervention programme has been properly implemented, whether the target group has been adequately covered and whether the intervention was implemented as designed. Rossi *et al* (1999:231), indicate that formative evaluation generally involves one or more of three relatively distinct domains of programme performance, namely:

- Service utilisation (questions about coverage and bias)
- Organisational functions (organising efforts and using resources)
- Programme outcomes (indicators of programme results).

According to Patton (1997), formative evaluation should provide feedback on the original programme and improve programme implementation, while summative evaluation should determine if the desired outcomes are achieved and can be attributed to the revised programme.

### 8.2.2 Evaluation models

A model can be seen as an aid in the form of a framework, which presents the methodology to be followed during the development and implementation of a programme in a systematic way. Programme models, specifically, are called 'valuable focusing devices', which can especially systemise the process of programme evaluation (Ahmad, 1995:253). An evaluation model is thus a framework or plan that can be used to conduct an evaluation. An evaluation design is more specific than a model, which is used to organise the evaluation and to provide for planned, systematic data collection, analysis and reporting. A well-planned design helps to ensure that the conclusions drawn about the programme will be as accurate as possible. The design is developed during the early stages of programme planning and has programme goals and objectives as focus.

The literature revealed several widely-used 'evaluation models' applied to channel the evaluation of programmes. Lipsey and Pollard (1989:318-323) offers four theoretical forms that may be



applicable to programme evaluation, namely 'causal modelling', 'the basic two-step', 'stage-state models', and 'substantive models'. Another model worth mentioning is the 'Logic model' as indicated by McLaughlin & Jordan (1996:66). It has been described as "*a plausible and sensible model of how the programme will work under certain conditions to solve identified problems*". It describes the logical linkages among programme resources, activities, outputs, and customer's reached and short, intermediate and long-term outcomes.

House (1980, in McKenzie & Smeltzer, 2001:234) present a well-constructed taxonomy of evaluation models that was consulted, which indicated the following types of models:

- Systems analysis
- Behavioural objectives
- Decision making
- Goal-free evaluation
- Art criticism
- Accreditation review
- Quasi-legal evaluation
- Case study.

Murphy (1989:460-462) briefly describes Stufflebeam's (1971) 'CIPP model', (referring to context-, input-, process-, and product- evaluation), the 'countenance model' from Stake (1967), and the 'illuminative model' developed by Parlett and Hamilton (1972). Within the field of nutrition, Ahmad (1995:253-258) describes the development of a model for a Nutrition Education and Training Program in Texas. Gillespie and Yarbrough (1984:169) propose a communication model to plan, implement and evaluate several short-term nutrition interventions.

Even more evaluation models do exist, but a discussion of each of these models is beyond the scope of this study. It is clearly indicated in the literature that no model is useful in all situations and that a single model need not be selected. No generic evaluative prescription or even guideline exists that can be directly applied to nutritional interventions. In this study, certain criteria derived from successful and effective interventions were considered and incorporated in the design and implementation of the evaluation plan. Criteria from both the fields of nutrition as well as hygiene and sanitation were included.



### 8.2.3 Evaluation criteria for nutritional interventions

The American Dietetic Association (ADA) stated certain key aspects for effectiveness in the case of nutrition education programmes. Firstly, programmes must focus on the gap between people's awareness of nutrition and their actual behaviour. Nutrition information must therefore be delivered in such a form, that people can in fact use it to improve their current diets and nutritional practices. Secondly, programmes should be designed to go beyond the delivering of information, but should support individual behaviour change (Shafer, *et al*, 1996:1187). It is advisable to include these two key elements as part of a model when applied to evaluate nutrition education programmes and in this study – nutritional interventions. Other characteristics of successful nutritional interventions were reported as that it:

- consisted of interpersonal communication channels
- lasted more than three months
- contained specific and measurable behavioural changes that can be documented (Weimer, 1996:43).

Other features are that it included a limiting number of educational messages, reinforcing and personalising messages, providing hands-on activities, incentives, cues and access to health professionals and using appropriate theories of behaviour of change (Sahyoun, Pratt & Anderson, 2004:60).

A key problem in evaluating nutritional interventions is the specifying of outcomes. A renowned question is asked: 'can a discernible change in a person's knowledge about the relationship between diet and health result in that person making an appropriate change in behaviour'? Would relevant outcomes of an intervention be a change in a target group's knowledge, attitudes, behaviour or health status? An outcome such as improved health status cannot be measured until quite some time after the intervention is conducted. A more immediate outcome such as change in knowledge is likely to show only a small effect as a result of an intervention and it is more difficult to demonstrate a causal link with the intervention. However, if no effects are found for a distant outcome, it does not necessarily mean that that intervention was ineffective, but merely that a longer period of time or control for other factors was needed (Weimer, 1996:43).

Contento, Randell and Basch (2002:4-11) provided a summary of the kinds of evaluation measures used in 265 nutrition education intervention studies conducted between 1980 and 1999. The

review has shown that a wide variety of measures have been used to evaluate effectiveness. Judgements of effectiveness may depend on the appropriateness, validity and reliability of the measures to make the judgments. Measures need to be appropriate to the nature, duration and power of the intervention. The instruments need to be closely matched to the purpose and power of the intervention and to the literacy level of the participants. In interventions with groups in community settings, including low-literacy participants or with shorter interventions, greater attention need to be paid to respondent burden and shorter instruments may be required.

#### **8.2.4 Evaluation criteria for hygiene and sanitation interventions**

Evaluation of sanitation programmes usually focus on numerical targets such as the number of latrines installed. Findings of recent reported studies show that sanitation has to go beyond building latrines and implementation of infrastructure. Attention has therefore turned towards the use of behavioural change indicators (Rietbergen-McCracken *et al*, 1998:120). Intermediate goals also need to be evaluated, such as if the intervention had achieved sustainable results. Sustainability, though, requires both equitable and effective use of sanitation facilities to generate lasting benefits for the community involved. Nonetheless, it was once again indicated that evaluations should stop short of trying to assess long-term goals - like trying to prove ultimate health impacts (Rietbergen-McCracken *et al*, 1998:125). Health impact indicators are not easy to define or to measure, particularly in the short run. It may be more feasible to look at sanitation as a package of services and actions which, taken together, can influence the health of a person and the health status in a community (Samanta & Van Wijk, 1995).

An input and behaviour-orientated approach to defining the criteria is more practical, since better practices and conditions outline the pre-conditions of any later health impact. Input and behaviour further have the benefit of focusing attention on the processes and flexibility of implementation as well as the relevance of adjusting the planning to the needs and culture of the people (Samanta & Van Wijk, 1995). Almedon *et al* (1997) proposed hygiene evaluation studies to be a cycle within a larger project of planning, monitoring and measuring impact. They suggest repeating the hygiene evaluation cycle periodically, with the purpose of following-up or for further investigation of issues raised by the previous one or for monitoring or measuring impact. Evaluation is seen as a series of investigations and experiential learning cycles consisting of four processes, namely:

- problem identification
- gathering information systematically

- reviewing the information
- reflecting on the results.

Evaluation strategies applied within the participatory approach in sanitation programmes are:

- Review-workshops which bring participants together to discuss the performance of the intervention and to seek ways of improving it
- Field-based assessments which involve community members directly performing their own analyses of the intervention
- Self-evaluations whereby community members rate themselves and consider the impact of the intervention on their own lives (Rietbergen-McCracken *et al*, 1998:125; World Bank, 2002c).

Almedon *et al* (1997) also mention the following methods and tools:

- Health walks (systematic walkabout)
- Structured (spot check) observations
- Key informant interviewing
- History line
- Community mapping
- Seasonal calendar
- Gender roles/task analysis.

It may be possible to evaluate particular practices only by means of observation. An observer could observe people's activities without too much attention. Some hygiene practices and behaviours are harder to observe, for example adult defecation. In such cases, indicators of behaviour may be observed. Almedon *et al*, (1997) mention a number of indicators that are both effective in indicating the occurrence of a particular practice and relatively easy to assess. These include:

- cleanliness, safety and soundness of latrine structure
- location of latrine in relation to living quarters
- means of disposal of children's faeces
- turbidity and smell of water at the source and in the home
- presence of soap/hand washing facilities near latrines.

### 8.3 EVALUATION APPLIED TO THIS STUDY

The evaluative phase was administered as an empirical study, using mainly primary data with a hybrid mixture of numerical and textual data and a medium degree of control and structure, as proposed by Mouton (2001:160). Evaluation was done within the naturalistic paradigm for the purpose of generating knowledge and to make certain judgments. Participatory aspects, however, were also eminent in the sense that they brought together the principal players in the intervention - the research team and the participants themselves. It was also conducted in a collaborative manner, in which the participants were considered co-evaluators of the implementation process.

The **objectives** related to the identified, prioritised need were formulated as follows:

- Encouraging and motivating all adult female community members to participate in the intended intervention and to collaborate with the research team in order to adopt safer hygiene and sanitation practices after a 12 month intervention period
- Improving the hygiene and sanitation conditions within the community after a 12 month intervention period as measured according to set criteria and indicators
- Improving the hygiene and sanitation practices of at least 80% of the female adult group after a 12 month intervention period as measured according to set criteria and indicators.

Criteria, indicators and methods used for both process and outcome evaluation are summarised in Box 8.1

#### BOX 8.1: EVALUATION PLAN

Evaluation plan			
	Criteria	Indicators	Method
Process	Encouragement Motivation Participation Collaboration	% women participating and collaborating Willingness to participate Enthusiasm	Qualitative: ⇒ Group discussions ⇒ Observations ⇒ Field notes
Outcomes	Safer hygiene and sanitation practices  Improved hygiene and sanitation conditions	% reduction in unhygienic practices  % improvement in sanitary conditions	Quantitative: ⇒ Knowledge test ⇒ Behavioural scale ⇒ Scoring guideline Qualitative: ⇒ Key informant feedback ⇒ Observations

The *steps* taken in this study to attain the objectives and execute the evaluation plan are discussed next.

### 8.3.1 Data gathering

The quality of information collected is critical in the systematic assessment of hygiene practices (Almedon *et al*, 1997). Just asking questions about hygiene practices is not good enough; hygiene practices are private and morally loaded. Nobody likes to admit not washing his or her hands. Respondents often tell interviewers what they think they want to hear or what they think will bring the greatest benefit. Interviewing about hygiene is also of little use because of the sensitivity of the subject (UNICEF, 1999a:12). Qualitative techniques such as focus group discussions and participant observation do not expose the participants and they would therefore be more willing to participate. These techniques can also 'dig deeper' and produce more insight into various health problems.

Originally the thought was to recruit and train some members of the community and the owner of the farm to keep a track record of the intervention implemented on the farm. These records would have included notes on whether the intervention had been properly implemented, whether the target group had been adequately covered and whether the intervention was implemented as originally designed. Community members were illiterate, however, and the farm owner indicated that the farming activities would not allow time to be spent this way. The principle researcher therefore took up this task, assisted by the other team members.

*Process* evaluation was done using qualitative evaluation methods (Posavac & Carey, 1997:213). The participants of the intervention were studied in their natural setting with the focus on their own perspectives and views of the intervention. This approach is also called 'naturalistic' evaluation (Babbie & Mouton, 2001:356; Mouton, 2001:161; Posavac & Carey, 1997:224). Although the course of a naturalistic study cannot be predetermined, it neither eliminates the need for pre-fieldwork preparation, nor does it mean that the researcher can be haphazard by merely adjusting to events (Hammersley & Atkinson, 1996:24). Naturalistic, process evaluation in this study was conducted in a collaborative manner in which the participants were considered co-evaluators of the implementation process (Babbie & Mouton, 2001: 358-359). The methods employed for data collection were observations with field notes, group discussions and key informant feedback. Criteria included encouragement, motivation, participation and collaboration.

*Outcome* evaluation was done using quantitative and qualitative techniques. Quantitative techniques were a knowledge test, behavioural scale, a scoring guideline (see Chapter 6, Table 6.1) and an activity sheet on domestic hygiene (see also Chapter 7, Box 7.1). These techniques were also applied during the situation analysis (needs assessment) phase of the intervention. Data obtained qualitatively were used to augment the quantitative measurements obtained through observations with field notes, group discussions and key informant feedback. Criteria were safer hygiene and sanitation practices and improved hygiene and sanitation conditions, which included implementation of the seven summative core messages. The indicators that were used to describe successful implementation are revealed in Boxes 8.1 and 8.2. Outcome evaluation was done on a limited scale, because some of the outcomes would only become evident after a longer period of implementation. Such evidence would be, for instance, if improvement in hygiene and sanitation practices had a positive impact on the growth of young children. Such an effect, would however be very difficult to prove.

**BOX 8.2: VARIOUS INDICATORS TO MEASURE THE IMPLEMENTATION OF THE SEVEN SUMMATIVE CORE MESSAGES** (Almedon *et al*, 1997; Van Wijk & Murre, 1992:18)

Message	Indicator
Teach children to use toilets	Absence of children's faeces in and around the home Presence of potties or latrines for children
Use soap to wash hands	Presence of soap and washing facilities in the cooking area
Keep toilets clean	Appearance of toilets/latrines: Cleanliness, odour, seat cover, presence of material for anal cleaning Well-constructed floor and roof Door for privacy No soiling on walls and floors
Wash kitchen cloths everyday	Clean appearance and smell
After washing the kitchen cloths, hang them out in the sun to dry	Presence of cloths on washing line
Cover drinking water	Presence of a separate, covered container for drinking water Long-handled dipper No communal drinking cup No hands touching the water
Burn rubbish	Presence of burned rubbish, ashes (in drums or deep holes)

### 8.3.1.1 Observations with field notes

Mouton (2001:159) wrote, “*It is common in implementation evaluation studies to utilise all available modes of observation, both structured (questionnaires, tests, scales) and less structured (focus group interviews, individual interviews, participation observation), as well as analysing existing documentary sources (field records, participation records)*”.

The first set of observations was done in an unstructured manner by noting down everything related to hygiene and sanitation that was observed. Observations were combined with a method called ‘health walks’ (Almedon *et al*, 1997) as well as household visits. Health walks are systemic walkabouts where the research team walk across the study site to foster spontaneous informal conversations and discussions on hygiene and sanitation-related topics. Because the field worker could speak the local language, she did health walks and informal visits on several occasions by herself. She asked to see the water sources, the places where rubbish is thrown, asking parents how they manage to keep their households and children clean, asking about sewage, latrines and stagnant water. She also observed aspects of the following practices - children's faecal disposal, hand-washing practices and how drinking water is kept. Directly after the observations were completed, we sat down and made notes. A negative aspect of this method was that we relied heavily on her memory of events and conditions. These notes also dealt with general impressions, translated comments from the community members and comments from the field worker herself. An extract of notes from such a health walk is shown in Box 8.3. These observations were later confirmed by my own set of observations.

The next set of observations (apart from the health walks) was more focused on the successful implementation of the advised messages. Observations were done as unobtrusive as possible. I kept extensive field notes to assess whether the hygiene practices and sanitation conditions in the community had improved. Field notes then included perceptions on programme outcomes (changes in people's knowledge and practices), aspects of personal, household and environmental conditions, including assessments of all the pit latrines. Field notes were handwritten, but an example was typed and is represented in Box 8.4.

The third set of observations dealt with whether the intervention had been properly implemented (process evaluation). Observations on the process included notes on the planning process, participant learning and programme structure (format, content, instructional method).



### 8.3.1.2 Group discussions

All the adult female community members were invited to participate in the group discussions. The aim of the discussions was to get as much participation from the community as possible. It was therefore essential for all the participants to also take part in the group discussions. The ideal number of participants is six to eight (Almedon *et al*, 1997) but participants were not turned away after they had arrived for the meeting. Twenty-two women were present and participated in the activities. A structured guide, based on certain pre-formulated evaluation questions, provided direction to the discussions (see Box 8.5). Discussions were recorded on tape, translated by the field worker and then transcribed by me the principle researcher. The outcome of the discussions was to reach consensus on the success and outcomes of the intervention.

### 8.3.1.3 Key informant feedback

Key informant interviewing is a standard anthropological method, which is widely used in health-related investigations (Almedon *et al*, 1997). The term key-informant may be used for anyone who can provide detailed information, on the basis of special expertise or knowledge of a particular issue. The community members unanimously elected a group leader during one of the group discussions and the research team considered this lady to be a key informant. She also assisted in the process of translating the assessed problems into felt needs (see Chapter 5).

During an interview session, feedback was asked from her, first in terms of the implementation of the core messages, which were transcribed (see Box 8.6). Feedback also included information on common problems experienced by the participants, identification of the most acceptable and difficult messages, ways the participants modified the recommendations and their motivations and constraints related to trying these new practices. The most common problem appears to be crowding. When more than five members are within a household, it is more difficult to keep the house clean. Not every household member is motivated to implement the recommended hygiene and sanitation practices at all times. Small children especially do not understand why their hands must be washed before eating and teenage children simply do not care. The most difficult practice (message) reported to implement was to clean the toilet and the easiest one was to wash hands with soap. Frequencies are presented in Table 8.1.

**TABLE 8.1: REPORTED DIFFICULTY ON RECOMMENDED PRACTICES** (n=16)

Most difficult practice	Frequency (%)	Easiest practice	Frequency (%)
Cleaning the toilet	44	Washing hands with soap	81
Hanging washed kitchen cloths in the sun	31	Covering drinking water	31
None of them	13	All the practices	13
Burning rubbish	6		
Washing the kitchen cloths with soap	6		

The key informant also indicated to us that the men in the community were interested in all our activities and wants to be included as well. If the men and husbands were involved, they would most probably would they have encouraged the women to improve their hygiene and sanitation practices. She said that within their culture (Southern Sotho) the women 'bow' to their husbands. Her recommendation put in her own words was: "*re tlamehile ho ruta banna le bona*" (we must teach the husbands as well).

#### 8.3.1.4 Quantitative measurements

At the time the group discussions took place, another set of quantitative evaluations were also done. The same instruments were used that was also used during the needs assessment phase, namely a hygiene-and-sanitation (HAS) knowledge test, a HAS-behavioural scale and a HAS-scoring guideline, as well as an activity sheet to identify certain illustrated 'domestic hygiene mistakes' employed during the implementation phase. Results are indicated in Box 8.7.

Participants attained a slightly better score in the sanitation knowledge test (90%), compared to the previous average group score of 78% attained during the needs assessment phase. Results from the sanitation behavioural scale also improved (86% as compared to 77% previously). The statement that was marked incorrectly by most participants (91%) was that ash or ground could be used to clean hands and surfaces if soap is unavailable.

The scoring guideline (see also Table 5.1) was also used as an assessment form for the competition during the implementation phase. Average scores attained during each of the phases are indicated in Box 8.7. The differences between the scores attained in each phase were only statistically significant for the personal hygiene score ( $p=0.19$ ). Individual items in which a

statistically significant difference was measured were: good body odour ( $p=0.08$ ); frequency of bathing (once a week) ( $p=0.03$ ); visible clean kitchen cloth ( $p=0.03$ ); sun dried kitchen cloth ( $p=0.04$ ); no visible cockroaches ( $p=0.009$ ); spider webs in the pit latrines ( $p=0.01$ ); bad smell in the latrines ( $p=0.003$ ); covered seat on the toilet ( $p=0.01$ ); clean swept yard ( $p=0.009$ ); signs of rubbish removal (burnt/buried) ( $p=0.04$ ).

Different findings were attained on the activity sheet, as compared to the outcomes of the previous test done during the implementation phase, three months prior to evaluation. These differences, however, were not statistically significant ( $p=0.1184$ ). Differences on four single items were statistically significant however, namely 'the presence of a cat in the house' ( $p<0.001$ ); 'person smoking while preparing food' ( $p<0.001$ ); 'overloaded dustbin with flies' ( $p<0.001$ ); 'drippings on the floor' ( $p=0.0172$ ). Assessment of the activity sheets showed that 19 of the participants (95%) scored 50% and more in the activity sheet; 12 participants (60%) scored 80% and more; eight (40%) participants scored 100%. Scores obtained during the previous session (implementation phase) are presented in Table 8.1. The outcomes of the activity sheet were not discussed with the participants again and it is not clear why test scores were different (that certain mistakes were identified differently than the previous time). The only mistakes identified by all participants on both occasions were the presence of the cat in the kitchen and the overloaded dustbin with flies. The key informant's comment on this particular finding was that none of the community members own a cat and that everybody dislikes flies. She also reported that some participants had struggled with the interpretation of the picture. This picture should therefore be further adapted, refined and tested.

Results need to be faithful to the data and the final conclusion has to be endorsed by the data. With this statement in mind, reviewing (analysis) and reflecting (interpreting) of the data followed.

### 8.3.2 Reviewing (data analysis)

This step could have also been called 'evaluative data analysis'. The emphasis in this step was to make decisions on whether the objectives of the intervention had been met or not. In this step, the data was systematically organised (selected and condensed), displayed (see Boxes 8.3, 8.4, 8.6, 8.7) and then verified in order to draw conclusions (Babbie & Mouton, 2001:328; Coffey & Atkinson, 1996:6; Collins, 1999: 58; Miles & Huberman 2002:394; Wolcott, 1994:36). Data was organised according to a system derived from the data itself, which were the following categories:

- Young children using the open field to defecate, without adult supervision

- Hands not washed
- Filthy toilets
- Filthy kitchen cloths
- Uncovered drinking water
- No rubbish removal system.

Apart from the fact that data should be accurate and reliable, it also needed checking and crosschecking to establish trustworthiness. Criteria for trustworthiness of qualitative data are not a set of tests to be applied to the information after it has been collected, but built-in checks that are put in place before information gathering actually commence (Almedon *et al*, 1997; Babbie & Mouton, 2001:276; Smaling, 1992:316). All the aspects that were considered and executed in an attempt to enhance the quality of the data and the results obtained are presented in Chapter 3. Only relevant aspects are highlighted here.

The involved study leaders and members of the research team judgmentally verified the content of the data. The outcomes of group discussions and observations were used to enhance the construct validity as well as for triangulation purposes. The following procedures were followed to maximise credibility and trustworthiness:

- Prolonged engagement – data gathering was terminated only when ‘saturation’ seemed to have been reached
- Persistent observation and triangulation – different methods and techniques were pursued to evaluate the process and outcomes of the intervention
- Referential adequacy – all the completed tests, field notes, transcribed discussions and completed observation schedules were available as documents of the research process and outcomes
- Peer debriefing – perceptions, insights, analyses and interpretations were shared with an acculturated colleague
- Member checks – the data, results and interpretations were taken back to the participants of the study to check whether that was actually what they had said and meant.

Other measures used for triangulation in this study were ‘peer reviews’, referring to the checking with fellow researchers whether the collected data or the interpretation there-of did not contain any random errors.

### 8.3.3 Reflecting on results (interpretation)

Reflection involves looking back on what has been done, reviewing specific questions or problems that had emerged, to determine whether they have been addressed effectively. It also involved looking forward to how knowledge and skills acquired might be useful in future situations. As Mouton (2001:109) said: *“The ultimate aim of evaluation research should be to contribute to our understanding of why certain interventions work and others are less successful”*.

Interpretation also meant determining what the results mean and how significant they were in the specific context. The reasons behind certain hygiene practices and to what extent they were influenced by socio-cultural factors was teased out. The following questions were answered when results were interpreted:

- what the results mean
- why the results turn out the way they did
- what the possible explanations are
- what needs further investigation.

Hygiene behaviour change can have significant effects on health by reducing a variety of conditions. These improvements in health can, in turn, lead to reduced morbidity and mortality and improved nutritional status (Billig *et al*, 1999:6). All efforts towards improving sanitation are worth undertaking, as they have community-level effects as well as individual ones. Long-term effects might be less disease; better health as measured by less diarrhoea, reductions in parasitic infections, increased child growth and lower morbidity and mortality. A healthier population is a more productive one and better sanitation can therefore improve income and the capacity to acquire food.

The interpretation of findings reflected the comments and suggestions made by members of the participants during the feedback sessions. This minimised the biases that can creep into the interpretation of results, making sure that they are not separated from the context in which the information was gathered (Almedon *et al*, 1997). To me the results meant that there was only a minor improvement in hygiene and sanitation practices and conditions. Although the participants were knowledgeable about hygiene and sanitation and had the intention to change behaviour, somehow, this did not happen to the extent that we were hoping for. According to Van Wijk and Murre (1995) the following four key factors strongly influence hygiene behaviour change, namely

facilitation, understanding, influence and autonomy. The results were discussed in terms of these four factors.

- Facilitation refers to making a good behaviour easier. The specific practices that we recommended were not difficult to implement in terms of means and effort. They did not have water directly available in their households, but they had a stable, reliable supply, which they need to collect daily. The distance they need to travel was only 200 metres, which were considered convenient (Billig *et al*, 1999: 9). The community were assisted in constructing two new facilities for households who did not have any and a special pit latrine were built only for the use by small children.
- Understanding refers to the participants' mode of thinking that change will improve their own and their family's health and quality of life. The participants did indicate understanding of the promoted messages and did perceive it to be desirable.
- Influence and support from others can also strongly effect sustained adoption of new practices. The participants did commit themselves as a group to the behaviour and to motivate one another in the implementation there-of. The husbands or partners of the participants should also have been actively involved in the intervention in order to provide further support and encouragement.
- Autonomy is the means and control to carry out the practices. The implementation of the new practices did not require new, specialised skills of expensive resources. They were free to use their own skills and resources. Additional means would only be time and energy to fetch more water or more regularly and to be disciplined in the act of practicing the behaviours.

To speculate thus on reasons why there was not a more significant improvement would centre on the support aspect. A strong support system, not only from spouses, but also from the local health authority, is a strong recommendation for future studies. The IRC (2003b) stated that it is universally accepted that people should have access to a basic domestic water supply, ranging from 25-50 litres per capita per day. The requirements for rural people can even be considered as much as 200 litres per capita per day if water for productive uses is included as well.

Sustainability can only be evaluated over a longer term. With a prolonged and gradual programme, it is possible to measurably reduce many risk behaviours and to sustain the improvements (Appleton & Van Wijk, 2003:30). The managers of the guesthouse on the farm were willing and able to assist in long-term monitoring and motivating of the recommended behaviours. Hygiene should definitely be included and addressed in the other planned interventions, for instance during

product development. All the participants were enthusiastically participating in the planned activities. Areas still in need of participation are monitoring and evaluation. Although the key informant assisted with these activities, the other community participants also have to become more familiar with these processes in order to assess their own improvement and progress in future times. Hygiene and sanitation however, is an educational task and can never be one-off. I can say with confidence that the participants were susceptible for assistance and advice. This particular intervention was also an enforcement of attempts by the previous owner of the farm. The participants offered many reasons for implementing the suggested hygiene practices. They do not like dirt or to have hands that smell bad. They also expressed a desire for comfort, beauty and social acceptability.

Certain practices were difficult to implement. In one household the grandmother reported the covering of drinking water to be very difficult, because there are too many children in the house using the drinking water facilities. They do not listen and do not practice what she tells them. Another lady said that to keep the toilets clean was difficult, again stating that there are too many children (eight) using the same toilet and they do not keep it clean. Three women locked the doors of their houses after cleaning it, in order to keep the children out, so that the houses can stay 'nice and clean' (*"botle le ho hlweka"*).

## 8.4 DISCUSSION

Analysis and interpretation ultimately lead to judging the findings as either positive or negative, or both and stating the reasons why. The findings may show what is good, bad, desirable, or undesirable in the way the intervention has promoted improved hygiene and sanitation practices, as well as in the way that the participants have responded to the intervention. The main questions that were answered were stated as the significance of the findings to the various stakeholders in this particular setting, to the intervention as such, to the participants and to other interested researchers.

The values of the study team were brought to bear on the findings. The first reflection was done in terms of the outcomes. The short-term outcomes set for the participants of this intervention were:

- Encouragement and motivation. The participants expressed feelings of being encouraged and motivated to implement the stated hygiene and sanitation practices and conditions. They also expressed personal benefits from being part of the study like cleanliness and well-being. During



the needs assessment phase eleven women participated compared to the 22 who showed interest during the implementation and evaluation phase.

- Received set of educational material regarding hygiene and sanitation. This material (in the form of posters) was promoted as reminders to continue with the implementation of the promoted practices and conditions. The messages on these posters were clear, and relevant to the community.
- Safer hygiene and sanitation practices. The participants expressed being capable to keep up the practices and conditions because it does not involve a large proportion of money, time and effort. Originally all the participants expressed the intentions to perform the desired behaviours but only 83% (n=18) managed to do so.
- Improved hygiene and sanitation conditions within the community. A marked improvement in environmental hygiene was observed (as shown by the results from the scoring guide, but not statistically verified). New latrines were also constructed – one for the use of small children and two for households that did not have any. Care should however be taken in using the word 'improved' (Samanta & Van Wijk, 1995). How and which particular improved practices and conditions are measured, must be defined locally. Participants themselves should make decisions on improvements. Researchers and change agents should only ensure that participants are informed and enabled to make wise decisions.

Intermediate outcomes were set as consumption of safe food, overall well-being, dignity and pleasantness. Longer-term outcomes were set as improved household food security, behavioural change, prevention of food contamination and infection, improved growth and physical development of vulnerable children, improved environmental health and productivity. For the research team, the outcomes were reliable research results, Masters' and PhD theses and publications. For the academic community and specifically the interested scholar and researcher, a generic model was the outcome, to use as guideline for the planning of similar interventions. General outcomes were collaboration among the various stakeholders and community ownership of the intervention.

## 8.5 CONCLUSION

The evaluative phase was administered as an empirical study, within the naturalistic paradigm for generating knowledge and to make certain judgments. A cyclical process was followed, consisting of the processes of data gathering, data revision (analysis) and data reflection (interpretation).

Qualitative data-gathering techniques were mainly used, which included observations with field notes, group discussions and key informant interviews. 'Applied' evaluative research was evident because we identified practical problems as research problems and emphasised the implications for practice rather than for theory.

Sanitation is generally defined as the access to adequate excreta disposal facilities that can effectively prevent human, animal and insect contact with excreta. Suitable facilities can include simple, but protected pit latrines. It also includes adequate access to safe drinking water that can be either in a dwelling or located within a convenient distance from the user's dwelling. Two hundred metres is regarded a convenient distance (Billig *et al*, 1999: 9). In terms of these set standards, this particular community's hygiene and sanitation status was judged as relatively good.

Whilst hygiene promotion plays a fundamental role in the prevention of infectious diseases, it also serves other needs. Among these is the desire to create order and beauty and to demonstrate respect for social morality (Appleton & Van Wijk, 2003:11, 16, 23). Those who seek to promote safe hygiene need to both understand the motivations underlying hygiene behaviour in general and need to be able to specify practices that may be putting health at risk (Curtis *et al*, 2000:22). Much has to be learned about the links between improved water supply and sanitation facilities and well-designed and implemented health/hygiene promotion and health. What is clear is that good hygiene practices are necessary for maintaining good health (Almedon *et al*, 1997).

Better facilities and hygiene messages rarely change people's hygiene behaviour by themselves (Van Wijk & Murre, 1992:11). People change their behaviour when they want and can do so for their own reasons. They also change when it is part of a communal decision process based on the educational stage of readiness. In this study, the members themselves decide that they will change and how they will promote and achieve the change. The research team did not direct the change, but helped them to choose the key changes and to organise the process of change.

Objectives were set for the participating adult female community members (described in Chapter 3 as the target group) to practice after the intervention had commenced. These practices were evaluated by the research team according to set criteria and indicators and by using methods such as observations with field notes, group discussions and key informant feedback. The objectives related to if the identified, prioritised need was met in the following way:

- The participants expressed that they had been encouraged and motivated to implement the stated hygiene and sanitation practices and conditions. They also expressed personal benefits such as cleanliness and well-being.
- Received set of educational material regarding hygiene and sanitation (in the form of posters) were promoted as reminders to continue with the implementation of the promoted practices and conditions. The messages on these posters were clear, simple and relevant to the particular community.
- The participants expressed being capable to keep up with the practices and conditions because they do not involve a large proportion of money, time and effort. All the participants expressed the intentions to perform the desired behaviours, but only 83% (n=18) managed to do so.
- An improvement in hygiene and sanitation conditions within the community was observed (as shown by the results from the scoring guide). New pit toilets were also constructed – one for the use of small children and two for households that did not previously had any.

### **BOX 8.3: AN EXTRACT OF NOTES FROM A HEALTH WALK (UNSTRUCTURED OBSERVATION)**

**Date: December 2004**

#### **The communal tap**

The research team walked past the communal tap 8:30 in the morning. Children were fetching water with plastic buckets. Some buckets did have lids. Some children carried these buckets on their heads back home, while others used wheelbarrows. Water was almost always spilled. The children stopped and played at several times.

The tap was left running between the fillings of the buckets. Water was wasted.

Several women were washing clothes over the three days of our visit.

There were still signs of stagnant water.

#### **Cleanliness of area**

The environment appears to be neater. No more papers, toys, wire, and old tyres were lying around. There were signs of a communal rubbish site and of recently burnt rubbish in congas. Several people were sweeping their front yards. Most chickens were kept at bay. Dogs were still very thin, but were chained for the duration of our visit. No human faeces could be seen within a radius of 5 metres from the houses or pit latrines.

#### **Reasons for being clean**

Mothers were asked what they thought about hygiene and why hygiene is important to them. Here are some of the things they said:

"I don't like my hands to be dirty; I don't like things to smell bad; It is very good to live in a clean house with a clean yard – everybody is more happier; If I go to town I dress up in nice clean clothes, but at home I am working all the time, so clean clothes are not necessary. Dirt comes from dust and animals and brings on illness".

**BOX 8.4: TYPED EXAMPLE OF AN EVALUATIVE FIELD NOTE**

<b>Date: December 2003</b>
Household 1: The single man who lives there is very clean. I regard his garden as one of the best in the community. He takes care of his chickens and has built them nests from grass.
Household 2: Urine could not be smelled anymore. The old lady also appeared cleaner than on the previous visit. The six children she takes care of look happy, content and cleaner. She did complain, however, about teaching all children to keep the drinking water clean and covered.
Household 3: We were not allowed to enter the house. Apparently the lady had a party the previous night and she was ashamed about the appearance of her house. This house does not have an attached toilet.
Household 4: The house appeared clean and neat. No flies could be observed. The chickens were kept at bay. Corn kernels were used as abrasives to clean pots and pans.
Household 5: No-one was present.
Household 6: The house, mother, grandmother and two children looked better in terms of cleanliness. A covered drinking bucket could be seen inside the house. The house is cleaner than the previously visited one.
Household 7: The mother and her daughter were very dirty. Their teeth looked awful. There were dried peaches and canned peaches on the shelves. After further questioning they told us they had done it themselves. Chickens run around loosely, with chicken dung all over the stoep.
Household 8: No-one was present.
Household 9: No-one was present.
Household 10: A flycatcher was in the house and in the pit toilet. The house was very clean and neat, so was the lady and the child she is taking care of. A spoon with an extended handle was used for scooping drinking water out of a container. The old lady staying next door (but as part of this household) was sweeping the yard.
Household 11: No-one was present.
Household 12: No-one was present.
Household 13: A remarkable improvement. The lady looked healthier, her clothes were clean, and her house was clean. She told the field worker how proud she is and wanted me to take photos. She showed us her clean kitchen cloth and water container.
Household 14: The house and the family members who live there appear to be clean (compared to the previous visit). Clean kitchen cloths were observed. The lady was willing to show us how she usually cleans her pit latrine. She showed us also the inside of her house, which was very neat and clean.
Household 15: Water is kept in a covered plastic bucket. It appeared clean. The lady was washing her clothes at the communal tap. There was not any soap present. She said that she usually boils the water in the winter.
Household 16: She won the price for the neatest person and household. Her house, yard and garden were still very clean. There were no signs of rubbish lying around. She also had a well-taken-care-of vegetable garden in her back yard.
Household 17: The owner has moved
Household 18: No-one was staying there

**BOX 8.5: STRUCTURED GUIDE FOR EVALUATIVE GROUP DISCUSSIONS (n=22)****Date: 7 May 2004**

1. We were visiting you for nearly 2 years now. We have learned a lot from you and we hoped that you have learned from us as well. What is it that you think you have learned from us?
2. What was good about our visits?
3. What did you not like about our visits. Why? Give examples.
4. Did you like all the people? Who did you not like? Why?
5. There was only a few things that we could do for you, like teaching you not to spread germs. Can you still remember what germs are? Did you find that specific information useful? Why is it important to be clean?
6. We know there are other things that you need such as water directly in your houses, a crèche, to learn to make clothes. We could not help you with those things. Do you understand and accept that?
7. People came to teach you about vegetable gardens. How did you feel about that? Have you learned new information? Could you managed your gardens? Sow the seeds? Did you harvest some vegetables yet? Which problems were there? Who is eating vegetables everyday? Are the children eating more vegetables?
8. We are also going to get two other students to teach you what to do with all the vegetables from your gardens. They will come later this year. Do you think it is necessary that they come? Do you want to learn more about cooking and preserving of vegetables?
9. Can you still remember that we sat there in the school and told you about vegetables and why it is important to eat them every day? Would you like another poster with information on that?

If we can look at the posters now, what don't you like about it? Why? What would you like differently? Do you understand the pictures? Will you be able to ask some of the children to read the written words (in English and Sotho)? Do you like your photos? Should we put them onto the other posters as well? What are you going to do with the posters?

Can we count how many of you have implemented the messages on the posters:

1. Teach children to use toilets (n=13)
2. Use soap to wash hands (n=16)
3. Keep toilets clean (n=13)
4. Wash kitchen cloths every day (n=14)
5. After washing kitchen cloths, hand them out in the sun to dry (n=5)
6. Cover drinking water (n=14)
7. Burn rubbish (n=11)

**BOX 8.6: FEEDBACK FROM KEY INFORMANT** (as transcribed and translated)**Message 1: Teach children to use toilets**

My husband helped me to build a toilet for the young children. We showed the other people how to do it, but they do not have the material to construct one. The other children also make use of the toilet. The children like to go to their own toilet. They use toilet paper to clean themselves and scrap paper from schoolbooks if the toilet paper is finished. No one is supervising if they wash their hands after visiting the toilet. Washing facilities is only available in the houses. The mothers say that they do tell the children to wash their hands after defecating or urinating. The children know that they should not go to the veld to defecate, because if faeces are lying around, it can make them ill.

**Message 2: Use soap to wash hands**

I have seen that most women wash their hands with soap, especially before they prepare food. They did buy soap from my *spaza* shop. Only two women did not buy any soap. The one said that she did not have any money and the other one had opened her own shop recently.

**Message 3: Keep toilets clean**

It is not nice to clean the toilets, but the women know that it is important. They do not clean the toilets every day, but do so at least once a week. They usually remove the spider webs, take soapy water and wipe the seats and dump all the papers lying around into the toilet.

**Message 4: Wash kitchen cloths every day**

The women wash their kitchen cloths every day. They liked the new cloths they received as presents and they try to keep them clean. They usually wash the cloths with soap. They like to use clean cloths.

**Message 5: After washing the kitchen cloths, hang them out in the sun to dry**

They know that if cloths are hung out in the sun, that the sun will destroy most of the germs. They say that they do it every time the cloths are washed and I have seen them doing so on several occasions.

**Message 6: Cover drinking water**

We told the children that, when fetching water, that they must not mess with it. They should not play with the water in the bucket, because we have to drink it. They have to keep the lids of the buckets on all the way back to the house. I know that they often leave the buckets on the road, either to rest or to play. I have seen some women washing the buckets outside and inside at the tap, before the buckets are filled. The filled water buckets are carried on their heads back to the houses. I do not know how often they wash the buckets though. I have a dipper that I use to scoop water for drinking. I would like to have a bucket with a tap on, so that I do not need to touch the water when pouring drinking water. People use the same dipper to pour drinking water, which is usually a cup. Sometimes they even drink directly from the dipper. They keep the buckets covered all the time.

**Message 7: Burn rubbish**

Nobody wants to take responsibility for one communal rubbish site. Male members from each household usually burn their own rubbish. It is easier to burn than to bury, because digging holes is hard work. We all have *congas* in which we can throw the rubbish. These we obtained from the previous farm owner. We all have matches to ignite the rubbish. Matches are very cheap. Rubbish does not take long to burn. The children usually want to see how the rubbish is burnt and they want to do it themselves as well.

**General comments**

The women like to be nice and clean (*"botle le ho hlweka"*). Some women are stubborn (*"manganga"*) and do not use soap to clean the dishes. If there are a lot of children (*"bana ba bangata"*) in a house, it is more difficult to keep it clean.

**BOX 8.7: RESULTS FROM QUANTITATIVE MEASUREMENTS**

<b>Date: 14 August 2004</b>			
<b>Knowledge test (n=22)</b> Participants attained a good sanitation knowledge score (mean=90%)			
<b>Behavioural scale (n=22)</b> Participants attained a good score (mean=86%) on the sanitation behavioural scale			
<b>Scoring guideline</b> Average scores from a maximum of 10 marks were as follows:			
Category	Maximum score	Implementation phase (n=13)	Evaluation phase (n=20)
Personal hygiene score	10	4.18	6.40
Household hygiene score	10	4.09	5.92
Environmental hygiene score	10	2.45	5.08
<b>Activity sheet on domestic hygiene</b> Reported frequencies of correctly identified 'mistakes' were as follows:			
Item ('mistake')	Implementation phase n=12 (%)	Evaluation phase n=20 (%)	
Presence of a cat in the kitchen	12 (100)	20 (100)	
Person smoking while preparing food	12 (100)	17 (85)	
Overloaded dustbin with flies	12 (100)	20 (100)	
Open tin	11 (91.37)	17 (85)	
Presence of a mouse in the kitchen	10 (83.33)	19 (95)	
Raw chicken thawing on a cupboard	9 (75)	15 (75)	
Food boiling over on the stove	9 (75)	14 (70)	
Drippings on the floor	7 (58.33)	18 (80)	
Mixing fish and raw vegetables	4 (33.33)	11 (55)	
Dirty kitchen cloths and clothes	4 (33.33)	9 (45)	
Number of participants who scored 50% and more	11 (91)	19 (95)	
Number of participants who scored 80% and more	5 (42)	12 (60)	
Number of participants who scored 100%	3 (25)	8 (40)	



*Chapter 9:  
Critical  
reflection*

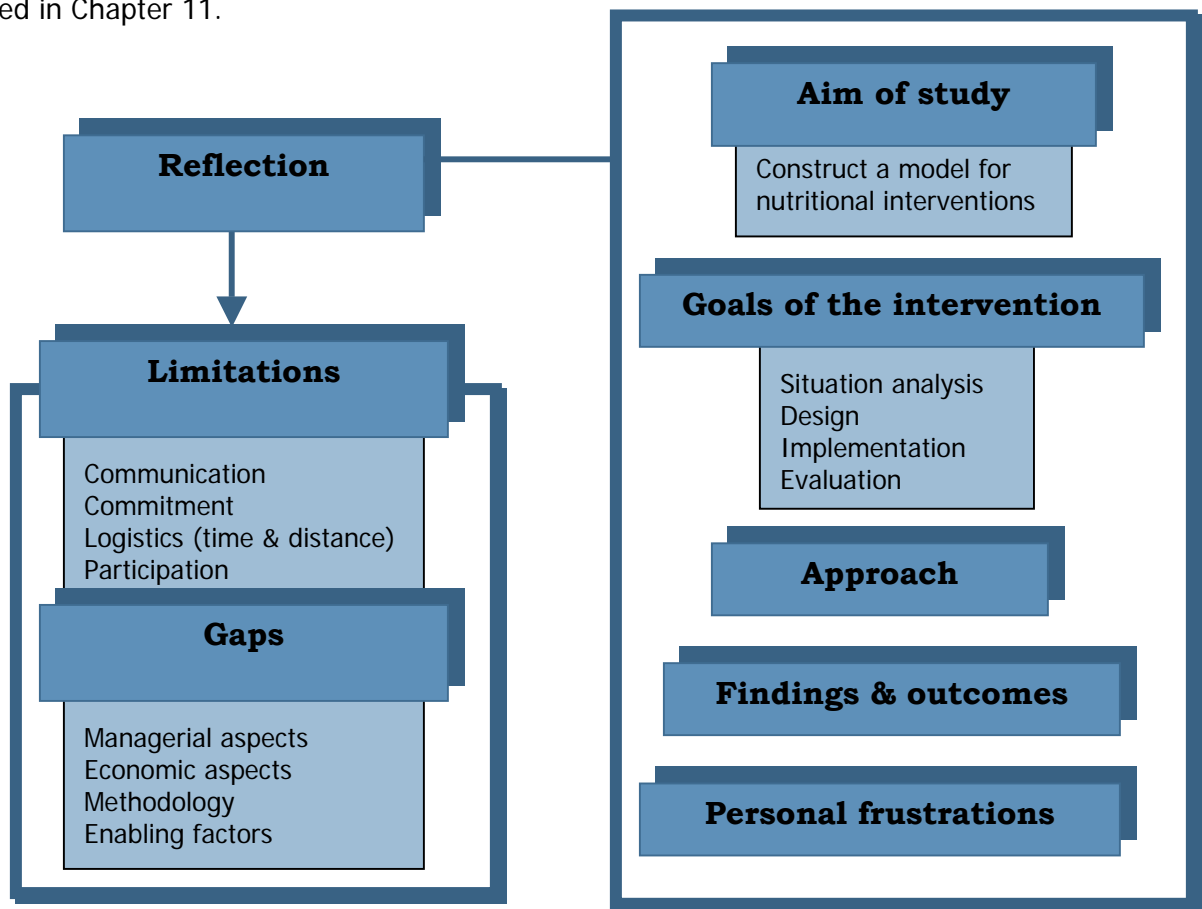


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## 9.1 INTRODUCTION

*“The process of analysis should not be seen as a distinct stage of research, rather that it is a reflexive activity that should inform data collection, writing, further data collection, and so forth. Analysis is not the last phase of the research process, but should be seen as part of the research design and of data collection” (Coffey & Atkinson, 1996:6).*

The logical, cognitive process followed in this chapter is outlined in Figure 9.1. First of all I felt it necessary to reflect on the originally stated aim of the study, the goals of the intervention, the approach used and ultimately the findings and outcomes. I have also shared some personal frustrations. These reflections led to the identification of certain limitations and gaps in the study. The particular delimitations are also highlighted. Possible solutions to the identified limitations and gaps were incorporated in the constructed model (presented in Chapter 10). Insights were also gained, which directed the list of lessons learned and recommendations for future research, discussed in Chapter 11.



**FIGURE 9.1: OUTLINE OF CHAPTER 9**

## 9.2 AIM AND GOALS

The aim of the study was to devise a model suitable for nutritional interventions in rural communities on commercial farms. More specific goals were to understand and describe the specific nutritional needs and problems on a commercial farm and to address these needs and problems by designing and implementing effective, relevant nutritional interventions. Further more, I wanted to evaluate the process and the outcomes of this intervention. This sequential process was structured and applied to a particular community in order to devise the model. This model was theoretically validated with current findings on the local situation, which were extended through comments from specialists in the various related fields and comparisons with findings from other studies reported in the literature.

Other goals were to strive for community ownership of the intervention, to render support to the participating members, to mentor degree-based training of post-graduate students and to strengthen capacity building at community level through improved nutrition, better health, and better quality of life. The goals of the intervention to be discussed here are set in terms of the four procedural phases. Each goal (specific phase of the intervention) constituted various objectives. Each objective is mentioned followed by a statement on the degree to which the objective (s) were attained. A brief discussion follows.

### 9.2.1 Phase 1

The objectives for the first phase (**situation analysis/needs assessment**) were the following:

1. Explaining the overall aim of the research study to all involved stakeholders (e.g. farm owner, community members, other farm workers like managers, health and agricultural workers from local government)
2. Obtaining consent and commitment from all involved stakeholders
3. Describing the nutritional situation
4. Identifying specific nutritional problems
5. Assessing the various identified nutritional problems
6. Executing further inquiry into the assessed nutritional problems
7. Translating those problems into felt/real but addressable needs
8. Identifying the most appropriate means and strategies for intervention
9. Establishing a basis for the designing of a suitable intervention

I can say with confidence that these objectives were fully attained. I want to emphasise that other related information can also be gathered, depending on the anticipated problems or interests of the participating individuals, people and team. This could include food access (various resources, food production, preservation), food adequacy (safety, quality, quantity, diversity), stability and sustainability (coping strategies and safety nets).

### 9.2.2 Phase 2

The objectives for the second phase (**design**) were:

1. Presenting the identified needs and problems to the household and community members to reflect local values and agreement
2. Involving the household and community members in prioritising the identified needs and problems as far as possible
3. Identifying a key informant in the community in agreement with the attending community members, to assist with the implementation of the intervention
4. Developing clearly conceived goals and objectives for the intervention in collaboration with the involved participants
5. Designing the facilitation plan (strategies, messages, learning activities, resources and outcomes) for the intervention guided by the set goals and objectives
6. Choosing the most appropriate program format including procedures, methods, techniques and support material for implementing the facilitation plan
7. Designing the evaluation plan in terms of process and outcome.

The first three objectives were fully met. To put the fourth stated objective into perspective, it must first be said that we were still at the starting stage of the intervention and the various involved partners were not acquainted with one another yet. Full participation would thus not be very realistic at this stage. Goals and objectives were developed, but not with full participation of the participants. Language problems were the primary barrier, which did set limitations to communication, understanding and construction of meaning. Although the field worker could speak the language and was accustomed to the culture, I am convinced that some information did get lost in the translation process. I was satisfied with the designed facilitation plan (fifth objective), the choice of program format (sixth objective) as well as the evaluation plan that was designed (seventh objective).

### 9.2.3 Phase 3

In terms of the third phase (**implementation**) the objectives were:

1. Preparing of the team, participants and the ambience to enhance learning
2. Conducting, coordinating and integrating the facilitation plan
3. Monitoring and giving feedback to the community
4. Revising and adapting the facilitation plan
5. Repeating and reinforcing the messages.

Reflecting on the attainment of these objectives: in my opinion the team was well prepared (first objective) in terms of the approach to follow and methodology to use; to the extent to which theoretical knowledge and limited experience allowed it. These were abstract and complex concepts and I was uncertain about the meanings that the participants assigned to these concepts. Conducting of the facilitation plan (second objective) could have been timelier and more regular, but time limitations of the involved team did not allow otherwise. Coordinating with the local health system was not successful, probably due to time constraints and limited resources on the side of the health personnel as well. It is however important for any community-based intervention to have the local health authority on board as a stakeholder. They could have made significant contributions in terms of reinforcing messages and sustainability.

Integration with the home vegetable gardening activities (in my opinion) were also not fully established and there is still scope for continuation in this regard. Drought and hail restricted the establishment of the gardens. The agricultural extension officer also did not do the follow-up visits as planned. A longer period of involvement could have tightened the link between vegetable gardens and nutritional status. Although a nutrition education session was held, it should have received more emphasis. Full integration is also needed to enhance the credibility of the research team and to establish a long-term partnership. Although monitoring (third objective) was done regularly, no established system was in place, which would have made the evaluation process easier to perform. Such a system, however, was not stated as one of the goals of the intervention. Feedback was given regularly to the community on a satisfactory level for both parties involved. The program plan did not need to be revised and adapted (fourth objective) in terms of strategies or methods used. Repeating of messages occurred at three different intervals, and recognition, praising and incentives reinforced all the observed, improved hygiene practices – meeting the fifth objective.

#### 9.2.4 Phase 4

Objectives set for the fourth phase (**evaluation**) were:

1. Assessing the implementation of the interventions in terms of the pre-set goals and objectives (process evaluation)
2. Determining the outcomes of the interventions as it occurred in the targeted commercial farms in terms of improvement of hygiene and sanitary practices (outcome evaluation)
3. Empowering household and community members (females specifically) as active participants in program planning, implementation and evaluation
4. Enabling household and community members to critically analyse their own particular situation and problems
5. Establishing community ownership of the intervention.

The process that was followed during this intervention (first objective) was much more important to me than the actual study and results attained. This process provided opportunities for the research team to learn more about implementing PAR in rural communities, to learn from the community itself and applying that knowledge into a constructed model for future projects. These experiences are summarised into a set of lessons learned (see Box 11.1).

Criteria for process evaluation included encouragement, motivation, participation and collaboration of the participating community members. It further involved aspects of the planning process, participant learning and program structure (format, content, instructional method). The underlying idea within the process was to use the people's existing values to promote safer hygiene and sanitary practices. This is because a better quality of life, self respect and respect from neighbours, convenience and cost saving are stronger motives than disease avoidance. Most of the participants (n=21) were enthusiastically participating in the planned activities. The participants expressed being encouraged and motivated to implement the stated hygiene and sanitation practices and conditions; being capable to keep up with the practices and conditions because it did not involve a large proportion of money, time and effort; as well as personal benefits from being part of the study like cleanness and well-being.

Criteria for reaching the second objective were safer hygiene and sanitation practices and improved hygiene and sanitation conditions, which included implementation of the seven summative core messages. Outcome evaluation was only done on a limited scale, because the effect on nutritional

and health status of community members will only become evident after a longer period of time. A received set of educational material regarding hygiene and sanitation (in the form of posters) were used as reminders to continue with the implementation of the promoted practices and conditions. All the participants expressed the intentions to perform the desired behaviours but only 83% (n=18) managed to do so. Improvement in hygiene and sanitation conditions did occur within the community, although it was not statistically significant (see 8.3.1.4). New pit toilets were also constructed – one for the use of small children and two for households that did not have any previously.

Empowerment (third objective) involved the setting of opportunities to enable participants to identify their own problems, to facilitate the research process and to implement strategies toward achieving positive change. Although the community members participated in the study and intervention, it is important to realise that participation in itself do not foster empowerment. Participation can only be served as a manipulative tool towards empowering people (Kleiner, 2002:4). In this study, participation was only in its initial stages and full empowerment was therefore not visible yet. To measure how much participation and empowerment was achieved remains a subjective assessment (Babbie & Mouton, 2001:317).

It was very problematic to enable the participants to analyse their own situation critically in order to create solutions to improve their quality of life (fourth objective). All they could see was their immediate situation - poverty and misery. Very few had hope for the future in terms of their children getting a higher education and a well-earned job, earning more money themselves and improving their household quality and immediate environment. To a certain extent, ownership of the intervention was established (fifth objective). The possibility of being sustainable could have been increased if the whole community were involved. The men should have been included because they are the authoritative figures and could act as motivators of change. The children should have been included as they are not only the future generation, but also the most vulnerable. Poor hygiene and sanitation, feeding and care practices have the greatest impact on them.



### 9.3 APPROACH USED

I wanted to understand and describe the nutritional needs and problems of a rural community on a commercial farm. I had experience in community work and did participate and manage interventions in rural communities before. However, the PAR approach was new to the team and me as well as to the participants of the study. We all had to learn how to participate in making decisions. This learning process took place within the context of one specific need that was identified and addressed.

Intellectual knowledge is power and researchers need to transfer the ownership of knowledge to the participating community. When the research team withdraw from the community, the skills, experience and newly acquired knowledge should not be taken with them (Stoecker in Minkler and Wallerstein, 2003:99). A community-based research study done within the paradigm of PAR cannot only be seen as a research project. It is a social change project of which research is only one aspect. Research is only a methodological way to reach the particular goals as stated together with the participants. Action-orientated, community-based projects can only be conducted by academics that are willing to be participatory researchers; who are committed to transforming the social relations of knowledge production and to democratic participation in the research process.

When people are guided to identify their own needs and problems, to develop their own ideas, to discover their own plans and solutions, only then do they possess and put into practice what they have learned. The female adult group on Oranje farm was no exception. These people have a grounded understanding of their local conditions far beyond what researchers can gain, unless they live within that specific local community. Likewise, researchers bring with them skills and perspectives often not present in the local context, including knowledge about how to design and implement interventions and learning activities. This asymmetry in skills and local knowledge can be an important force in co-generating new understandings. The parties should engage with each other to make sense out of the situation (Greenwood & Levin, 1998: 118).

At the beginning of a research process, the outsider (researcher) makes decisions and teaches and trains local participants on topics that both consider important. At the same time, the outsider is responsible for encouraging insiders (participants) to control their own development process. It is the researcher's obligation to let go of the group near the end of the intervention. The researcher has to play the role of facilitator and change agent to initiate opportunities for participants to

develop the capabilities and skills in order to take control and direct the ongoing developmental process according to their own interest (Babbie & Mouton, 2001:317). For participants to become active players in a change process, they must be allowed and supported to exercise power. The initially asymmetrical situation between participants and the researcher can be balanced only by the transfer of skills and knowledge from the researcher to the participants and the transfer of skills and knowledge from the local participants to the outside researcher. In the end, the process must be handed over to the participants (Greenwood & Levin, 1998:119).

During the co-generative processes to solve identified needs and problems, the participants learn new things about the problems they are facing and often revise their understandings in fundamental ways. The outcomes of this collective process also support the creation of new-shared understandings. The larger this shared grounds, the more fruitful the communication has been and the greater the likelihood is that further insights can be developed through reflection and actions based on this shared knowledge. This in turn can open up new ways of formulating problems, and thus result in ongoing learning from all parties.

In an ideal world, groups for whom the research is meant to benefit would always initiate PAR. In South African rural communities, this is rarely the case. Having limited or no access to formal education, the great majority remains illiterate. People generally have a limited capacity to evaluate techniques that are most often derived from acquired beliefs immediate observations. A further hindrance to PAR derives from the cultural ambiguity of participation. From a Western perspective, participation involves the open exchange of arguments and ideas. It sanctions the right to question, and it legitimate the prerogative to be different, to conduct experiments and to make mistakes. In many rural regions in sub-Saharan Africa, direct questioning and open dialogue among different subgroups are shunned and experimentation and mistakes are regarded as conveying unacceptable risk. Where people have been previously manipulated by other more powerful forces, intervention by outside researchers, even those espousing principles of dialogue and participation, is likely to generate suspicions or deep concern (Chambers, 1989).

For researchers, PAR in rural African communities poses an enormous challenge. Researchers have to strive to assume some skills normally related to ethnography and community development work. They must be able to identify those individuals with whom collaborative work will be most effective. They must also determine the forms of relationships that can simultaneously accommodate prevailing socio-cultural norms and the objectives of participatory involvement in applied research.

Researchers must furthermore establish relations with people in order to learn and teach together on an equal footing. As catalysts of a novel exercise, researchers must also know when to comply to the suggestions of the people, where these are feasible and appropriate. If these suggestions are not, researchers should explain the foreseen difficulties and shortcomings and then negotiate alternatives (Maclure & Bassey, 1991:191).

Community participation builds and strengthens the capacity of community residents to address future health risks, through education, outreach and training (Smith & Smitasiri, 1997). This study was committed to conducting research that would benefit the participants either through the direct intervention or by using results to inform action for change (Swanepoel & De Beer, 1997:5). Remedial action must be taken. The refinement of culturally sensitive educational and participatory processes depends on further experience in community-based interventions.

#### **9.4 FINDINGS AND OUTCOMES**

*“Relevant actions to solve the problem at hand are the first outcome of an action research process”* (Greenwood & Levin, 1998:85).

Findings from the needs assessment were prioritised and incorporated in the design and implementation of relevant interventions. Findings from the evaluation phase were incorporated into the constructed model discussed in Chapter 10. The outcomes of the research study as stated during the research design (Chapter 3) were:

1. A generic model for nutritional interventions in rural communities on commercial farms
2. A basic field of knowledge regarding household food security on commercial farms in South Africa, including academic knowledge and local knowledge (also referred to as traditional/insider wisdom and expertise)
3. Improved household food security as experienced by adult female community members
4. Socially meaningful research results (as experienced by the participants)
5. A detailed dissemination report (as evaluated by the study leaders and external examiners)
6. A set of educational material regarding identified needs for each household in the community
7. Publications as a means to communicate research results to international and national health, economic development, and/or environmental policy-makers, academics and the public

8. Community ownership of the intervention
9. Support, mentoring and degree-based training of students from previously disadvantaged communities
10. Capacity building through providing opportunities for interested scientists for career development in the health, environment and social sciences, with specific reference to the methodological tools in use
11. Strengthened capacity at community level through improved nutrition, better health, lower medical cost, improved learning abilities, productivity, and better quality of life.

These outcomes were reached in the following way:

### **First outcome**

The model was developed, verified and adapted (see Chapter 10). This model can be considered a tool for researchers to use during the modus operandi of community-based nutritional interventions, specifically in rural areas on commercial farms. It represents a holistic, transparent picture of all the components and elements to consider and can therefore be applied in any other context, addressing different needs in rural communities as well as other aspects arising. The model as such is too comprehensive to be quantitatively tested on other commercial farms, but should rather be qualitatively verified through various applications in different contexts.

### **Second outcome**

A basis of academic and local knowledge on nutritional situations on a particular commercial farm in South Africa has been established. This basis will be expanded when future studies are implemented on other commercial farms. Various cultural groups can then be compared in terms of nutritional status and factors influencing that. This study was also seen as a pilot study for one of the research focus areas of the Foods/Nutrition section of the Department of Consumer Science in collaboration with the Centre for Nutrition. The basis has been established and verification of alteration can now commence.

### **Third outcome**

Community members did not experience an improvement in their household food security status yet. I foresee that to happen only over a longer period of time, when the home vegetable gardens with a stable yield are more established. Future projects addressing the other needs (dietary diversity and food coping strategies) will also add to increased food security.

#### **Fourth outcome**

The applied results of the research study could be considered as a way in which systematic knowledge is returned to the people in a material form. The active involvement of those who are directly affected by the intervention and who are considered the beneficiaries is essential for meaningful problem solving (Babbie & Mouton, 2001:319). The intervention did meet the needs of the participants and were compatible with their cultural values. Therefore it can be said that the intervention was agreeable with the participants and meaningful to them.

#### **Fifth outcome**

Two promoters guided this written thesis. At the time of publication, two external examiners will also have approved it. It is considered a detailed report of the conducted research study.

#### **Sixth outcome**

A personalised poster was constructed for each participating adult, female community member. These posters were designed and printed by staff from the Department of Telematic Learning and Education Innovation at the University of Pretoria. See Addenda B for a reduced-size example of such a poster.

#### **Seventh outcome**

To date a poster presentation on preparation work done for this study was presented at the 5<sup>th</sup> International Conference on Dietary Assessment Methods, 2003, Chiangrai Thailand. An oral presentation was accepted for the 20<sup>th</sup> Conference of the International Federation of Home Economics, Kyoto, Japan, 2004, with the title "Needs assessment – applied Participatory Action Research for nutritional interventions in a rural community in South Africa". I envisaged other presentations to follow at the following conferences:

- 18<sup>th</sup> International Nutrition Congress, Durban, South Africa, 2005
- 6<sup>th</sup> International Conference on Dietary Assessment Methods, Copenhagen, 2006
- 15<sup>th</sup> International Congress of Dietetics, Yokohama, Japan, 2008.

Chapter 5 was published (Green, Botha & Schönfeldt, 2004) and chapters 6 and 7 will be combined and adapted to article format and submitted to any of the following accredited journals for publication: '*Health Education Journal*'; '*International Journal of Hygiene Education*', '*Journal of Tropical Medicine and Hygiene*', or '*Journal of Nutrition Education and Behaviour*'. Chapter 8 will be

send to the *'Journal of Evaluation and Program Planning'* and an adapted form of chapter 10 to *'The Journal of Public Health'*.

### **Eighth outcome**

As mentioned previously, ownership of the intervention was established to a certain extent, but could have been done more so if the male community members were also included. They could have acted as the social pressure needed to motivate behavioural change.

### **Ninth outcome**

One student (Matla, 2004) finished her Master's thesis and two other students are still in the process of doing so. These students were supported and mentored by other involved study leaders and researchers.

### **Tenth outcome**

I hope that with this study, I have inspired other interested scholars and researchers to apply the methods, instruments, strategies and approaches developed during this study in similar studies in future times.

### **Eleventh outcome**

In my opinion, the nutritional situation of the people on Oranje farm could have been much more fully addressed. We could have made a more significant contribution to the lives of these people, had the other involved students also directed their research studies towards community development. In reflection, it was a disappointment to me that the other involved researchers and students could not all participate in attending to the needs of the community.

Nevertheless, we (the research team of this study) did serve as catalysts and facilitators of the process towards strengthened capacity on community level. This process included dialogue, joint research, and empowering people to take action in solving their problems. I know that we have contributed to the welfare and quality of life of the people living on Oranje farm. I am also confident that the aspects we have taught them will be remembered and carried over to the next generation.

## 9.5 PERSONAL FRUSTRATIONS

I felt enormously frustrated by not knowing exactly what was said during interviews and group discussions. Voice recordings were made and translated, but still I was left with the feeling of incompleteness. Something was missing and I was convinced that important information was left out. The people were also illiterate and I wanted to them to keep record of their experiences and perceptions on the intervention. Their personal judgements, reactions and impressions were mainly lost to me.

*“The question to be researched (problem statement of the study) must be of major importance to the participants or the process will go nowhere”* (Greenwood & Levin, 1998:116). In retrospect, the issue that were addressed in this study (hygiene and sanitation) might not have been that important to the community members. We as a research team were convinced that it was important to the community and we did go through efforts of convincing them of the importance. Although they understood what we were able to assist them with and agreed that hygiene and sanitation should be addressed, the question still lingered in my mind ... is it really important to them?

## 9.6 DELIMITATIONS, LIMITATIONS AND GAPS

For the purpose of this discussion the term ‘delimitation’ was seen as the boundaries or restrictions of the study, the term ‘limitation’ was seen as a restraint or constraint and a ‘gap’ was seen as a shortcoming or weakness.

The *delimitations* of the study were that it was restricted to a particular geographical area (North Eastern Free State province of South Africa), specific cultural group (South Sotho), specific farm (Oranje) and community members living on that farm. Certain *limitations* were already envisaged before the start-up of the study, as described in Chapter 3. These were problems regarding communication and the risk of losing deep-rooted meanings and linguistic nuances. Non-commitment of certain community members and stakeholders (farm owners, health and agricultural workers from local government), time available to conduct the study and logistics, such as the distance to travel to the community, were also constraints. Limitations of community-based interventions usually are the time necessary to discuss problems, co-ordinate decisions, plan and implementation, mobilise local resources, monitor and evaluate the processes and train people



(WHO, 1991; Ferrel, 2002). The Western concept of time is greatly influenced by the clock, whereas in African time, interpersonal relationships take precedence over everything else. Other limitations were the lack of infrastructure, especially in terms of transportation, which had an impact on access to resources like food and cleaning agents for the farm workers.

*Gaps* in the study and research design were identified in terms of managerial aspects (partnerships that were not formally formed), economic aspects (funding), methodology (instruments that were not sufficiently tested) and enabling factors that were not addressed. These four aspects are consequently discussed. Recommendations to bridge these gaps in future are discussed in Chapter 11.

### 9.6.1 Managerial aspects

In many countries worldwide, weak management is often cited as the reason for failure of interventions (Dennill *et al*, 2000:188). Weak management in this study was in my opinion due to a lack of formally documented partnerships. No written agreements were constructed, specifying the obligations of all the involved partners. Partners within this research study were the Agricultural Research Council (ARC), the Centre for Nutrition, the farm owner, post-graduate students and staff from the Department Consumer Science. The ARC was contracted to train and establish a vegetable garden as a demonstration plot, as well as a nursery for sweet potatoes on the farm. The Centre for Nutrition sponsored the study. Although a research proposal was presented before funds were allocated, the research team was not informed of any documented agreement. Even within the research focus area of the Department of Consumer Science, no documents were drafted and signed to indicate liabilities and commitments. Disagreement regarding the approach that was followed in this study also contributed to a *laissez-faire* attitude. Formalised partnerships could have enhanced the credibility and scientific judgement of the intervention.

### 9.6.2 Financial aspects

Closely related to the managerial aspects are finances. Funding is another aspect that can have a profound impact on the success of a research project. It took us over two years to get a sponsorship for this study. Possible funders and sponsors need convincing arguments on the importance of investing in the project (intervention) at stake. The inexperience of the researcher and supervisors to obtain funding was the main obstacle in this process. Some other reasons were

the track record of the researchers in terms of limited publications in this particular field, and the fact that the research endeavour included information from the social, natural and health sciences. Such a combined approach could have weakened the success of the funding applications. Two questions integral to applying for funds are - "whether the intervention should be done" (cost-benefit analysis) or "which intervention should be chosen" (cost-effectiveness analysis) (Phillips & Sanghvi, 1996:11; Weimer, 1996:43). A person with financial background should have been consulted to assist with these tasks in order to improve the funding application.

### 9.6.3 Methodology

Weaknesses in terms of methodology are described in terms of the specific instruments. In this study the instruments used were not extensively tested, validated and standardised. Most of the methods were qualitative in nature, but some instruments were constructed to quantify some of the findings. These were a hygiene-and-sanitation (HAS) knowledge test, HAS-behavioural scale and HAS-scoring guideline. The scoring guideline was also used as an assessment form for competitions. An activity sheet to identify certain illustrated 'domestic hygiene mistakes' were also designed and used. The instruments were devised from consulted literature (Ahmed *et al*, s.a.; Almedon *et al*, 1997; Billig *et al*, 1999:22; Curtis *et al*, 2000:23). Formally established agreements that define the concepts were used and agreement within the research team and with the study leaders was obtained. Theoretical validity can therefore be claimed. Theoretical validity was seen as consensus within the involved research team regarding the terms used to describe and understand the phenomena at stake (Maxwell, 2002:52).

There are definitely certain limitations in terms of reliability of the findings as well as in the description and measurement of the phenomena (hygiene practices and sanitary conditions) under study. These instruments, however, are considered a valuable contribution of the study to future research. The instruments are easy to understand and to implement and can be used as tools to assess the hygiene and sanitation situation in rural communities. It can also be applied to measure, understand and explain the success or failures of interventions in this regard.

### 9.6.4 Enabling factors

Another gap was the consideration of factors that could have influenced behaviour change – either positively or negatively. It is wrong to automatically put the blame for a failure of a health

education programme on a lack of interest or motivation. People may have the intentions to perform a desired behaviour but still not do so, which might be because of the influence of enabling factors such as time, money and skills. People are also influenced by various significant other people in their social network (parents, spouses, siblings, relatives, friends, employers, religious leaders, traditional healers and health workers) (Hubley, 1988:136). A person may have to balance out conflicting pressures from different people and conform to wishes of those most important to them. In this study these influencing people were the women's husbands or partners. They were not involved in the study but showed great interest. Insight from the field worker and key informant revealed that the men in the community should have been included in the intervention. Perhaps then more significant results would have manifested. I therefore speculate that the hindrance for some of the women in the community laid in this mediating factor, namely that their husbands/partners did not support them in the application of the desired hygiene practices and improvement of the sanitation conditions.

## 9.7 CONCLUSION

This intervention, even considering the limitations discussed, has shown the potential to positively impact in the lives of people in rural areas by improving hygiene and sanitation practices and conditions. The outcomes of this study were considered small steps in a long journey towards behavioural change, development and improving the nutritional situation on commercial farms. Although we all wanted a more significant improvement in hygiene and sanitation practices on Oranje farm, this research activity still did provide lessons through reflection and analysis, which make it possible to attempt further research. A foundation has been laid and I hope that the next step would be to apply the recommendations from this study to future projects within similar contexts.

## *Chapter 10: Constructing a generic model*



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## 10.1 INTRODUCTION

One of the stated outcomes of this study is a generic model that can be applied in nutritional interventions in rural communities (referred to as the *model* in this text). A model was seen as a framework of the process to follow within community-based nutritional interventions. The context within which the *model* was developed was a geographic, rural area on a commercial farm. It was a small-scale pilot study, with female adults as participants. The content revolved around the addressing of a particular identified need, which included the promotion of good hygiene and sanitation practices to members of this community. The *model* is considered a comprehensive framework and a visual representation of the process that was followed, namely situation analysis, design, implementation and evaluation. The users of this *model* were anticipated to be interested academic scholars and researchers. The *model* does not intend to be a recipe for action, but a guide to stimulate further intellectual cognitive activity. It is also not meant to constitute a final mould of steps, activities and methods, but it rather offers an overview of an intervention in process.

The *model* is based on the research study and is fashioned by interactions with the participants of the study as well as various literature sources. The reasoning for this was found in Coffey and Atkinson (1996:156) who stated that data is there to think with and to think about. Ideas about data should therefore go beyond the data. This reasoning was introduced by Charles Sanders Peirce (Coffey & Atkinson, 1996:156), which he called 'abductive logic'. Mouton (1996:74) also refers to it as 'diagnostic induction' or 'retroduction'. The aim is to present plausible explanations of patterns and regularities found in the data. It is an unconventional way of thinking that allows for a more dynamic interaction between data and theory. Analysis and interpretation go further than the mere technical categorisation and description of the data; it is rather found in those intellectual accounts that expand the data. It starts from a particular identified phenomenon, which is taken further by relating it to broader concepts. There is repeated interaction among existing ideas, former findings and observations, new observations and new ideas. The generation of ideas for the construction of this *model* did not depend on data alone.

This *model* was theoretically validated with current findings on the local situation and was adapted along the research process. Validation is an ongoing, emerging process based on applied evaluative research to conform for implementation in other communities on commercial farms. Modifications were in accordance with feedback from the participants, outcomes of

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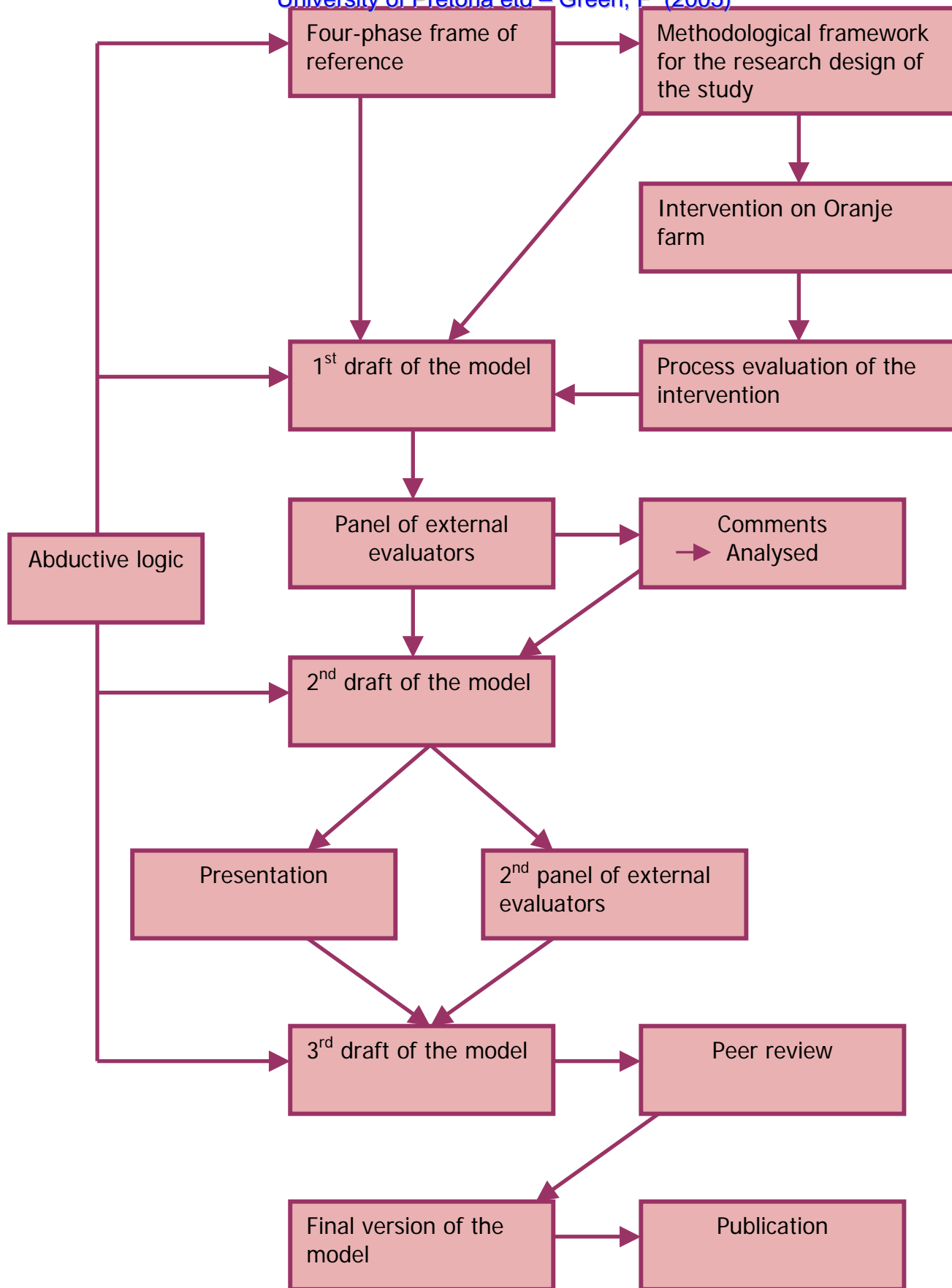
impact evaluation, expertise and recommendations of external evaluators and other stakeholders. Feedback from process evaluation further guides intervention modification, closing the feedback loop.

All models or frameworks need not consist of causal explanations. Many theories generated from qualitative research take the form of ideal types, that is, patterns or typifications constructed out of all the actual cases observed. They are intended to capture the key features of a given phenomenon without necessarily displaying all the particulars of individual cases. This was also the case in this *model* where the given phenomenon was the nutritional intervention. The *model* further internalised the process of Participatory Action Research (PAR) within rural communities, contributing to the body of knowledge on the relevance and success of interventions in rural communities within the realms of health and nutrition.

A great deal of flexibility is implied in the *model*, allowing modifications to be made where needed and as a result, the *model* became more focused. The activities included in each phase are not all-inclusive and additional ones could be added, as demanded by the application of the *model* within a particular context. Some of these ideas might be discarded in future and others modified, while others might be developed and documented more fully. The process is therefore never considered to be complete.

The process that was followed when devising the *model* is summarised in Figure 10.1. A literature search has been conducted and I decided to use a particular four-phase framework (Figure 3.1) as first building block. This framework was extrapolated to the methodological framework for the research design (Figure 3.2) on which the intervention on Oranje-farm was based. The intervention was evaluated in terms of process and outcomes and the relevant results were used to develop the first draft of the *model*. The development process was transformed into a slide show, which was electronically sent to external evaluators. The received comments were analysed and used to draft a second version. Abductive logic was again applied to add value to the *model*. The adapted *model* was presented to a group of attendees at a micronutrient-deficiency course as well as electronically mailed to a second group of external evaluators. Comments received were once more used to expand, adapt and verify the constructed *model*. This particular version will be sent for peer review before it is published.

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**FIGURE 10.1: PROCESS FOLLOWED DURING CONSTRUCTION OF THE MODEL**



## 10.2 FRAME OF REFERENCE

The first drafts of the *model* reflect a methodological frame of reference, which was also used as parameter for the research design of this study. The four-phase framework (as indicated in Figure 3.1) was extrapolated, in order to be applied as an interactive reference for the design phase of the intervention. This framework was selected from the vast array available to fit in with the values, preferences, and belief systems of the research team, as well as with the approaches integrated into the research design of the study. More criteria set for the choice of the framework were that it is action-orientated, address a number of components simultaneously, is flexible enough to be rearranged to suit the demands of a particular community, emphasise design (structured planning), reflects evaluative research and that it is not iterative. The frame of reference used in this study was chosen because I believe it to meet the above-mentioned criteria and therefore valid to meet the needs of the participative community. The framework also fits into a commonly accepted approach to rural community development, namely programme planning (as stated by Burkey, 2000: 42).

A phase-process to nutritional interventions is not new. Several researchers have constructed or used similar approaches calling it either steps or stages (Ahmad, 1995:254; Babu & Rhoe, 2002:365; Gillespie & Yarbrough, 1984:175; UNICEF, 1990). Similarities were also depicted with interventions that promoted agricultural extension (Düvel, 1991:70), hygiene (UNICEF, 1999a: 15) and adult education (Caffarella, 1994:18). Even within mechanical-, engineering- and construction-projects, certain phases are distinguished, often called the life cycle of a project (Adams & Barndt, 1983). In all these models and interventions it is clear that each of the phases (with its consecutive steps) were transformed into the next, and remained in operation throughout the life cycle of the intervention. Each phase thus contributed to the development of the successive phase until the decision is made to withdraw from the community or hand the intervention over to chosen representatives.

## 10.3 EXTERNAL EVALUATION

### 10.3.1 Data gathering

After construction, the *model* was sent out to 45 external evaluators considered experts in the field of nutrition intervention, programme planning or community development. The list of panel members comprised national and international experts, mainly those who were either known by my study leaders and me or cited in the thesis. This method is also known as the Delphi-group

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technique (Stuter, 2003), which was originally conceived as a way to obtain the opinion of experts without necessarily bringing them together face-to-face. The technique is iterative and aims to obtain a broad range of opinions from an expert panel. The *model* was presented as slide show using MS Power Point software. The various response levels are indicated in Table 10.1 and the responses summarised in Box 10.1.

### 10.3.2 Results

The various comments received were collated and summarised. Comments received were not shared with the rest of the panel members. The aim was to progressively clarify and expand on issues, identify areas of agreement or disagreement and commencing to refine the *model*.

**TABLE 10.1: RESPONSES OF EXTERNAL EVALUATORS FOR FIRST ROUND**  
(N=45)

Category		Comments received	Unable to respond	No response	Unknown address
Local academic institution	9	2	2	5	0
Other national academic institutions	11	2	1	8	0
National health/research institutions	4	2	1	1	0
International academic institutions	9	1	1	5	2
International health/research institutions	8	0	1	7	0
Private capacity experts	4	1	0	2	1
<b>Total</b>	<b>45</b>	<b>8</b>	<b>6</b>	<b>28</b>	<b>3</b>
<b>%</b>		<b>18</b>	<b>13</b>	<b>62</b>	<b>7</b>

The level of response was 18%. This low response rate can probably be attributed to the fact that because no explanatory notes were attached. People indicated various reasons for being unable to respond: no time available, other work priorities, not within field of expertise, and do not understand the purpose of the request. Limited experience in any of the relevant fields could have also contributed to the low response. The comments that were received, however, were extremely valuable and useful.

The *model* was streamlined and sent out for a second time. The co-supervisor of the study sent it to add some more credibility to the request. It was electronically mailed to 27 people, of which five responded. Six people of the second panel were also included in the first panel, mainly because we considered them as experienced and capable to give significant feedback on

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the *model*. A presentation on the *model* was also given at the Centre of Nutrition to attendees of a micronutrient-deficiency course, with another request for comments. Three more comments were received.

### 10.3.3 Data analysis and interpretation

The results were systematically organised (selected and condensed), displayed (see Box 10.1) and then incorporated into the *model* to add value, support or modify aspects of it. Wolcott (1994:36) describes this process as the threshold in thinking and writing “*at which the researcher transcends factual data and cautious analysis and begins to probe into what is to be made of them*”. The insights that were revealed during the evaluation process reinforced the choice of the various steps included and validated the contention that nutrition intervention is a long-term, carefully planned process with a consecutive interactive series of steps that builds upon each other. A further valuable output from the evaluations was the information generated with regard to future operationalisation of the *model*, which will require the correct mix of approaches, methods, steps and actions.

#### **BOX 10.1: SUMMARY OF COMMENTS AND OPINIONS ON THE MODEL FROM EXTERNAL EVALUATORS (n=8)**

Impressive. Entry through leaders of the community. Do not restrict to adults only. Conceptualisation of causes. Essential success factors should be considered. Feedback to the media.

Interesting. Very complex. Delete non-essential components.

Accentuate the cyclical nature of the model. Focus more on the active search for reasons of problems (analysis) instead of addressing problems. Stronger figuration of community participation, empowerment and ownership.

Logic. Difficult to deduct the type of intervention that will be addressed. How does it differ from other models?

Only a model of procedure. Not much is revealed about the content. Only needs have been identified as behaviour determinants. Will the programme therefore be effective?

‘Instructional plan’ and ‘transfer of learning’ do not reflect PAR. Report to stakeholders as well.

Thorough and well-reasoned. Some problematic issues. Reduce the information. Use simpler format.

PAR is not fully reflected. Some terms are very directive. Include the application of ethical principles.

Feedback should be received sooner from participants. Add important key persons (farmer). Include interdisciplinary peer review throughout the process.

Some explanatory notes should accompany it. Does not allow for nutritional measurements. Be more specific with the title. Avoid the term ‘personal’. What is the difference between literature study and theoretical base? Use ‘identify target’ rather than choose. Model has value but needs to be refined.

## 10.4 ADDED VALUE

A literature search was conducted with the aim of finding publications on other nutrition intervention models that could add value to the constructed *model* of this study. The emphasis was on the process and not on explanation of outcomes like the influence on nutritional knowledge, attitudes, skills, behaviour or other health impacts. The following criteria were formulated in order to consider a particular model useful, namely that it had to:

- Show visual presentation
- Use a phase-approach
- Be related to health and/or nutrition
- Mention context and content
- Be previously applied and tested
- Be comprehensively described.

Within this framework, a search for applicable models commenced. An electronic search was conducted using various search engines with the key words 'nutrition intervention model' to be included anywhere in the text of the publication. The facilities of the Academic Information Service of the University of Pretoria as well as those available on [www.ojose.com](http://www.ojose.com) were used. Apart from the electronic search, various text books in the field of community nutrition, health promotion and adult education were consulted.

A considerable body of literature was found. Those who were consulted are indicated in Box 10.2. These were screened in order to corroborate the interpretations and to check that interpretations, made when the *model* was constructed, are grounded in prior research and anchored in the literature. This approach was followed in a disciplined manner. The connotation of 'disciplined' implied rigor and care. Due care was exercised to ensure consistency and comprehensiveness in the screening procedures pursued.

The literature sources were also used as building blocks in the following way:

- Put various steps in order
- Provided meaning to empirical findings
- Provided an explanation for observed events and relationships
- Showed which variables are related and how they are related
- Provided new insight
- Stated a general uniformity beyond this particular *model*
- Enabled extrapolation from the known to the unknown

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- Verified the proposed *model*
- Stimulated and guided further thinking
- Provided a basis for refining the *model*
- Explored different ways to look at the *model*
- Revealed the various facets.

The following models found in the literature were regarded as applicable and valuable and were used to enrich and verify the *model*:

- A model for the promotion of complex innovations through programmed extension (Düvel, 1991: 70)
- A community nutrition paradigm (Endres, 1999: 71)
- Seven-step process for programme planning, implementation and evaluation (Frankle and Owen, 1993: 217)
- Community project development model (Gajanayake & Gajanayake, 1993: 7)
- A problem-based nutrition care process (summarised by Lacey & Cross, 2002: 582)
- ACADA model for communication programmes (UNICEF, 1999b: 13).

#### BOX 10.2: SELECTION OF PUBLICATIONS USED FOR VALUE ADDING

- ACHTERBERG, C & MILLER, C. 2004. Is one theory better than another in nutrition education? A viewpoint: more is better. *Journal of Nutrition Education and Behavior* 36(1): 40-42.
- ACHTERBERG, CL, NOVAK, JD & GILLESPIE, AH. 1985. Theory-driven research as a means to improve nutrition education. *Journal of Nutrition Education* 17(5): 179-184.
- AHMAD, M. 1995. Nutrition education and training programme model for evaluation and planning. *Evaluation and Program Planning* 18(3): 253-258.
- ANDRIEN, M. 1994. *Social communication in nutrition: A methodology for intervention*. Rome. FAO.
- BABU, SC & RHOE, V. 2002. Designing nutrition interventions with food systems: planning, communication, monitoring and evaluation. *Journal of Crop Production* 6(1): 365-373.
- BOTELHO, RJ & SKINNER, H. 1995. Motivating change in health behaviour. Implications for health promotion and disease prevention. *Primary Care* 22(4): 565-589.
- BUCHANAN, D. 2004. Two models for defining the relationship between theory and practice in nutrition education: is the scientific model meeting our needs? *Journal of Nutrition Education and Behavior* 36 (3): 146-156.
- CONTENTO, IR, RANDELL, JS & BASCH, CE. 2002. Review and analysis of evaluation measures used in nutrition education intervention research. *Journal of Nutrition Education and Behavior* 34(10): 2-25.

(continued)

**BOX 10.2: SELECTION OF PUBLICATIONS USED FOR VALUE ADDING**

(continued)

- ELDER, JP, AYALA, GX & HARRIS, S. 1999. Theories and intervention approaches to health-behavior change in primary care. *American Journal of Preventive Medicine* 17(4): 275-284.
- EWLES, L & SIMNETT, I. 1999. *Promoting health. A practical guide*. 4<sup>th</sup> ed. New York. Baillière Tindall.
- FRANKLE, RT & OWEN, AL. 1993. *Nutrition in the community. The art of delivering services*. 3<sup>rd</sup> ed. London. Mosby.
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- HOELSCHER, DM, EVANS, A, PARCEL, G & KELDER, S. 2002. Designing effective nutrition interventions for adolescents. *Journal of the American Dietetic Association* 102(3): S52-S63.
- HUBLEY, J. 1988. Understanding behaviour: the key to successful health education. *Tropical Doctor* 18: 134-138.
- ISMAIL, S, IMMINK, M & NANTEL, G. 2002. Improving nutrition programmes. An assessment tool for action. Rome. FAO.
- LACEY, K & CROSS, N. 2002. A problem-based nutrition care model that is diagnostic driven and allows for monitoring and managing outcomes. *Journal of the American Dietetic Association* 102 (4): 578-589.
- SAHYOUN, NR, PRATT, CA & ANDERSON, A. 2004. Evaluation of nutrition education interventions for older adults: a proposed framework. *Journal of the American Dietetic Association* 104(1): 58-69.
- SMITH, B & SMITASIRI, S. 1997. *Nutrition education for the public. Discussion papers for the FAO expert consultation*. FAO Food and Nutrition paper 62. Chapter 2: A framework for nutrition education programmes. Rome. FAO.
- THOMAS, J. 2002. Nutrition intervention in ethnic minority groups. *Proceedings of the Nutrition Society* 61(4): 559-567.
- UNICEF. 1999b. *Towards better programming. A manual on communication for water supply and environmental sanitation programmes*. Water, Environment and Sanitation Technical Guidelines Series - No. 7. New York. UNICEF.
- VAN DILLEN, SM, HIDDINK, GJ, KOELEN, MA, DE GRAAF, C & VAN WOERKUM, CM. 2003. Understanding nutrition communication between health professionals and consumers: development of a model for nutrition awareness based on qualitative consumer research. *American Journal of Clinical Nutrition* 77(4): 1065S-1071S.

(These references are not all reflected in the reference list)

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The findings were used to contribute to a number of features that an effective model for nutritional intervention should exhibit. It should hence:

- Establish successful partnerships
- Pilot test all measuring instruments
- Determine the factors which underlie a person's decision to perform or not perform a behaviour
- Concentrate on changing only those factors which are important for influencing changeable behaviour
- Promote actions which are realistic and feasible within the constraints faced by the community
- Build on ideas, concepts and practices that people already have
- Repeat and reinforce the messages over time using different methods
- Be adaptable and uses existing channels of communication
- Be entertaining and attract the community's attention
- Use clear simple language with local expressions and emphasises short term benefits of actions
- Provide opportunities for dialogue and discussion to allow learner participation and feedback on understanding and implementation
- Use demonstrations to show the benefits of adopting practices.

The comments from the external evaluators and the outcomes of the literature study were used to construct the final, comprehensive version of the *model*. The various phases and steps within the *model* are displayed in Figures 10.2-10.8. Each phase and step will first be discussed.

## 10.5 THE PROCESS FOLLOWED

The first building block was the frame of reference, which I called the ADIE-framework of the process that was followed namely analysis, design, implementation and evaluation. This framework was applied to the particular context of the study. Each consecutive phase of the process is separately illustrated in the *model* as illustrated in Figures 10.2-10.8. For clarity reasons, to enhance readability and to ease understanding, the pursued discussion is based on the process that was followed during the course of this study. Each phase and step is presented in terms of what has been done in this study (stated in past tense), proceeded by recommendations from external evaluators and insight gained from the literature (stated in future tense).



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Phase 1 (illustrated in Figure 10.3 and 10.4) focus on analysis, including (1) preparation and (2) contact-making followed by steps related to (3) data gathering on the situation and (4) transforming the gathered data. The focus in Figure 10.5 is on Phase 2 (design) with the consecutive steps of (1) formulating goals and objectives (2) designing a facilitation plan and (3) designing an evaluation plan. Implementation is the third phase (Figure 10.6) including steps of (1) preparing (2) conducting, coordinating, integrating (3) revising, which included monitoring and giving feedback (4) repeating and reinforcing. The designed evaluation plan (from phase 2) and information from monitoring activities is drawn upon to conduct Phase 4 (evaluation) (Figure 10.7), which consist of (1) data gathering – on the process as well as the outcomes of the intervention (2) reviewing the data and (3) reflecting on the data. Reflecting on data included dissemination to all the stakeholders involved, the participants, academics and the media.

### 10.5.1 Starting point

All interventions, studies, programmes or initiatives must have a starting or entry point, which can be multiple - a personal interest, a current stated problem in an area, and/or an existing need expressed by a particular community. A starting point shows the researcher in the direction of the group and context within which the intervention will be conducted. You can go out searching for a relevant community or a group (or even an individual) can approach you as the scientist/researcher/specialist in order to solve a particular problem or to assist them to fulfil a need. This group can be people living within the boundaries of a certain geographical area with the same interests, members from the same institution (church, school) with similar problems, or patients attending a community clinic reporting to have similar needs. If the starting point is priority within the specific country, a mandate, or a response to public outcry, and it is relevant to the involved institution's mission, it is an excellent rationale for proceeding with the intervention (CDC, 2001).

This particular intervention (and study) started with an interest in community nutrition and recently available results from a national survey indicating that malnutrition (specifically stunting) in young children living on commercial farms was significant (Labadarios, 2002). This starting point led us in the direction of a particular commercial farm, influenced by factors such as logistics and personal relations.

Attached to the 'starting point' were preconditions that related to the context within which this community-based intervention was devised, namely PAR and community-based participatory research (CBPR). Almost by definition, most nutritional interventions are 'community-based'

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(Ismail, Immink & Nantel, 2002:3). PAR, however, is not necessarily implicit in this definition. These are also seen as prerequisites to self-sustaining interventions.

### 10.5.2 Phase 1

Phase 1 (illustrated in Figure 10.3 and 10.4) focus on situation analysis, including (1) preparation and (2) contact-making followed by (3) data gathering and (4) transformation of the gathered data.

#### 10.5.2.1 Preparing

Preparations consisted of creating a theoretical base of knowledge, skills and expertise, setting up a research team (and task teams), writing a proposal and obtain funding.

Theoretical knowledge and practical experience was needed regarding the methodology as well as the content of the study. The literature was used as a tool for critical thinking and planning. Literature was consulted on a continuous basis as the intervention progressed. Literature studies and readings were therefore never considered a once-off activity.

The research team of this study consisted of three main members. I considered myself knowledgeable regarding the methodology and content and was experienced in terms of community nutrition, derived from previous work as a community dietician. The second team member was also knowledgeable about nutrition, and was included in the team because she was from the same culture and could speak the local language. She was also an enrolled post-graduate student at the Department Consumer Science. The third team member was an experienced senior researcher and very knowledgeable about the underlying philosophy and various approaches and theories included in this study. All involved team members were knowledgeable on the principles of the underlying philosophy that has driven the intervention. In this case, it was PAR combined with critical theory, adult education principles and evaluative research. Team members were also familiar with the process of programme design, implementation and evaluation. Other involved partners were knowledgeable about nutrition and agricultural aspects.

Stakeholders and partners should be recruited, selected and chosen to strengthen the efforts of the research team and to provide diverse perspectives and expertise (CDC, 2001). The size, resources and nature of the intervention should guide the specific components of the team as recommended by Ismail *et al* (2002:5). All involved team members were knowledgeable on the principles of the underlying philosophy that has driven the intervention. In this case, it was PAR combined with critical theory, adult education principles and evaluative research. Team

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members were also familiar with the process of programme design, implementation and evaluation.

The next part of this step was to construct a work plan and to outline the schedule, time frame and responsibilities. A research plan (intervention proposal) was written as the first step in ensuring the ultimate success of the intervention. The proposal was approved by the post-graduate committee of the Department Consumer Science of the University of Pretoria as well as the ethical committee of the Faculty. Included in this proposal was a work breakdown structure, as indicated in Figure 3.3. A research plan is a concise document that provides a clear idea of what the intervention is all about and should indicate the following aspects:

- What specific strategies are being considered for implementation
- Who will benefit from the intervention
- How the intervention will operate
- What the requirements are for effective implementation (Dennill *et al*, 2000:90).

A well-written, concise proposal is of paramount importance, since this document will be used to obtain funding and sponsorships.

#### 10.5.2.2 Contact making

Important key persons in the community, such as the farmer, shop owners, school principal and teachers were identified and contacted. The aim was to get acquainted with the people and to display empathy with and interest in the situation. Contact making had three main goals, namely:

- For the people to know and accept the research team for what they are and able to do
- To earn acceptance from the people
- To know and understand the people and their situation (problem, need, interests).

Contact making refers to either meeting the group or individual or entrancing the area. This could be a first appointment for negotiating access to a group, meeting the leaders or spokespeople who can be a tribal head, a town mayor, a community health nurse, the head of a school or any other person considered to be of importance in that community. For individual cases it can be a family member or friend of the actual person in need. In this study it was the farm owner.

Contact making can never be rushed. The involved parties had to accept the research team's bona fides before the intervention could commence. This was done through informal talks, friendliness, and a keen interest in the people and their circumstances and by just being

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available and present. Specific methods used were individual informal interviews, observations and group discussions.

Access can be a lengthy process, especially if there is power, money or politics at stake. It can involve in-depth discussions, motivations and negotiations. A draft, preliminary plan of action is necessary to use as starting point for discussions. Practical application of ethical issues is also very relevant and important during this step (as it is through the rest of the intervention). We, as the research team, did try to build trust and a partnership with the community. We showed empathy and respect and acknowledged their feedback and comments. Group discussions were held to clearly indicate to the community who we are and what we can do. The intervention idea was sold to the participants and they were convinced of the feasibility of the intervention as well as the benefits for them. A 'group leader' who acted as spokesperson and key informant was elected and decisions on the specific methodologies and approaches to be applied were also communicated.

#### **10.5.2.3 Data gathering**

The next step was to gather information in order to establish a basis for the intervention, identify ideas and to sort and prioritise these ideas. This was done in a structured way including various sources of data and data collection methods. Three types of data were gathered, namely contextual, nutritional and interventional. Contextual data was descriptive in nature and was needed to put the identified problem/need/interest and proposed intervention in a specific context. The next level of information focused on the specific nutritional issues at stake, which were anthropometrical, biochemical, clinical, and dietary information. Other related information that was gathered included food access (various resources, food production, preservation), food adequacy (safety, quality, quantity, diversity), stability and sustainability (coping strategies and safety nets).

What was called 'intervention information' was collected next. This involved knowledge, attitudes, practices and/or specific behaviours regarding the issues at stake. Methods deployed were group discussions, observations and feedback from a key informant. Recordings of all information were implied, which were needed as evidence to verify that the problem or need exists and to quantify the severity. The gathered data were analysed and interpreted in order to verify the decision regarding the need or problem to prioritise and to address.

Findings from the needs assessment should also be organised and prioritised based on criteria of importance and feasibility. This process should be tied to the context within which the

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research study is conducted. Rating identified needs and problems in terms of relative importance and relative feasibility will ease the overall and final judgement. Some criteria to consider are stated in Table 10.2

It is also necessary to identify the variables that might either assist or undermine the intervention's effectiveness. Problems as well as opportunities related to the intervention should be anticipated in order to respond appropriately to these potential influences (CDC, 2001). A common method of discovering factors that can help or harm an intervention is a SWOT-analysis in which you identify strengths, weaknesses, opportunities, and threats that might affect the intervention.

**TABLE 10.2: CRITERIA FOR PRIORITISING NEEDS AND PROBLEMS** (Sort as cited by Caffarella, 1994:89)

<b>Importance criteria</b>	<b>Description</b>
Number of people affected	An estimate of how many people would benefit if the problem were addressed
Contribution to goals	The degree to which addressing the problem will contribute to the attainment of the study aim and community's priorities
Immediacy	The degree to which each problem requires immediate attention
Instrumental value	The degree to which one problem will have a positive or negative effect on addressing other problems
Magnitude of discrepancy	The desirable size of the gap between the current situation and a more desirable one
<b>Feasibility criteria</b>	<b>Description</b>
Efficacy	The degree to which an intervention can contribute to addressing the problem
Availability of resources	The degree to which the resources necessary to address the problem would be available if it is decided that the problem should be addressed
Commitment to change	The degree to which those with vested interest (research team, participants and stakeholders) are committed to addressing the problem

Secondary data gathering was also valuable at this point. The literature was consulted on theories and approaches regarding planning interventions, extension, community development, nutrition education and behavioural change. A summary of theories and intervention approaches to health-behaviour change in primary care were found in Elder, Ayala and Harris (1999), which includes:

- 'Health Belief model'
- Cognitive/Information processing

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- Theory of reasoned action
- 'Social learning theory'
- Social support theory
- Behaviour modification
- Self-management model
- Transtheoretical or 'stages of change' model.

These models and theories can be integrated into the process of nutritional intervention, explaining and predicting behavioural change. Application of these models is widely published within the field of community nutrition (Achterberg & Miller, 2004:40; Dennill *et al*, 2000: 127; Endres, 1999:345; Glanz & Eriksen, 1993:82). The models and theories should be reviewed and applied as a guideline to the process of intervention planning.

#### 10.5.2.4 Transforming the data

Wolcott's (1994) term of transformation was adopted in this step. It refers to data management and expands beyond the mere description, analysis and interpretation of data. It includes verifying the findings with the participants, discussing and prioritising it, as well as analysing and interpreting. The process of analysis was not a distinct phase of the research process, but a continuous, reflective activity that informed and guided the processes of data collection, needs assessment, intervention planning, implementation and evaluation. Analysed data is also transferred to the designing phase. The bridge between the two phases within this step are therefore blurred and not set in cement.

The process of theorising refers to generating ideas and formulating themes for the design phase to follow. What were considered as ideas were substantial – it had to make sense in the particular context of this study. Some contemporary accounts of theorising are expressed in terms of 'theory building', where ideas are brought together and systematically ordered. It was an intellectual activity, which included speculation about the data, in order to create ideas, and to link the ideas with those of others. It was a conceptual move from the findings to a more general and abstract level of analytical thought. Theorising was therefore not seen as casual explanation but the translation of the identified themes and patterns into positively stated messages.

The focus was on tailoring the needs and problems and constructing it into relevant, effective and appropriate activities to improve the problem or address the need. It was called a 'nutritional' intervention, referring to the broad aspects that influence the nutritional situation and nutritional status of people. Such aspects include feeding practices, diseases, household

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food security, maternal and childcare, health services, environmental factors, education and information and poverty (Latham, 1997:9; UNICEF, 1992). The assessed factor in this study was hygiene and sanitation.

#### **10.5.3 Phase 2**

The design of the intervention was based on the outcomes of the situation analysis. The design was done logically with inclusion of goals, objectives, a facilitation plan (which included strategies, format, and available resources) and an evaluation plan. Realistic goals should be set in terms of a time frame that can contribute to an intervention's credibility. The objectives also form the basis of evaluation and are therefore key indicators of the success of the intervention. Designing and planning were done together with a key informant. She was actively involved in considering various options and constructing of plans. The participants further indicated and openly communicated their preferences, understandings and choices. A flexible and open design approach was therefore followed.

Strategies contained the learning activities and messages that needed to be conveyed. Consensus between all the involved stakeholders was needed in terms of all aspects included in the facilitation plan, in order to enhance success and efficiency. Learning activities were deliberate, strategic and practical. Messages within the facilitation plan needed to be field-tested to increase the likelihood that participants will respond positively to the messages. Testing is also needed to improve the messages' clarity, consistency, tone, or relevancy for the participants (CDC, 2001). A tangible product that contains the messages to be delivered was also needed. I decided on an educational poster to communicate and support the messages. The field worker participated in developing this teaching aid, to ensure that it was culturally acceptable. It was personalised by attaching a photo of each participant to her own poster. The focus of the posters was to change key behaviours as attained to the identified, prioritised needs and problems. Unsanitary practices and conditions (as observed and measured) were translated into seven core summative messages, which were imprinted on the posters.

The specific chosen educational tool also had to reflect the needs and wants of the participants, their literacy, entertainment preferences and main sources of information. Selecting and testing materials to find those most appealing and appropriate for the participants is at the heart of effective health communication (CDC, 2001).

The execution of the facilitation plan should be discussed with all the key partners involved. A weakness in this intervention is that I did not determine ways to maximise support and



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feedback from others like colleagues from the Department Consumer Science. Input from the key partners is also needed to ensure a successful evaluation plan. If you don't seek the viewpoints of stakeholders, the evaluation may overlook important elements that should have been evaluated. Or worse, evaluation findings may be ignored, criticised, or resisted because you failed to consider stakeholder perspectives (CDC, 2001). The evaluation plan consisted of criteria, indicators and methods for both process and outcome evaluation. It also included ways to analyse the evaluation data and reporting it back to stakeholders.

#### **10.5.4 Phase 3**

Implementation was done in four consecutive steps, with various activities involved.

##### **10.5.4.1 Preparing**

This step included the preparing of the research team and the recruited key informant in terms of content and messages to be conveyed. The content and messages were already planned and written into a facilitation plan. This was a necessary step to ease the learning process for the participants and to enhance their learning as far as possible. It also included training of the field worker and key informant regarding principles of adult education that were applied. A constructed set of principles (Green, 2002) was adopted, which included aspects applied to the adult learner, the learning situation (ambience) and the learning process.

##### **10.5.4.2 Conducting, coordinating and integrating**

Activities involved were the mobilising of resources, deploying of various strategies and the integration of the program with different other services in the area. Mobilising of resources (labour, skills, food, supplies, money, time, utilities, information, space and equipment) refers to all the arrangements that needed to be employed. Strategies refer to the specific activities that were planned. Strategies are usually selected to bring about behaviour change and should be mediated by local knowledge and contexts. Strategies can include information processes as well as the more conventional communication processes. Information dissemination is generally designed to inform unilaterally, for example through print and broadcast channels, where-as communication strategies use interpersonal, face-to-face channels such as group discussions, home visits, training and counselling (Smith, 1997). The issue, however, is no longer which channel to choose or which channel is best, but how to use a combination of channels to improve and support nutritional behaviours. Six different strategies were eminent, namely group information sessions, individual dialogue sessions, key informant trials, supporting a local tuck shop, competitions and educational support material. This intervention was integrated with a food-based strategy, which were mainly focused on home vegetable gardening.

### 10.5.4.3 Revising

Unexpected problems will almost certainly arise during the implementation phase. Managing these problems and seeing them as either threats or opportunities requires effective communication with partners and other stakeholders so that everyone is aware of adjustments being made to original plans (CDC, 2001). Revising the facilitation plan as well as the conducted activities also depends on a monitoring system. Although a particular monitoring system was not in place in this intervention, it is a definite weakness that has to be overcome in future interventions and is therefore mentioned here.

Monitoring was done through regular visits, to motivate behavioural change, to improve the intervention process and to ensure efficient addressing of the specified need (hygiene and sanitation). The monitoring activities were also fed into the evaluation phase, as discussed in Chapter 8. Regular monitoring of activities and strategies of successfulness was important to enable the team to adapt or change the action plan when and if necessary. A part of this step was also to document all findings, to provide evidence of positive or negative outcomes and to improve the communication and collaboration of the research team.

### 10.5.4.4 Repeating and reinforcing

The activities were repeated and reinforced until a satisfactory level of change, improvement or development was observed and measured. It was also very important to repeat the activities until the desired outcomes have been reached as well as a satisfactory level of improvement, as stated in the objectives.

## 10.5.5 Phase 4

The purpose of evaluation was to generate knowledge, to make certain judgments or to make certain applicable improvements. The process and outcomes of the intervention were monitored and evaluated concurrently. Evaluation helped to ensure that objectives are met and that the related intervention is implemented as intended. It also helped to determine which behaviours have been changed as a result of the intervention and the extent that the health problem itself has been affected. Objectives in this study were set for the participating adult female community members to practice after the intervention had commenced. These practices were evaluated by the research team according to set criteria and indicators and by using methods such as observations with field notes, group discussions and key informant feedback.

In a more practical sense, the process of evaluation can strengthen interventions in various ways, namely by:

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- Revising and fine-tuning the initial design to take into account new priorities and opportunities
- Recognising and reinforcing successful activities to encourage those responsible and keep up momentum
- Ensuring that the intervention remains tuned to community needs
- Informing decision- makers about realities at the local level to help them modify policies where needed (Rietbergen-McCracken, Simpson-Hebert & Wood, 1998: 120).

Evaluation can also contribute to high-quality partnership outcomes. Outcome evaluation can determine whether educational objectives were attained. Evaluation can also identify spin-off benefits like greater visibility, new opportunities, additional investments to extend the reach or scope of the original goal, and to enrich the expertise and experience of partners. Common features of successful evaluation are: integrating process and outcome; identifying quantitative proxies for qualitative events; using logic models to identify key process variables; using cumulative graphs to chart temporal changes; emphasising feedback cycles for programme improvements; and that it should be responsive to the cultures of key stakeholders (Lansing & Kolasa, 1996: 813).

One way to evaluate the success of a community-based intervention that combines intervention and basic research is to consider how well both the intervention and the basic research components are able to meet the specific aims and are able to do so in a way that is found to be respectful, beneficial and participatory to the partners involved in the intervention (Brakefield-Caldwell & Parker, 2000: 55). Evaluation also plays an important role as an empowerment tool. Effective projects are motivational as well as diagnostic. They energise participants and direct attention to what is working and what may be in need of some refinement. Evaluations provide information that documents effective practices but also focus on motivating partnerships to improve practices through identifying and overcoming barriers.

Various measures for evaluation can be used, for example improvement in dietary intake, health behaviour, and even functional improvements such as well-being. Changes in certain conditions like nutritional status, natural environmental awareness, and health care, can be measured as well as impact assessment regarding social and environmental aspects. Capacity building can be measured in terms of the number of completed research studies, involved scientists and career developments made. More relevant to the participants involved, capacity can be measured in terms of job performance. Personal ownership of the intervention should also be measured but can only be done so over an extended period of time.

### 10.5.6 Dissemination

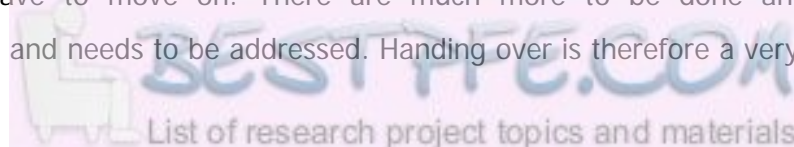
The community was continuously kept informed about the outcomes of the formal and informal evaluations. They were rewarded for whatever positive changes had taken place with either incentives or a celebrative event. The field worker was recruited to assist the other community members in keeping up the good work. Jenkins (1998:111) stated that, if needed, the intervention has to move into a second phase to incorporate additional changes. These would reflect the addressing of the other identified needs. Other postgraduate students were involved in these particular activities, and these needs were incorporated into their particular research studies. The media, however, were not included in dissemination activities.

Some extract parts of the study were prepared for dissemination among the academic population. Various electronic sources can also be considered for dissemination. It can be electronically forwarded to the global applied research network (GARNET), which has a topic network on hygiene behaviour and a working group on the promotion of sanitation. The Development gateway ([www.developmentgateway.org](http://www.developmentgateway.org)) can also be considered. This is an interactive portal for information on development issues, efforts and opportunities. The communication initiative on planning models ([www.comminit.com](http://www.comminit.com)) is another possibility for dissemination.

### 10.5.7 Handing over

Community-based hygiene promotion programmes are by definition long-term (Appleton & Van Wijk, 2003:30). This particular intervention was done between November 2001 and December 2004. Progress is a gradual process especially where no particular cohesion or leadership like steering committees exist. It was very difficult to decide when to terminate the intervention. The key informant indicated that the community do not want us to leave, for reasons of attention, feeling important and incentives that were received. Time was the main factor involved when the decision was made to withdraw. Another master's student will however, implement a product development study (showing them how to process the sweet potatoes from their vegetable gardens). The managers from the guesthouse on the farm were interested in continuing with some aspects of the intervention, especially the vegetable gardens. They were also committed to continue monitoring and motivating community members regarding the recommended hygiene and sanitation practices.

Researchers also have to move on. There are much more to be done and many other communities to help and needs to be addressed. Handing over is therefore a very relevant, final step.



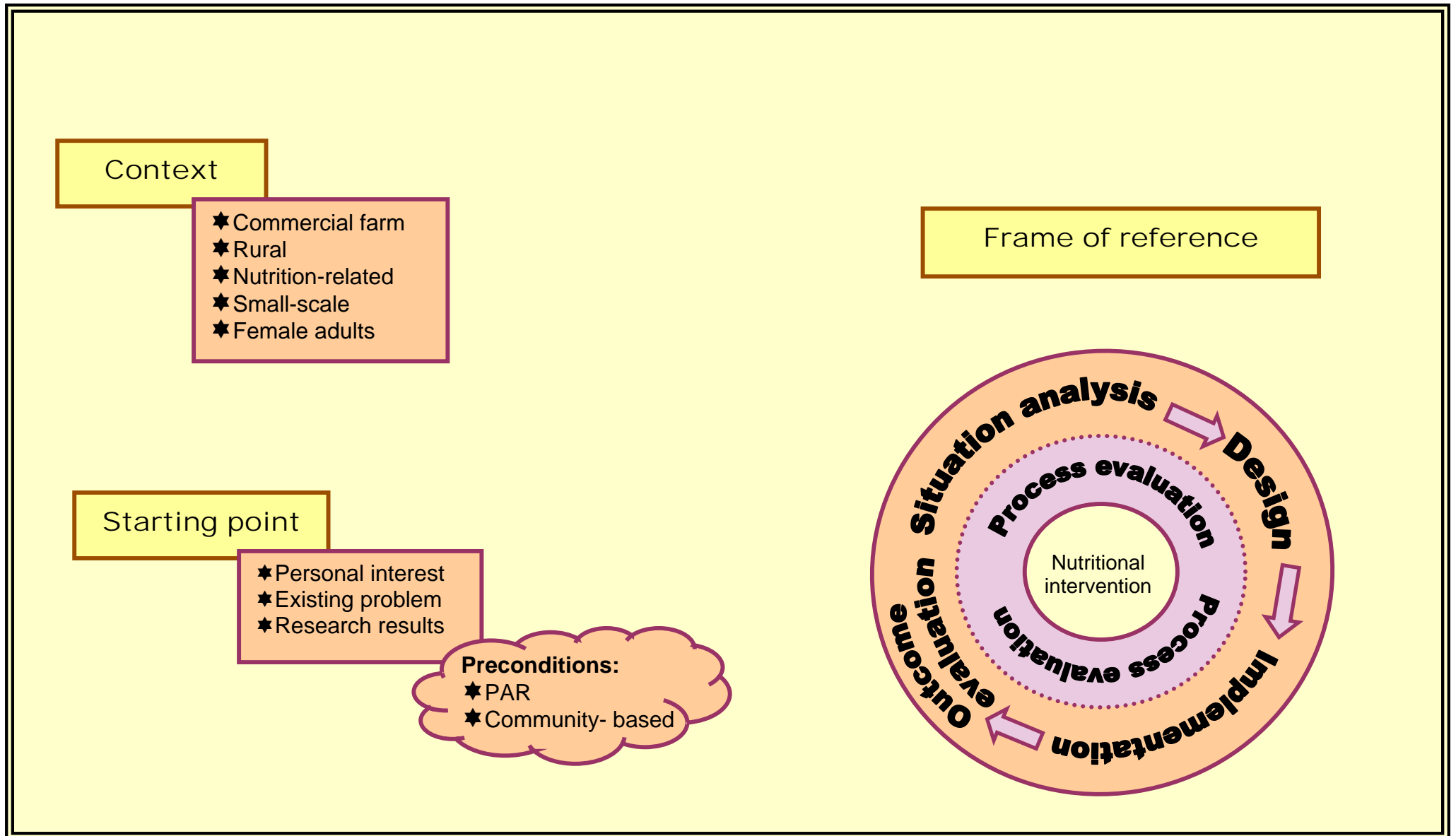


FIGURE 10.2: APPLIED FRAME OF REFERENCE

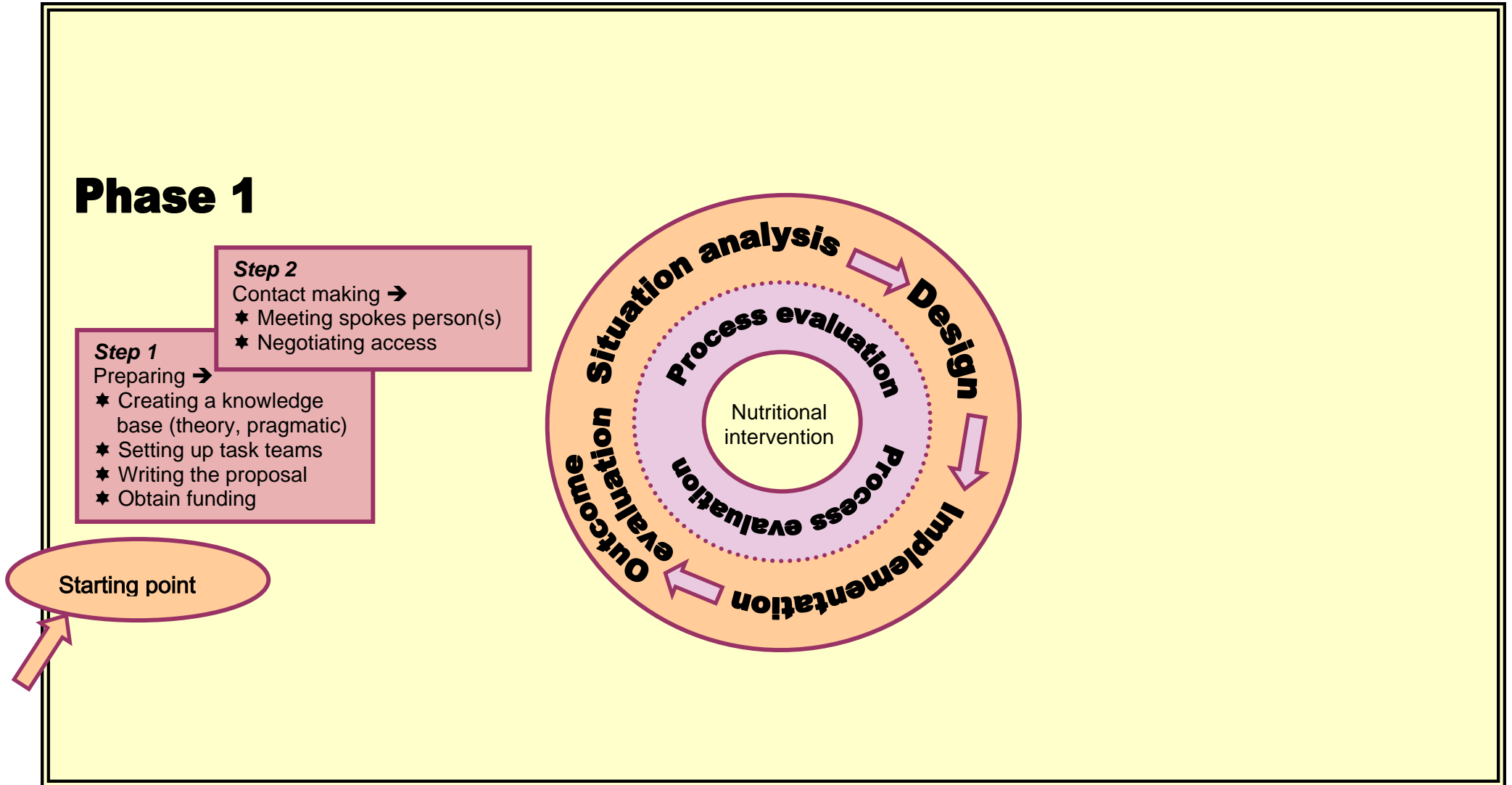


FIGURE 10.3: FOCUS ON SITUATION ANALYSIS (PHASE 1)

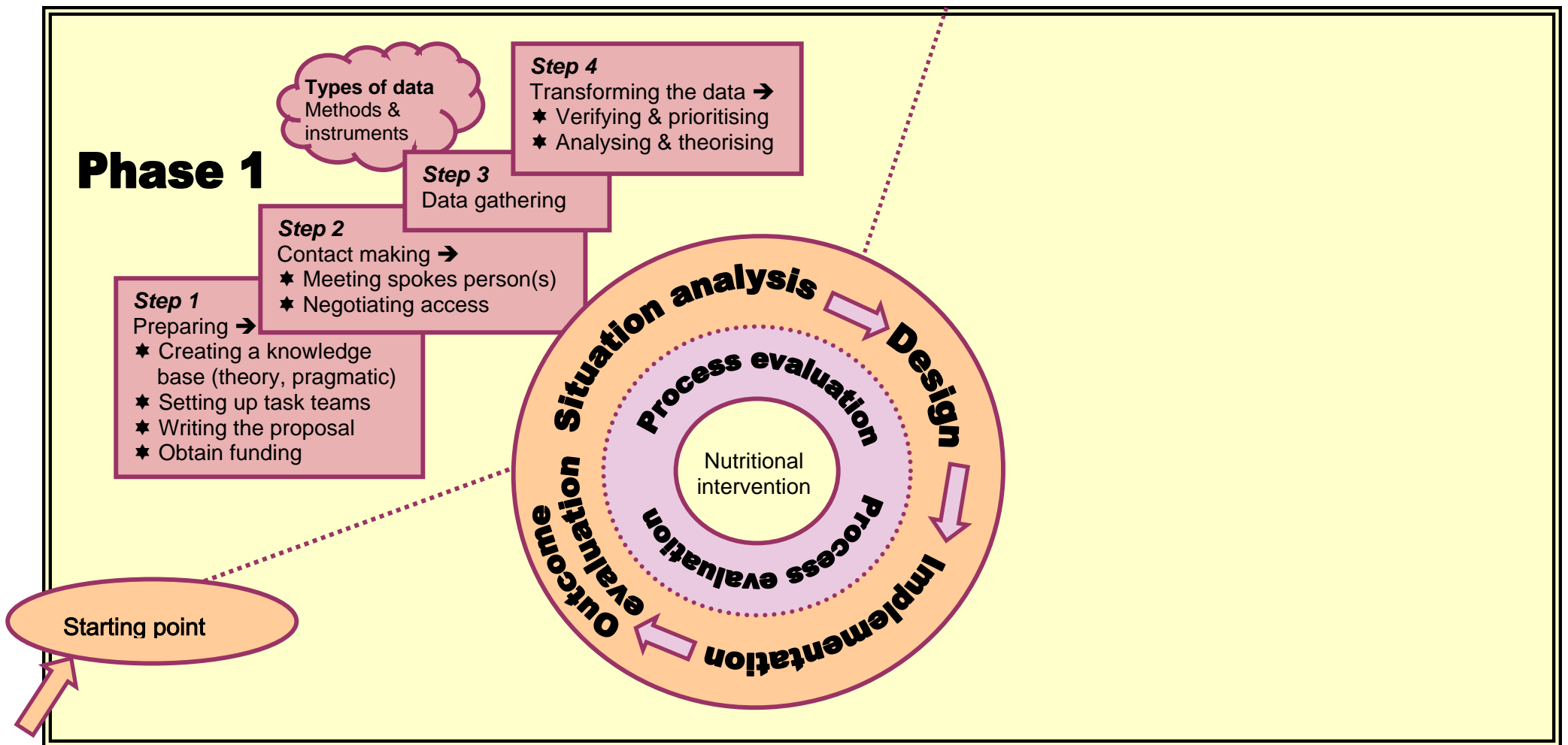


FIGURE 10.4: FOCUS ON SITUATION ANALYSIS (PHASE 1) (continued)



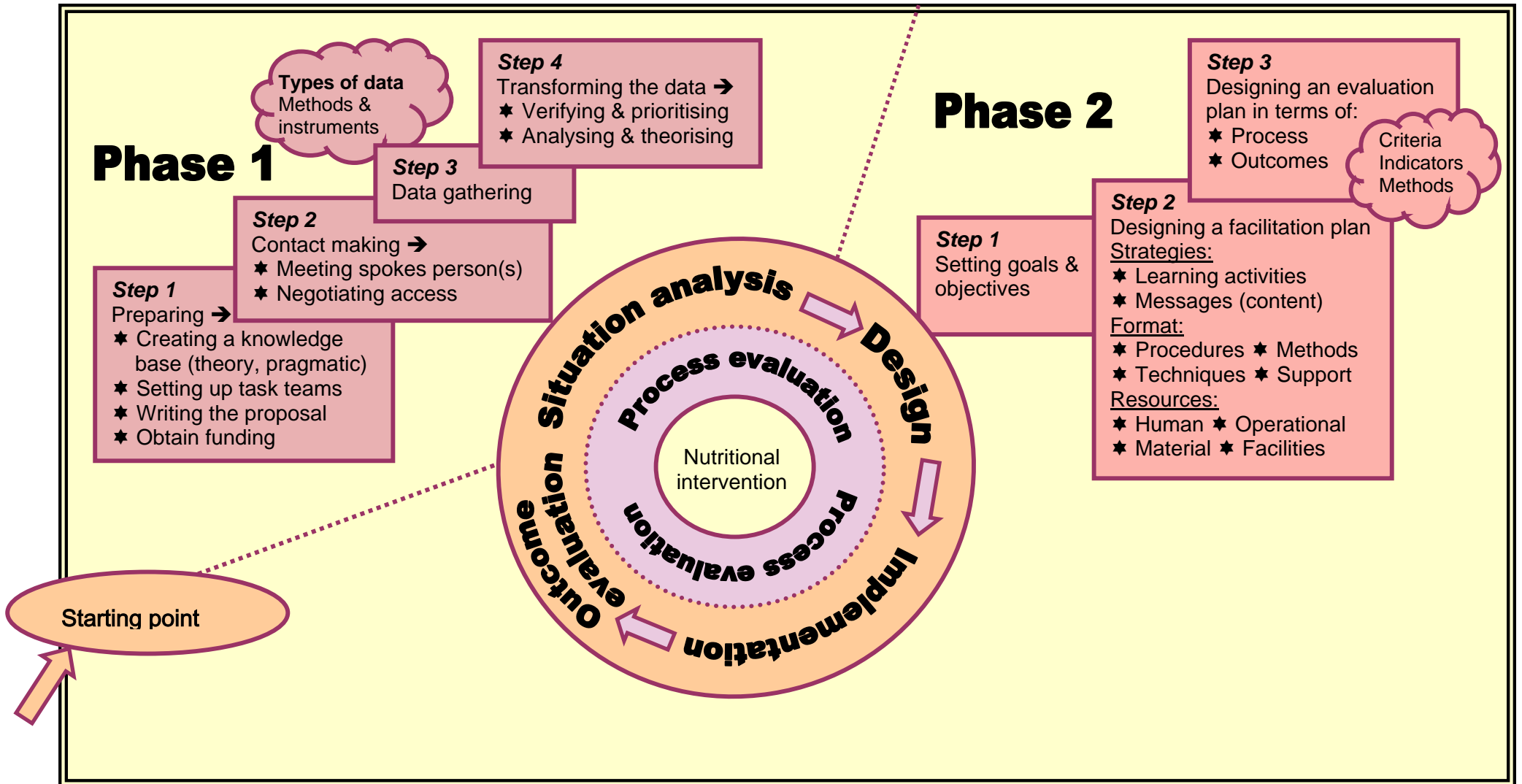


FIGURE 10.5: FOCUS ON DESIGN (PHASE 2)

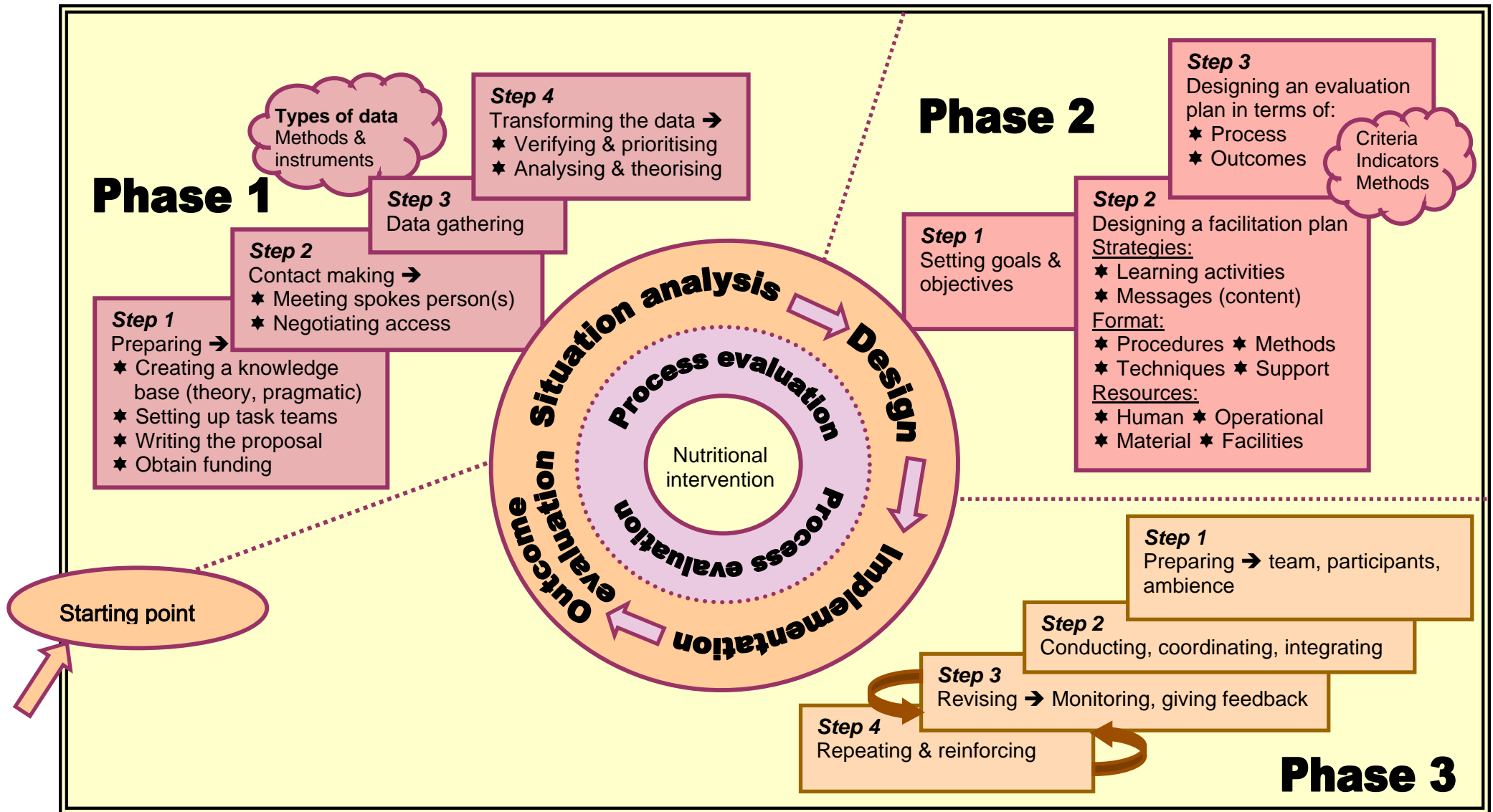


FIGURE 10.6: FOCUS ON IMPLEMENTATION (PHASE 3)

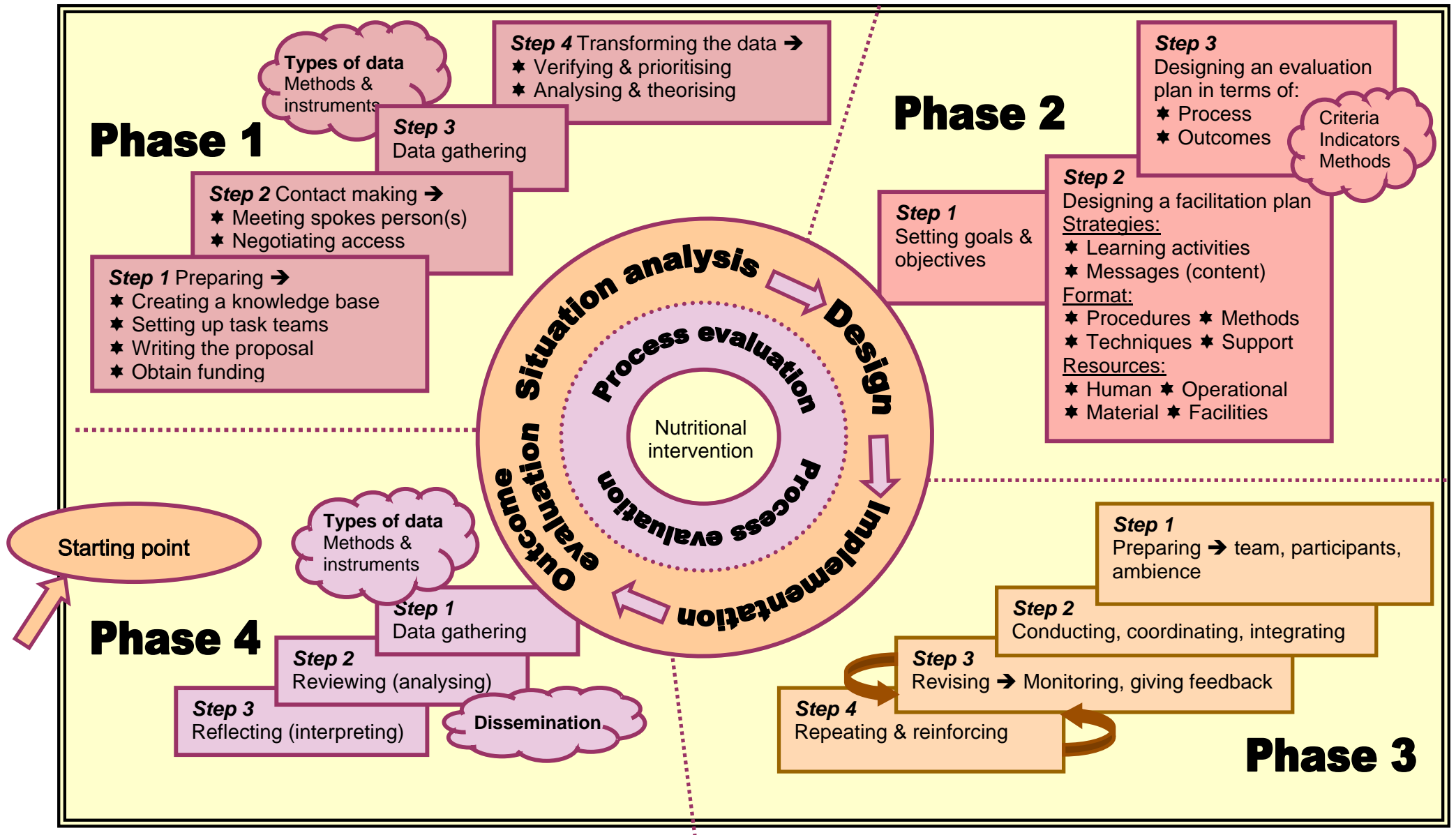


FIGURE 10.7: FOCUS ON EVALUATION (PHASE 4)

ADIE model for nutritional intervention

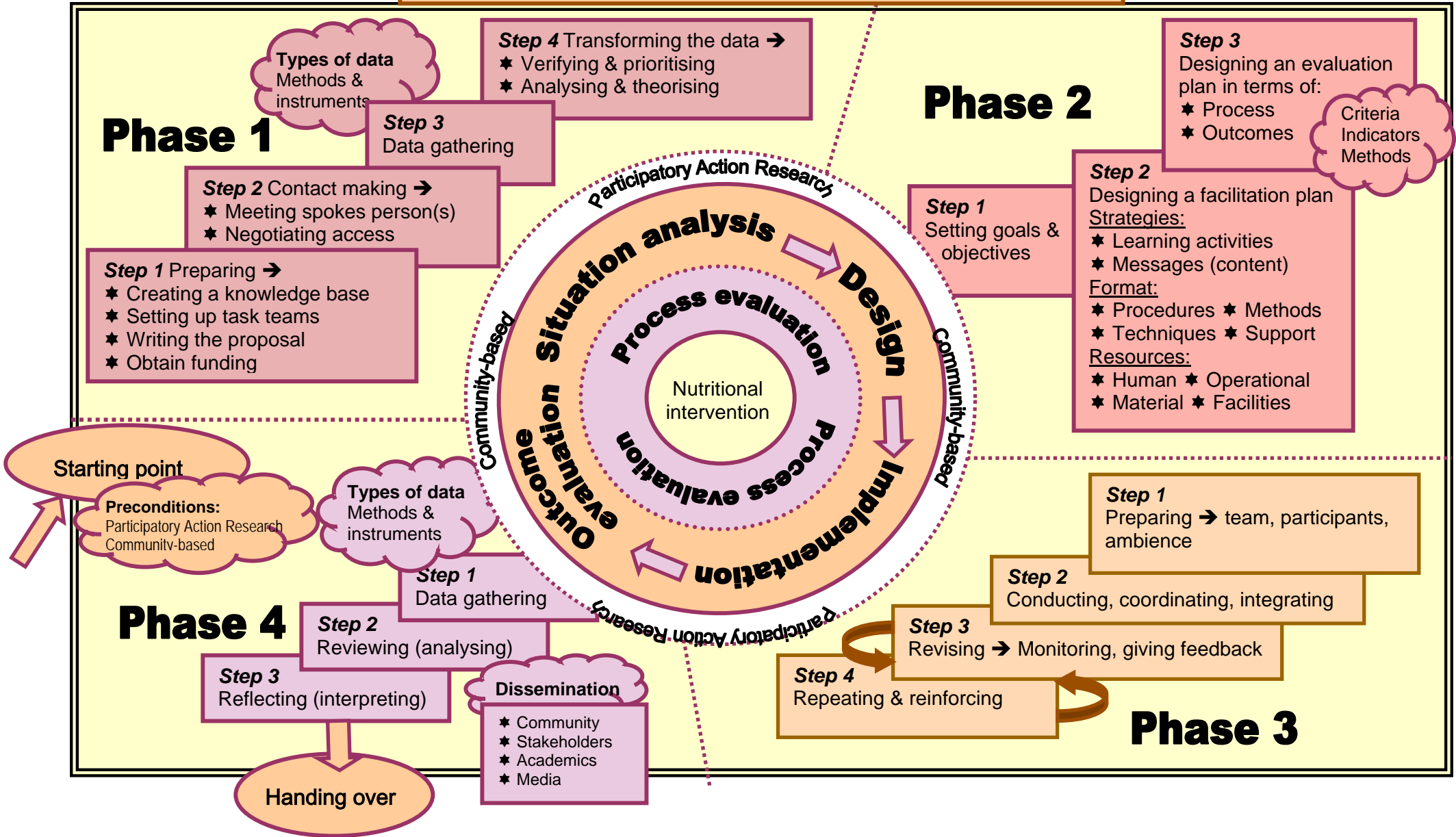


FIGURE 10.8: FINAL COMPREHENSIVE MODEL FOR NUTRITIONAL INTERVENTIONS

## 10.6 DISCUSSION

My thinking has expanded during the development of this *model*, eventually resulting in the proposed ADIE *model* as presented in Figure 10.8. The *model* was drawn from previously applied models and was grounded in research. It was further enriched with comments from a panel of external evaluators as well as specifically selected literature sources. In my thinking, this *model* can be considered comprehensive and ready for pragmatic testing in other commercial farms in South Africa. It can even be considered a methodological framework for a large-scale national project to improve the nutritional situations of farm workers and their families living on commercial farms. Testing within other settings (schools, work sites) and contexts (individual behaviour change) can also be considered.

This *model* is comprehensive and logical and can therefore be considered as a teaching tool for researchers and scholars. It is a practical, methodological framework that can be used as guideline for similar projects in future times. It addresses the entire continuum of processes involved in developing valid and reliable interventions for rural communities. It also provides a basis for managerial functions in order for better, more successful programmes to be developed.

Principles of evaluative research have been incorporated from the starting point to measure the success of the process as well as the outcomes of the intervention. A specific phase focusing on design has been included to emphasise the importance of proper planning based on the outcomes of the analysis-phase. The *model* also shows how and where research and action can be successfully combined with the participation of community members. Community-based interventions are not an iterative process to be continued by researchers, but a process that need to be handed over to the community for them to continue. This *model* clearly shows this point. This *model* should be chosen only if it fits in with the values, preferences and belief systems of the research team, as well as the approaches integrated into the research design of the study. Other criteria to consider are:

- Using PAR as research paradigm
- Assisting local people in their own problem-solving activities
- Rearranging the *model* to suit the demands of the particular community
- Addressing a number of components simultaneously.

As in the words of Blaise Pascal (1623-1662): “*Let it not be said that I have said nothing new... the arrangement of the subject is new*” (School of mathematics and statistics, 2003).



## Chapter 11: Conclusion

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*“If we could but know where we are now, and where we ought to go, we could better judge what to do and how to do it” - Abraham Lincoln, 1809-1865 (Applewood, 2003).*



## 11.1 INTRODUCTION

This study started with a certain rationale in mind, emerging from various sources and directions as indicated in Chapter 1. It was a personal, felt responsibility which were further embedded in global declarations by the FAO and the WHO as well as commitments made during the World Food Summit in 1996 and 2002. Results from the most recent 'National Food Consumption Survey' (Labadarios, 2000) also inspired the study and lead to the challenge to design, implement and evaluate a community-based intervention, specifically with the aim to address nutrition-related problems in a rural community on a commercial farm in South Africa.

The study was also a pilot project for the research focus area within the Food/Nutrition section of the Department Consumer Science in collaboration with the Centre for Nutrition in the School for Agricultural and Food Sciences. The research part of this study was an example of a scholarly effort based on sound research principles to show how a programme can be designed, implemented and evaluated. This study should be positioned within the context of a broader theoretical perspective, namely community development. Only one particular aspect of the nutritional situation on Oranje farm was addressed in this study, namely hygiene and sanitation. Many other factors that might influence the nutritional status of rural communities on commercial farms should be addressed similarly.

The aim of the study was not to strive for external validity (generalise the findings to other rural communities) but to internalise the process of research (specifically Participatory Action Research) within a rural community, contributing to the body of knowledge on the relevance and success of interventions in rural communities within the realms of health and nutrition. This process provided opportunities for the research team to learn more about implementing PAR in rural communities, to learn from the community itself and applying that knowledge into a constructed model for future projects.

This study has to be viewed against the background of community development, which in a broad sense connotes a process of social learning through people's participation in promoting self-reliance (Burkey, 2000:60). Within the context of this study, it refers to the process of assisting needy people within a specific geographical area (the community), to address felt needs and improve their lives for the better. A commonly accepted approach to rural community development was followed, namely to establish programmes, which were referred to in this study as the nutritional



intervention. The intervention was developed within the PAR paradigm, which also created opportunities to experiences and capacity building within this field. Nutrition intervention developed within the PAR paradigm is thinly spread and much more still needs to be learned. The lessons learned from this study should be seen as foundation on which similar interventions can be built.

## **11.2 VALUE OF THE STUDY**

The value of the study is found in its major outcome, the model that was structured as a visual presentation of a nutritional intervention in a rural area on a specific commercial farm. The other outcomes (as described in Chapter 9) can also be viewed as contributions to the research and academic community. More specific aspects that I want to highlight are expressed in terms of the nutritional situation on Oranje farm, empowerment of the participants, measuring of hygiene and sanitation as well as the educational material that were developed.

### **11.2.1 Nutritional situation on Oranje farm**

A particular need was identified, namely improper hygiene and sanitation practices and conditions. These were evaluated by the research team according to set criteria and indicators and by using methods such as observations with field notes, group discussions and key informant feedback. The participants expressed that they had been encouraged and motivated to implement the stated hygiene and sanitation practices and conditions. They also expressed personal benefits such as cleanliness and well-being as well as the intentions to perform the desired behaviours. The participants also expressed being capable to keep up with the practices and conditions because they do not involve a large proportion of money, time and effort. An improvement in hygiene and sanitation conditions within the community was observed (as shown by the results from the scoring guide).

The intervention did meet the needs of the participants and were compatible with their cultural values. Therefore it can be said that the intervention was agreeable with the participants and meaningful to them. The research team also acted as catalysts and facilitators of the process towards strengthened capacity on community level. This process included dialogue, joint research, and empowering people to take action in solving their problems. I know that we have contributed to the welfare and quality of life of the people living on Oranje farm.

### 11.2.2 Measuring of hygiene and sanitation

Four different instruments were constructed to quantify the findings on hygiene and sanitation. These were a hygiene-and-sanitation (HAS) -knowledge test (see Addendum C), HAS-behavioural scale (see Addendum D), a HAS-scoring guideline (see Table 6.2) and an activity sheet on domestic hygiene (see Addendum E). The instruments were devised from consulted literature (Ahmed *et al*, s.a.; Almedon *et al*, 1997; Billig *et al*, 1999:22; Curtis *et al*, 2000:23) and formally established agreements that define the concepts were used. Common agreement within the research team and with the study leaders was obtained. Theoretical validity can therefore be claimed. The instruments are easy to understand and to implement and can be used as tools to assess the hygiene and sanitation situation in rural communities. It can also be applied to measure, understand and explain the success or failures of interventions in this regard. These instruments are therefore considered a valuable contribution of the study to future research.

The HAS-scoring guideline structurally measures hygiene and sanitation practices by using three dimensions of personal, household and environmental hygiene. Indicators relevant to each of these dimensions were based on observations done during the needs assessment phase of the study, but also compiled from the literature. A score was attached to each indicator. A maximum of 10 marks could be scored within each category, revealing excellent hygienic practices. More than eight marks were considered to be very good, and between five and seven as good. A score of three or four were indicative of poor hygienic practices, and less than three as very poor.

An activity sheet to identify certain illustrated 'domestic hygiene mistakes' was used as a measurement and an instructive tool. This tool showed a drawing of a person preparing food in a kitchen. Certain bad hygiene and sanitation practices and conditions were illustrated. The activity was to find ten 'mistakes' in this drawing, relevant to hygiene and sanitation practices. After encircling the mistakes, self-assessment follows which can continue into a discussion. Throughout the process, the participants are encouraged to verify their findings, make comments, and differ from and teach one another. Each mistake can be discussed separately. In this study, the only mistakes identified by all participants on both occasions (needs assessment and evaluation) were the presence of the cat in the kitchen and the overloaded dustbin with flies. The key informant's comment on this particular finding was that none of the community members own a cat and that everybody dislikes flies. She also reported that some participants had struggled with the interpretation of the picture. This picture should therefore be further adapted, refined and tested.

### **11.2.3 Educational material**

A set of educational material regarding hygiene and sanitation (in the form of posters) were promoted in this study as reminders to continue with the implementation of the promoted practices and conditions. The messages on these posters were clear, simple and relevant to the particular community. The focus of the posters was to change key behaviours. Unsanitary practices and conditions (as observed and measured) were translated into understandable messages, which were imprinted on the posters. An example of such a poster can be seen in Addendum B.

### **11.2.4 Generic model**

The model is not an exhaustive mapping of different theoretical perspectives, but a visual presentation of the process to follow in order to design, implement and evaluate community-based nutritional interventions. It is a framework wherein action can be taken methodological and systematic. It is not a recipe for action, but a guide to stimulate further intellectual cognitive activity. It is also not meant to constitute a final mould of steps, activities and techniques, but it rather offers an overview of an intervention in process. The model also reflects on the intervention as it was planned and implemented within the context of a specific commercial farm. Some of the ideas proposed in the model might be discarded in future time and others modified; others might be developed and documented more fully. The process is therefore considered never complete.

This model is comprehensive and logical and can therefore be considered as a teaching tool for researchers and scholars interested in community development. It is a methodological framework that can be used as guideline for similar projects in future times. It can be differentiated from other proposed models in terms of the inclusion of the evaluative and design phases. The evaluation phase was considered an effective way to measure the success of a community-based intervention that combines intervention and basic research. It took into account how well both the intervention and the basic research components are able to meet specific aims and are able to do so in a way that is found to be respectful, beneficial and participatory to the partners involved in the intervention. The model therefore incorporates principles of evaluative research from the starting point and highlights the process of ongoing evaluation. It also clearly distinguishes between process and outcome evaluation.

Designing and careful planning of programmes and interventions are processes that are very often implied in other proposed models. Andrien (1994) has stated that many interventions aimed at changing habits have failed in the past, mainly because of inappropriate planning. Therefore, this particular phase was specifically included to emphasise the importance of proper planning based on the outcomes of the analysis-phase.

The model also shows how and where research and action can be successfully combined with the participation of community members. Community-based interventions are not an iterative process to be continued by researchers, but a process that needs to be handed over to the community for them to continue by themselves within their our lives. The model clearly shows this line of reasoning.

### **11.3 INSIGHTS**

During this study certain insights were gained that guided me to formulate recommendations for further research. These insights should not only be for the record, but also to be incorporated into interventions to improve practices and behaviours of rural communities. The insights mainly centred on the factors that motivated or hindered change. A corollary of this is that a list of lessons learned could be formulated.

Behavioural change depends on individual motivations and a sense of personal relevance to the change. Judgements of personal assets or resources to make the change are also important. This should be accompanied by a willingness to overcome barriers, accompanied by environmental change such as the availability and accessibility of food, social and cultural norms, and community assets and empowerment (resources and collaborations) (Contento, Randell & Basch, 2002).

Studies have shown that people can change their behaviour if they see the need and want to change their own behaviour. Human beings have the capacity to exercise free will. Human behaviour is therefore not determined by antecedent causes. The question is whether it is ethical to develop effective behaviour control techniques. The quality of interventions should not be evaluated by its effectiveness in changing people's behaviour but by whether the people find the interaction worthwhile in terms of helping them decide how they want to lead their lives and make food choices (Buchanan, 2004:147).

Insight into the factors that motivated change helped to promote this process. These factors were that people should understand – in their own mode of thinking - that the change is for the better for oneself and for one's family. We as researchers should understand the influence and support of significant others (social pressure) when a new practice is adopted and that people should be assisted in the autonomy or the means and control to carry out the new practices (Van Wijk & Murre, 1992:12).

Nutritional problems are not only food-related. Other important factors include lack of access to health services, sanitation, knowledge, education and care. Food production programmes are also more effective when combined with promotional and educational activities. Nutrition education and the promotion of appropriate diets and healthy lifestyles are seen as a priority issue to address existing nutrition-related problems (FAO, 1996; FAO, 1997; Latham, 1997:9). Nutrition education is also mentioned as an important part of improving household food security. If nutrition education programs are to be effective in South Africa, it must be tailored to the current prevailing consumption patterns and the desired changes there-in, including the improvement of the nutrient density of children's diets as well as food hygiene and feeding practices (Labadarios, 2000). Other external factors that should have been considered more carefully were the political situation on the farm (relations between farmer/owner and farms workers), availability and scale of funds and experience and commitment of the research team.

## **11.4 RECOMMENDATIONS**

Recommendations to overcome the weaknesses of this study, as identified in Chapter 9, and to improve future studies, are firstly discussed in terms of managerial aspects, financial aspects, methodology (instruments and methods) and enabling factors that were not addressed. Other recommendations gained from my own insights and derived from the consulted literature follows.

### **11.4.1 Managerial aspects**

Research studies are complex and the exact outcomes are difficult to plan. The process towards the outcomes may sometimes be rather chaotic and often subjected to forces beyond the control of the research team. Research cannot be managed by the setting of very rigid goals and times when results must be achieved. Then it is no longer research (Ernø-Kjølhede, 2000:8). But good management is critical for sustained success in any intervention or research study (Allen &

Gillespie, 1992). A result of good management is that all the aspects of doing research come into focus.

Recommendations for the management of research studies (projects) are drawn from the field of project management. Two elements are identified within project management:

- Technical structure which includes activities like scheduling, financing, planning, controlling
- Human processes which included co-operation, communication and empowerment.

All projects need technical structure as well as human input. This research study would have benefited if a project manager were formally allocated who could have executed only managerial tasks. Preferably this manager must be totally committed, involved from the start-up, align with the underpinning philosophy. The central task of any project manager is to navigate between the conflicting demands of time, cost and performance (Ernø-Kjølhede, 2000:13), which makes it an impossible task to find the right person.

Alongside good management practices are well-formulated partnerships to enhance the credibility and scientific judgement of the intervention. According to Lansing and Kolasa (1996:809), a full disclosure of the partnership's nature and its goals and outcomes is essential. Criteria for partnerships should be formalised with defined roles clearly put forward in a strategic plan. Such a plan would have provided a framework for decisions. The research proposal could have been used as basis. The intervention should have been jointly developed, with more recognition to each other's contribution and expertise. This would have fostered respect and commitment to, and ownership of the intervention and its outcomes. Successful partnerships also depend on mutual trust, personal credibility, sharing of power and influence and ensuring high quality outcomes (Lansing & Kolasa, 1996:812).

An overriding concern is to establish and maintain realistic expectations for what the partnership can accomplish. Anticipating challenges and potential pitfalls help to ensure success of both the partnership and the intervention. The Society for Nutrition Education (SNE) has developed partnership program operating guidelines which included aspects of mutual goals and benefits, equity (sharing of resources and influence over outcomes), maintenance of integrity and respect, retaining independence in judgements and decision making, endorsement, equal access (SNE, 2004). These could have been laid down in written format for this intervention, which could probably assisted in better teamwork and more enthusiasm.

Due to the specific setting and circumstances on commercial farms, the role of the farmer was crucial for the success of the intervention. The farm owner needs to be much more involved and commitment to the intervention. Possibilities in this regard could have been more explored and addressed.

An established monitoring system is another recommended managerial tool. Monitoring in this study was done through regular visits, to motivate behavioural change, to improve the intervention process and to ensure that the identified needs were efficiently addressed. Revision of the facilitation plan as well as the conducted activities depends on a monitoring system. Monitoring is the process that binds the intervention together and should therefore be done throughout its life cycle. Such a system should already form part of the research proposal in the preparation phase.

#### **11.4.2 Financial aspects**

One of the most widely recognised procedures for examining programme efficiency is cost-benefit analysis. It quantifies the effects of an intervention and evaluates them relative to costs (Weimer, 1996:43). Cost-benefit analysis can be performed if all of the outcomes of a nutrition intervention can be captured in monetary units. By valuing both costs and benefits in the same monetary terms, they can be directly compared to determine the net economic impact of a program (Lambur *et al*, 2003).

In some instances, this is a straightforward task, but for this intervention it would have been less easily quantified. Valid endpoints that are usually used are morbidity and mortality. There are many ways to measure costs and benefits. Costs are usually straightforward while benefits are more complex. Those that can easily be valued in money are referred to as tangible; those that cannot easily be monetised are referred to as intangible. The time horizons over which costs and benefits have occurred or are expected to occur also need to be indicated. Intangible costs and benefits, especially benefits, can be measured more directly, without the added step of monetising them. Examples include knowledge gained, attitudes changed, skills acquired, practices adopted, and individual and societal end results. The various intervention components also need careful examining in order to find the most cost-effective mix (Phillips & Sanghvi, 1996). It is therefore recommended that a cost-analysis be done for this project that could guide future projects to operate more effectively.



Various fund applications were submitted for this study and intervention, but without success. In academic environments, post-graduate students are usually involved in the interventions. In my opinion, these students should not enrol for post-graduate qualifications, before funds had not been allocated for the intervention. Only during the second year of this study, funds were allocated from the Centre for Nutrition at the University of Pretoria.

### 11.4.3 Methodology

Considerable preliminary work has to be done to develop and test evaluation instruments. We need to know whether the instruments we used are appropriate and have adequate psychometric properties. Even published instruments need to be cognitively tested with each new participative group. When testing of instruments are in place, we will be better able to make judgements about the effectiveness of interventions (Contento *et al*, 2002:21). The hygiene and sanitation tools used in this study need further refinement to be more sensitive towards the situations on commercial farms. Items, pictures and messages in these tools that were not fully understood, should be revised, tested and adapted to reflect the behaviours and conditions under scrutiny.

Another aspect included in this discussion is participation. Participation was such an integral part of the study and intervention that it would be valuable to measure its intensity. An applicable instrument can be devised in order to measure the various levels or intensities of participation that is taking place in interventions. Such information could help to understand and explain the success or failures of interventions. The instrument constructed by Schmidt and Rifle (1996) can be considered and adapted to the context.

### 11.4.4 Enabling factors

It is not enough to merely understand behaviour and to design and implement appropriate strategies. We also have to anticipate potential pitfalls and detractors, particularly those who do not specifically support the intervention. We should identify which mediating variables are highly predictive of the behaviour of interest and then embark on studies that demonstrate the effectiveness of intervention strategies directed at these mediating variables before proceeding to measure efficacy and effectiveness of interventions. Participants in interventions, however, cannot be manipulated, nor can the environment be controlled in a natural setting in order to conform to an experimental paradigm designed to eliminate extraneous variables (Hubley, 1988:136).

In this study an enabling factor could have been the participants' husbands or partners. They were not involved in the study but showed great interest. If they were involved they could have supported the participants in the application of the desired hygiene practices and improvement of the sanitation conditions. I therefore recommend including support systems from the planning phase onwards. A strong support system, not only from spouses, but also from the local health authority, is a strong recommendation for future studies.

The insights gained were built into a repository of lessons about community-based interventions applicable to rural communities on commercial farms. This list (Box 11.1) also includes new problems that were discerned that demand further research.

### **BOX 11.1: LESSONS LEARNED FROM THIS STUDY**

- Formally allocate or appoint a project manager who can execute managerial tasks
- Formalise partnership agreements, specifying the obligations of all the partners to improve teamwork and the successful implementation of the intervention as well as to enhance the credibility and scientific judgement of the intervention
- Obtain commitment and involvement from the farm owner
- Criteria for partnerships should be formalised with defined roles clearly put forward in a strategic plan
- Identify workable strategies for community-researcher partnerships to address challenging problems of sharing power
- Establish a monitoring system
- The hygiene and sanitation tools used in this study need further refinement to be more sensitive towards the situations on commercial farms
- Devise an applicable instrument to measure the various levels or intensities of participation that is taking place in interventions
- Include support systems from the planning phase onwards, including spouses at household level, but also from the local health authority

## **11.5 FINAL THOUGHTS**

Throughout the formation of this thesis, I endeavoured to accomplish logical, inductive reasoning. The distinctive feature of inductive reasoning is that, even if the supporting evidence or premises

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are accepted as true, there is always the possibility that the conclusion may not be true (Mouton, 1996:71; Smaling, 1992:313). I have attempted to make a logical leap from the premises to the conclusions as determined by sufficient support (evidence, results, findings) for the conclusions. Inferential validity was therefore justified throughout the research process - from the proposal phase, to dissemination of results.

A study in Burkina Faso concluded that hygiene promotion can change behaviour and are more likely to be effective if built on local research and if it uses locally appropriate channels of communication repeatedly for an extended time (Curtis *et al*, 2001:518). I agree that well-planned interventions can make a difference in the lives of needy people, whether it is to improve health and nutritional status, or to assist them in the process of empowerment so that they can take responsibility for their own situations and become their own change agents.

A challenge will be to adopt research approaches that are conducive to human and social development. Such approaches include the promotion of full participation and empowerment of people in all intended activities. Researchers should be explicitly committed to conducting research that will benefit the participants; either through direct intervention, or by using the results to establish what action should be taken for changing the situation. Travers (1997:61) also pleads for this approach in nutrition education. He says that when the social world is the source of nutrition problems, the solutions to those problems lay in social change. People and communities who have been empowered through education that raises consciousness of the social roots of nutrition problems best initiate social change.

The University of Pretoria also places a high premium on involvement in the community and community-related projects (UP, 2002), implying that researchers also have a commitment to serve the community in ways that are contributing to their well-being in a meaningful way. A standpoint is therefore taken from a research and academic point of view that more research activities should be employed towards empowering needy people. Participation in the research process has been placed in the forefront of efforts to empower people to increase the quality of life in their communities.

PAR presents unique opportunities and challenges for implementing a process of dialogue, action, analysis and social change. PAR however is a comprehensive term describing how and why researchers embrace local knowledge when responding to the needs expressed by people in

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communities and empowering them to pursue and experience social change (Kleiner, 2002:3). I want to urge the National Department of Health to develop a comprehensive nutritional policy for improved nutrition on rural areas on commercial farms through support and encouragement of participatory-orientated projects and interventions.

Interpretations should flow from the outcomes of the interaction of the research team with the social world of the participants, shaped by the methods of inquiry and analytical procedures used. Qualitative methods should be enriched with quantitative data derived from anthropometric measures, biochemical tests, clinical evaluations and dietary intake measures. Other quantitative measures that can enrich qualitative data are household food security scales and diversity scores. These methods can help the research team and participants to assess the scientific significance and relevance of the situation.

To be a good researcher is not enough. Formal training in science practices can be useful but is not sufficient. The scholar in developmental studies must be familiar with the dynamics of participation and must develop to act as a facilitator and partner. The researcher must continually strive to combine excellence in the research process as well as in the intervention process. There are unique demands placed upon researchers who participate in PAR. Researchers should therefore be committed to the needs and problems of the people involved in the participatory process and furthermore realise that the primary beneficiaries are the participating community members and not necessarily the academic community. As Kleiner (2002:23) has put it: *“there is no glory in doing PAR”*.

Intellectual knowledge is power and researchers need to transfer the ownership of knowledge to the participating community. When the research team withdraw from the community, the skills, experience and newly acquired knowledge should not be taken with them (Stoecker in Minkler and Wallerstein, 2003:99). A community-based research study done within the paradigm of PAR cannot be seen as a research project. It is a social change project of which research is only one aspect. Research is only a methodological way to reach the particular goals as stated together with the participants. Such projects can only be conducted by academics that are willing to be participatory researchers; who are committed to transform the social relations of knowledge production and democratic participation in the research process.

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When people are guided to identify their own needs and problems, to develop their own ideas, to discover their own plans and solutions, only then do they possess and put into practice what they have learned. The female adult group on Oranje farm was no exception. These people have a grounded understanding of their local conditions far beyond what researchers can gain, unless they live within that specific local community. Likewise, researchers bring with them skills and perspectives often not present in the local context, including knowledge about how to design and implement interventions and learning activities. This asymmetry in skills and local knowledge can be an important force in co-generating new understandings. The parties should engage with each other to make sense out of the situation (Greenwood & Levin, 1998: 118).

At the beginning of a research process, the outsider (researcher) makes decisions and teaches and trains local participants on topics that both consider important. At the same time, the outsider is responsible for encouraging insiders (participants) to control their own development process. It is the researcher's obligation to let go of the group near the end of the intervention. The researcher has to play the role of facilitator and change agent to initiate opportunities for participants to develop the capabilities and skills in order to take control and direct the ongoing developmental process according to their own interest (Babbie & Mouton, 2001:317). For participants to become active players in a change process, they must be allowed and supported to exercise power. The initially asymmetrical situation between participants and the researcher can be balanced only by the transfer of skills and knowledge from the researcher to the participants and the transfer of information and skills from the local participants to the outside researcher. In the end, the process must be taken over by the participants (Greenwood & Levin, 1998:119).

The struggle to solve important actions is the result of co-generative processes. The participants learn new things about the problems they are facing, which often revises their understandings in fundamental ways. The outcomes of this collective process (action and reflection) support the creation of new-shared understandings. The larger this shared grounds, the more fruitful the communication has been and the greater the likelihood is that further insights can be developed through reflection and actions based on this shared knowledge. This in turn can open up new ways of formulating problems, and thus result in ongoing learning from all parties.

I want to conclude with the following citation:

*“The past is not past: it lives in the present, in the resources tradition provides to its bearers, in the effects which continue to ripple through time long after an event has occurred, in the minds of self-conscious creatures bent on understanding who they are by grasping where they have been, and in the genetic explanations of social scientists and historians.*

*In this way the past changes as the present changes. Nor is the present just the present: to be an act every act anticipates a projected outcome and looks backwards to what preceded it for its motivation. The present thus contains within itself the past and the future” (Fay, 2001:244).*

## *Glossary*

ADA	American Dietetic Association
AR	Action Research
ARC	Agricultural Research Council
CBPR	Community-based Participatory Research
CDC	Centers for Disease Control and Prevention
CESR	Centre for Economical Social Rights
CIPP	Context-, Input-, Process-, and Product – evaluation
DRI	Dietary Reference Intakes
FAO	Food and Agricultural Organization of the United Nations
GARNET	Global Applied Research Network
HAS	Hygiene and sanitation
HFS	Household food security
NFCS	National Food Consumption Survey
NICUS	The Nutrition Information Centre at the University of Stellenbosch
PAR	Participatory Action Research
RDA	Recommended Dietary Allowance
SAWAU	South African Woman’s Agricultural Union
SNE	Society for Nutrition Education
UNDP	United Nations Development Programme
UNICEF	United Nations Children’s Fund
UP	University of Pretoria
WHO	World Health Organization
WSSCC	Water Supply and Sanitation Collaborative Council



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*ADDENDA*





# ADDENDUM A:

## Household food security scale

### Food Insecurity Assessment Scale (FIAS)



With this questionnaire we would like to get an impression of the availability of food. Grade yourself as quickly and as honestly possible. Do not speculate too long before you answer. The first answer that comes to mind is usually the correct one. Mark the relevant item with an **X**, using the following scale:

Sekale sa tlala le tekanyo ya polokesego ya dijo ka dipotso tse re rata go tlhomamisa maikutlo mapabi le go nna teng ga dijo. O itshwaye ka bofelo le ka bonnetje... O se ka wa nagana nako e telele pele o araba. Karabo ya nthla e o e gopolang e tle e nne e e nepagetseng. Tshwaya nthana e e lebaneng ka **X** o dirisa sekale se se latelang:



1.	My food runs out before I get money to buy more. My kos raak op voordat ek geld kry om meer te koop. Dijo tsa me di fela pele ke amogela gape.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
2.	I do not know where the next day's food is going to come from. Dit is onbekend waar môre se kos vandaan kom. Ga ke itse gore dijo tsa letsatsi le le latelang di tla tswa kae.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
3.	The food that I buy is not enough to feed my family. Die kos wat ek koop, is te min vir my gesin. Dijo tse ke ri rekang ga di lekane balelana.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.	I am often hungry. Ek is dikwels honger. Ke tshwarwa ke tlala gantsi.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.	I eat less than I think I should. Ek eet minder as wat ek dink ek moet. Ga ke je jaaka ke gopola gore ke je.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.	I don't have enough money for food. Ek het te min geld om kos te koop. Ga ke na madi a a khanatseng dijo.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
7.	I cannot afford to feed my children. Ek kan dit skaars bekostig om my kinders te voed. Ke tlhacila goka jesa bana ba me.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
8.	My children are not getting enough food to eat. My kinders kry te min kos om te eet. Bana ba me ga ba na dijo tse di lekaneng.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
9.	My children go to bed feeling hungry. My kinders gaan honger slaap. Bana ba me ba ya go robala ba na le tlala.	<input type="radio"/> 1 <input checked="" type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
10.	I have enough food to last until I get money to buy more. Ek het genoeg kos totdat ek geld kry om nog te koop. Ke na le dijo tse di lekaneng go fitlha ke amogela gape.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
11.	I know where tomorrow's food is going to come from. Ek weet waar môre se kos vandaan gaan kom. Ke itse gore dijo tsa ka moso di tla tswa kae.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
12.	I can afford to eat enough every day. Ek kan dit bekostig om elke dag genoeg te eet. Ke kgona go ja go lekane maiatsi othe.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
13.	I have enough money for food. Ek het genoeg geld om kos te koop. Ke na le madi a a lekanatseng dijo.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
14.	I go to bed feeling hungry. Ek gaan honger slaap. Ke ya go robala ke na le tlala.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
15.	I still have food in the house the day before someone gets paid. Ek het genog kos in die huis oor die dag voordat iemand geld kry. Ke na le dijo mo ntlong pele mongwe a duelwa.	<input type="radio"/> 1 <input type="radio"/> 2 <input checked="" type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5

10, 11, 12, 13, 15

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*ADDENDUM B:*

*Educational support material*

*Poster designed for  
the Oranje farm  
community on  
hygiene and  
sanitation*





# On Oranje farm... ...Sanitation rules.

## Ka ntlong ya Oranje Farm... ...melao ya ho hlwkisa ke ena



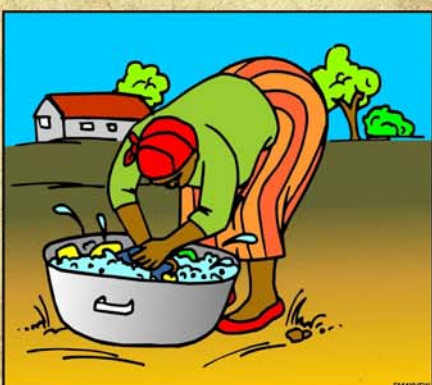
**Teach children to use toilets**  
Ruta bana ho sebedisa  
ntlwana



**Wash hands with soap**  
Hlatswa matsoho  
ka sesepe



**Keep toilets clean**  
Boloka ntlwana ya hao e  
hlwekile ka naka tsohle



**Wash kitchen cloths everyday**  
Hlwekisa masela a ho  
hlatswa dijana ka nako tsohle



**After washing the kitchen  
cloths, hang it in the sun to dry.**  
Masela a ho hlatswa dijana a lokelwa ke ho thola letsatsi



**Cover drinking water**  
Kwala metsi a ho  
nwa ka nako tsohle



**Burn rubbish**  
Tjhesa matlakala



Oranje Farm



# *ADDENDUM C:*

## *Hygiene and Sanitation - knowledge test*

1. Do you know what germs are? [yes=1]
2. Diseases can be spread from one person to another. [yes=1]

### **Personal hygiene:**

3. Hands don't need to be washed before you start cooking. [no=1]
4. You should always put on clean clothes everyday. [yes=1]
5. You only need to bath once a week. [no=1]
6. Nails must be kept short and clean. [yes=1]
7. After being to the latrine, stools can be removed from the body using paper or grass. [yes=1]
8. It is safe to dry wet hands on your clothes. [no=1]
9. Children can have worms inside of them. [yes=1]

### **Household hygiene:**

10. It is good if there are flies in the latrine. [no=1]
11. Children can use the field instead of the latrine if they want to. [no=1]
12. Drinking water can stay in the bucket for 3 days. [no=1]
13. A dirty house can cause diarrhoea (loose stools) in children. [yes=1]
14. Boiled water and milk is safer to use. [yes=1]
15. Leftover food should be kept in a cool place. [yes=1]
16. Drinking water should always be covered. [yes=1]
17. Ash or ground can be used to clean hands and surfaces if soap is unavailable. [yes=1]
18. Marogo from the field should always be washed before it is cooked. [yes=1]
19. Meat with purple or brown spots can be eaten. [no=1]

### **Environmental hygiene:**

20. Rodents (mice or rats) carry some very deadly diseases. [yes=1]
21. It is good to have one single garbage dump site for the village. [yes=1]
22. Garbage should be burnt or buried. [yes=1]
23. Chickens and dogs must be kept out of the cooking area. [yes=1]
24. Flies can cause diseases and illnesses. [yes=1]
25. I don't have to keep my yard clean from animal droppings. [no=1]

### **Literature consulted:**

AHMED, NU, ZEITLIN, MF, BEISER, AS, SUPER, CM, GERSHOFF, SN & AHMED, MA. s.a. *Assessment of the impact of a hygiene on environmental sanitation, childhood diarrhoea, and the growth of children in rural Bangladesh.* [WWW document - 04/16/2003]. URL [www.unu.edu/unupress/food/8F151e/8F151E07.htm](http://www.unu.edu/unupress/food/8F151e/8F151E07.htm)

# *ADDENDUM D: Hygiene and Sanitation - behavioural scale*

Always=2; Sometimes=1; Never=0; except for negatively implied answers (\*)

1. I wash my hands before I start cooking
2. My children put on clean clothes everyday
3. I wash my face and soft body parts everyday
4. I cut my children's and my own nails short
5. After being to the latrine, I remove stools from my body using paper
6. I check if my children wash their hands after being to the latrine
7. I wash my whole body, seated or standing, everyday
8. I attempt to keep flies out of the house
9. My children use the field in stead of the latrine (\*)
10. I give rotten food to the dogs
11. I keep fresh and clean drinking water in my house everyday
12. I clean my house with a cleaning agent (soap, detergent) once a week
13. After I have milk the cow, I boil the milk before we drink it
14. I keep left-over food for the following day on the stove or on the cupboard (\*)
15. Drinking water is kept in a closed container
16. I use ash or ground to clean hands and surfaces if I don't have soap
17. I wash vegetables and fruit before we eat it
18. I throw leftover food away after 3 days
19. I attempt to keep mice and rats away from my house
20. I burn garbage in my yard
21. I have a rubbish bin in my house
22. There are chickens and dogs in the area where I cook (\*)
23. I sweep the yard around my house every week
24. I remove droppings from animals around my house everyday
25. I teach my children to be clean and tidy

## **Literature consulted:**

HSU, CHC. 1994. Sanitation knowledge, attitudes and behaviours of food service workers in Big Ten Universities. *Journal of the National Association of college and University Food services*. [WWW document - 4/16/2003] URL [www.nacufs.org/resources/publications/journal/old/sanitation.asp](http://www.nacufs.org/resources/publications/journal/old/sanitation.asp)

## *ADDENDUM E:*

### *Activity sheet on domestic hygiene*



# ADDENDUM F: Checklist for planning better sanitation projects

## Checklist for planning better sanitation projects

—WSSCC Working Group on Promotion of Sanitation

This checklist has been drawn from the *Principles of better sanitation programmes* and *Features of better sanitation programmes*.

If you are interested to know how closely a planned project follows the “principles” and “features”, you may wish to try this checklist. If your answer to these questions is consistently “yes”, you have followed the “best practices”.

If any answers are “no” you might examine whether changing this feature would improve the project.

### Project formulation

- Are communities being selected for sanitation change because of their **keen desire for improvement** Yes  No   
or because it is at **high risk** for sanitation-related diseases? Yes  No
- Is the project planned in a way that **changes** can be made as lessons are learned? Yes  No
- Is the sanitation project accepted as a **priority** in its own right, rather than viewed as an add-on to a water programme? Yes  No
- Does the sanitation project have its **own budget** Yes  No   
and **own time-frame** Yes  No   
separate from any water supply project that may be taking place concurrently?
- Is the project assessing how the community's improved sanitation system will be a successful part of its **larger ecosystem, cultural beliefs and practices**? Yes  No
- Does the project have a component either to create demand for sanitation or to encourage the **expression of demand** that is already there? Yes  No
- Is the project assessing whether the principles of **social marketing** can or should be applied to the project to understand consumer preferences in the design of facilities? (See *Social marketing for sanitation programmes*.) Yes  No
- Is the project learning about and considering the cultural beliefs and practices of the community in designing the hygiene behaviour-change component? Yes  No
- Is the project involving the community in collecting information on the current sanitation situation for use in developing the project? Yes  No

### Project management

- Is the community involved in setting the project's objectives? Yes  No
- Is a realistic time-frame being allowed for the project? Yes  No
- Is the project identifying what additional support from other sectors might be needed to make the project successful? Yes  No
- Is the project developing a plan for how the sanitation project will be managed? Does this include:
  - defining roles and responsibilities? Yes  No
  - setting out supervisory structures? Yes  No
  - developing reporting systems? Yes  No
  - coordinating activities? Yes  No
  - outlining communication systems? Yes  No

### Community participation

- Is the project considering how (whether) the essential elements of **social mobilization** can or should be applied? Yes  No
- Is the project assessing how (whether) **participatory approaches** can or should be applied to encourage better dialogue with the community and to involve it actively in decision-making? (See *Participatory approaches to community empowerment*.) Yes  No
- Is the project creating an environment in which the community feels a sense of responsibility and ownership for the project? Yes  No
- Is the project trying to use **existing community organizations** rather than creating new ones? Yes  No
- Is the project consulting with people trained and experienced in methodologies for achieving effective community participation? Yes  No
- Is the project creating an environment in which **private producers** can be involved in providing the hardware for the project and can thrive economically in doing so? Yes  No

### Gender sensitivity

- Is the project employing a **gender specialist** and using the gender checklist? (See *A gender perspective in sanitation projects* and the associated gender checklist.) Yes  No
- Is the project using both **male and female personnel** to reach out to the community and households? Yes  No



### Hygiene behaviour change

- Do the project personnel recognize that **hygiene behaviours** are as important as facilities for improving community and household sanitation? Yes  No
- Is the project identifying **behaviour changes** that need to occur in the community and households to get the benefits of facilities? Yes  No
- Does the project have a **strategy for bringing about behaviour changes?** (The *Checklist for planning hygiene behaviour-change in sanitation projects* is a useful source of further information on this subject.) Yes  No
- Are hygiene behaviours and facilities being **promoted together**, in a complementary way, in the project? Yes  No
- Is the project trying to involve community groups in **formulating their own hygiene education programmes** and own messages and methods rather than having these designed from outside the community? Yes  No

### Selecting technologies

- Is the project using information collected about what people in the community are **doing now** for sanitation, and trying to build, step by step, upon these traditions to improve sanitary conditions? Yes  No
- Are the project personnel keeping an open mind about what kind of **sanitation technologies** might be possible for the community? Yes  No
- Is the community being advised about a **range of technical options** from which it can choose? Yes  No
- Are these options affordable to the great majority of households, **without subsidy?** Yes  No
- Do community members have opportunities to **assess for themselves** various sanitation technology options, and to participate in a meaningful way in their selection? Yes  No
- Do community members have opportunities to suggest adaptations to the various sanitation technology options presented, so that they can be made more appropriate to the local situation? Yes  No
- Are some **household financing schemes** being offered to the community to help them pay for facilities? Yes  No

### Promotion

- Is the project trying to win the support of **slightly wealthier and higher status people first** before approaching the poorer households or groups? Yes  No
- Does the project have **political support** from the highest possible level within this social context? Yes  No
- Is the project **letting the people in the community** know that this sanitation project is supported by higher-level political figures? Yes  No
- Does the project include and involve **schools schoolchildren or other community children?** Yes  No

- Is the project planning for the promotion of sanitation and hygiene behaviours to be a **continuous activity** rather than a one-off effort with a limited time-frame? Yes  No

### Capacity-building

- Is the project building capacity for the community to take over the **operation and maintenance** of any new facilities? Yes  No
- Is the project offering additional training to its personnel to help them accomplish the above? Yes  No

### Backup

- Is the project planning to provide the necessary support to the community until it is able to sustain the project on its own? Yes  No

### Feedback

- Is the project involving the community in developing a monitoring system that it can use to measure progress and as a basis for continued improvement? (See *Participatory monitoring and evaluation of sanitation projects*.) Yes  No