CHAPTER SIX

METHODOLOGY OF THE STUDY

6.1 Introduction

Chapter 6 explains the applied research design and its underlying methodology. The description of the research design provides details about the quantitative, quantitative-qualitative and purely qualitative research instruments with their sampling, data collection procedures, techniques of data analysis, and limitations. This variety of methods was used to gain an extensive result and to cover a detailed view of the setting in which the intervention was undertaken. In this study, eight major instruments are introduced to gather research data for the presented study:

- Evaluation of needs: field interviews.
- Process evaluation: documentation of the intervention, learners' reports, reports by health promotion trainers, and participant observation by learners of the intervention group.
- Outcome evaluation: questionnaire and opinion poll.

The data collection instruments are used to (a) characterise the intervention and its implementation, (b) identify its effects on the individual and interpersonal level, and (c) identify factors and conditions that might influence the intervention.

6.2 Methods of the Needs Analysis

Knowing that the development of individuals' health behaviour and the environmental risks and resources that influence health-related behaviour share a deep interconnectedness, the aim of these methods was, first of all, to explore the social conditions for the mental and physical development of children in Kayamandi outside the intervention undertaken. The accompanying underlying objectives were to detect factors affecting the research and, consequently, its outcomes. Methods used for the needs analysis were an extensive literature review, supplemented with regular field trips and an accompanying photographic documentation, which is presented in chapter 4, as well as the qualitative instrument of field interviews.

The following paragraphs focus on the instrument of field interviews, which evaluated the proximal and distal context in which not only the children progressed, but the intervention also took place.

6.2.1 Sampling

Field interviews were done with experts and stakeholders from governmental and non-governmental organisations from March 2004 until June 2004. The samples were selected after a long personal negotiation process to build trust (see also par. 5.5.2) and should therefore have an increased validity and reliability of the data. The participating interviewees were selected using the following three functional criteria:

a) The interviewee works for a health, educational, social, governmental or non-governmental institution that works with/for children in Kayamandi.
b) The interviewee has a leading role in his/her institution/organisation.
c) The interviewee agrees with the field interviewee design.

In the end, nine people agreed to participate in the interview sessions: from the non-governmental religious and public sector ($N = 2$), the governmental and health sector ($N = 3$), and governmental educational sector ($N = 4$). Contact with church leaders or party members could not be established over the research period and the support by social workers from Child Welfare was unsatisfactory due to staff change or refusal. The mentioned institutions were not included in the interview list.

6.2.2 Description of the Instrument

The half-structured interview was framed by an introductory guide in the form of a questionnaire, so as to build a framework for the interview sessions. In other words, the questionnaire formed the basis for the interview sessions, in which further probing by the interviewer was possible (Appendix B). The half-structured interviews and also the questionnaire included 14 items on cultural, socio-economic, family, health, and educational conditions in the target group's living environment. The items were the same for all respondents. The questions for interviewees were:

a) Which factors influence children in their mental and physical development process from childhood to adolescence in Kayamandi?
b) What kind of positive and negative factors support or hinder children in developing a strong mental and physical growth in Kayamandi?

c) What role do the educational systems play in the mental development of children in Kayamandi?
d) What role do the families play in the mental development of children in Kayamandi?
e) How can a one-year life skills programme influence children in their mental and physical development?

6.2.3 Data Collection Procedure

The outline of the field interviews was specifically designed and interviews were organised in six phases (Table 6.1). In phase one, the interviewer introduced herself, the research purpose and the content of the interview session. Afterwards the interviewee was asked to introduce himself/herself and the institution to which he/she belonged. During interviews the interviewer constantly made field notes and re-read the field notes to the interviewee if a statement was unclear. The first session ended with the handing over of the questionnaire and allowing the interviewee to clarify any remaining questions.

The second phase took place one week later. The purpose of the second interview session was to collect the questionnaire; questions were asked which followed the structure of the questionnaire on the living conditions for children in Kayamandi. The interim phase was used to complete the interview design. The questionnaire was transcribed digitally, answers were pre-analysed and questions were formulated to expand the interviewees' statements in the third interview phase. The formulated questions on the interviewees' statements were used during phase three and the interviewee was asked to clarify any remaining questions or comments. The last session ended with handing over the copy of the questionnaire to the interviewed person; a copy was signed by the interviewee for the interviewer, and a note of thanks by the interviewer.

Table 6.1.

Design of Field Interviews illustrated with its Six Phases.

Design	Data collection	Data collection	Data analysis –interim	Data collection	Data analysis
Interview procedure	Introduction of research purpose and researcher	Asking questions relating to living conditions for children in the community/field	Transcription of questionnaire papers	Asking questions from the questionnaire	Trans-cription of additional comments
	Questions relating to work and institutional matters			Clarification of equivocal answers or prevention of cultural or linguistic misunderstand-ings and unclear points	Compari-son of results from interviews and question-naire papers
				Additional comments by interviewee	Final analysis
Questionnaire	Handing over questionnaire papers	Collection of questionnaire papers	First analysis of interviewees' answers	Handing over copies of questionnaire paper to interviewees	Final analysis
Time	30 minutes	45 minutes		60 minutes	
Duration (in weeks)	1		1 to 2		4

There were four reasons for using a three-fold interview design. First, it was needed to limit misunderstandings in the communication process between the interviewee and interviewer as a second language (English) was used in the interviews, and thus to increase the validity of the gathered data. Second, it was important to clarify statements and to expand thoughts of the interviewees' who were repeatedly questioned over a period of two weeks. Also, the design supports a stable process of communication in which the interviewee has time to reconsider statements and turn them into culturally understandable patterns, and/or allow the interviewee to add statements which were lost in the (sometimes interrupted) interview atmosphere. This specific interview design should also rectify the limitations resulting from the specific interview situations in the field. Because the interviews were mainly held at the institutional office during working hours this design means that people were interviewed in their offices where there were interruptions by the telephone or people walking in and out the office. Only two interviews were held on private property at times convenient for the interviewees.

6.2.4 Data Analysis

The analysis included two phases. In the first phase, each interview was read carefully and was analysed independently in order to make sure that the contextual factors were noted, 1) to make sure that the meaning is clear, 2) to identify and extract key themes and 3) to identify quotes. Quotes that were illustrative of themes were also highlighted at this point. In the second phase of the analysis, the interviews were re-read and the categories examined across all the interviews to look for both shared and divergent understanding of factors influencing child development. All the interviews were read through one final time to check that no information had been ignored and to make sure the categories drawn up were representative of the data and that statements had not been influenced in one way or the other. Every detail of information had to be taken into account and adjustments made to the analysis. The final result included the dominant themes as well as the variations that were found on these themes (see also Skinner, 2000). Some of the quotes may appear confusing due to poor sentence construction or a lack of vocabulary. In some of the quotes additional editing notes were implemented with careful consideration not to change the content of the statement. Due to small number of interviewed people and their well-known status in the community, the applied coding system using letters as identification instruments neither refers to the interviewees' institution nor their gender.

6.2.5 Limitations and Strategies to Guarantee Data Correctness

The main limitation of the interview procedures is the fact that the interviews were not tape-recorded. The decision not to use tapes was made after the interviewer realised that interviewees felt threatened and did not give open answers in the presence of evidence like taping. The same was reported by Morrell (2001) in his qualitative survey on corporal punishment in South African schools. He stated the sensitivity of the subject was acknowledged and the interviews were not tape-recorded in order to ensure anonymity. The interviewer in the present survey also presumed that the interviewees would give more socially accepted answers and statements with taping than without. It can possibly also be supposed that the half-structured interview sessions without taping created a more relaxed interview situation. To limit the loss of information notes were taken from memory during and immediately after the interview session; in addition the interviewees were asked to check the transcribed statements. Seven of nine interviewees participated in all three sessions and only two did not go through the three-phase procedure.

As already outlined in the previous paragraph, another limitation during interview sessions was interruptions, especially at the school setting, which could only be reduced, but not totally avoided by the interview design. Finally, due to the African context doors were mainly left open during the interviews. Closed doors are defined as impolite and imply talking behind someone's back. The open doors also avoided that rumours were being spread about intimate relationships between researcher and interviewee (if one was male and the other female), which avoided resulting uncomfortable situations for both interview partners.

6.3 Methods of the Process Evaluation

For the process evaluation five instruments were utilised. One purely qualitative method included project documentation. The reports by health promotion trainers and learners, as well as the participant observations with four learners of the intervention group can be described as a mixture of qualitative-quantitative methods.

6.3.1 Documenting the Intervention

The aim of the documentation of the programme was to monitor and evaluate the aims of the project in terms of validity and to reflect on the actual events during the intervention. It exemplifies first and foremost the intervention sessions for the later analysis of the implementation process. A diary was used during the team meetings for notes on lessons content and methods and relevant events, special incidents and observational findings. The documentation was also done in comparison with session planning and team reporting after each session and at the end of Intervention I. The design of the programme documentation included four phases: predocumentation, data collection, postdocumentation, and final documentation. The data analysis was done by reporting, screening and analysing the data.

6.3.2 Reports by Health Promotion Trainers

In the knowledge that both health promotion trainers (HPTs) were non-professional educators, the decision was made to do a quality evaluation of their teaching. At first glance the report by the HPTs, given after each session, assessed their self-confidence and evaluated their assessment of the suitability of the teaching methods used during the session, using a short formula. The sessions were assessed using a 5-point rating scale (from 1 = excellent to 5 = bad). Additional descriptive comments were possible (Appendix C). The class teacher was only asked to fill in the form if she had participated in the session for the full duration. Results of the reports were discussed two days after the session in every follow-up meeting that

functioned as supervision for HPTs. All data were computed into a database (Excel 2003), double checked, and analysed. The gathered quantitative data were analysed using the calculation of mean.

Additional comments by HPTs followed the analysis of interviews already reviewed in the analysis of the field interviews (see also par. 6.2.4). In short, the qualitative results were proofed separately, later checked for similarities and discrepancies between HPTs and combined descriptively at the end of the process. The booster session (Intervention II) was not analysed because in the middle of Intervention II a change of staff took place, which is thought to have influenced the quality of the sessions (e.g. learning atmosphere) and consequently the derived data.

6.3.3 Learners' Report

Participants of the intervention group were asked to assess their attitude towards each session once a week. This method was intended to examine the children's emotional well-being and their general attitude to the topic, lesson methods, classmates (same and other gender) and HPTs as well as the acceptance of the intervention model. The method was similar to an election process: 'One vote for one voice'. Only children from the intervention group were involved in the learners' reports.

6.3.3.1 Description of the Instrument

The instrument was created in the form of two yellow posters. The first poster contained a table with two columns ("I like"; "I do not like"). The rows assessed the attitude towards trainers, relations to boys and girls, relevant topics, used methods, and the confidence sentence as an ice-breaker entry at every lesson. The second poster was to evaluate the general emotional attitude towards the lesson in the form of statements ("I have fun", "I feel ok", and "I am bored"). The simple design of the instrument was considered to be suitable to the expected low level of literacy within the intervention group and their young age.

6.3.3.2 Data Collection Procedure and Analysis of Data

The data collection took place two days after every intervention session (every Friday morning). At the beginning of the reporting, only children who had attended the previous session were asked to take part in the report. The posters were attached to the black board in the classroom and then each child received seven stickers in the form of dots. Boys received green and girls orange dots. Two learners posted their dots on the posters at the same time,

while the researcher controlled the evaluation process to avoid wrong or double markings by learners. The data were entered into the Microsoft Excel database (2003) and double-checked. The first two report results were excluded from the analysis because of pretesting considerations and the newly introduced instrument. The data were analysed in terms of the general attitude towards the outlined sessions, including feelings of comfort towards applied methods and existing working relations with the same and the other gender, as well as teaching staff. The data were specifically viewed for gender differences over time. All results were measured by additive calculation and multiplied by 100 to show the percentage of positive and negative attitudes for each category.

6.3.3.3 Limitations

The two-day period between the specific session and the corresponding report of the learners was considered a limitation on the collected data. Because the sessions took place in the afternoon, the concentration of the children and their participation in an additional 90-minute workshop was expected to be low after a long school day. Thus, it was decided to do the reporting session on another school day; possibly on a Friday morning. In addition, even though the researcher observed the data collection procedure, especially over the first testing phases, wrong markings were set. The first two reporting sessions were consequently deleted from the analysis. It was also assumed that over time a generally constant (and positive) attitude to and opinion of the programme and its content developed among participants, which might be reflected in the data (grouping).

6.3.4 Participant Observations

The participant observations refer to the development of social behaviour of four children (age range 9 – 12 years) attending the intervention group over a period of one year. Although the instrument comprised almost all the different types of behaviour of the specific participants, it also drew inference from the intervention group on a deputy level. The method of participant observations was used to collect comprehensive additional process data that provided evidence for social learning from a model (intervention) (Bandura, 1986). The observations provided information about personal (development of the individual over time) and interpersonal (interaction and communication with other classmates) factors and the environmental context (classroom). This allowed the evaluation of the development of the individual in his/her social and physical environment.

Each session content was defined as an 'event' in which the participant's activity, time management and resource expenditure was observed. To ensure respresentativeness, participants were randomly chosen and in relatively equal gender (two girls, two boys), without having any knowledge of the participants' background, personality or school performance. The observation was done at the same place, day, time, and situation (during sessions) to avoid changes in the observational situation and setting.

6.3.4.1 Description of the Instrument

For measuring behaviour, a coding system was used that applied social behaviour as the independent variable. The dependent variables were (a) general attitude with three dimensions, (b) nonverbal expression with five dimensions, (c) acts of communication with four dimensions, and (d) social interaction/communication with six dimensions. The self-administered category and coding system was organised in homogenous and independent 'relational' and four 'consequence' categories. All presented categories were grouped in opposite dimensions to control the observer's responses, for example friendly – unfriendly.

The relational category included details on age, name, class, setting, topic, activity, and the position of the participant in the classroom. Narrative descriptions of additionally observed events and the communication and interaction ability of the focus child were recorded in field notes (Appendix D). The consequence categories included details on general attitude, nonverbal body language, acts of communication, and social interaction. The general attitude category measured the level of comfort that the focus child expressed in the specific educational situation (method and lesson content). The child's general attitude towards the lesson content was divided into three categories: willing, undecided, negative.

The body language observed signs, actions, and reactions in facial and bodily expressions including arms, hands, legs, and body posture. Acts of communication (spoken language) observed the actual utterances (voice tone) generated by a child, for example expression of words and way of communication with other learners or trainers or teachers during the intervention sessions. The observation focused on the sound of voice and the resulting speaking ability of the focus child. The content of the conversation did not form part of the observation. The social interaction category (i.e. interaction with other learners/teachers or trainers) mainly observed gestures or performances of the subject as well as a child's failure and/or success to interact with interlocutors. This category seemed to be extremely important to observe general behaviour towards others in connection with the participant's ability to express his/her opinion in the interaction with other learners and/or a teacher or trainer.

The categories were measured by frequency dimensions in a 7-point rating scale (1 = never to 7 = all the time). The rating scale was used to complement direct observations and to help the observers to detect (Pellegrini, Symons, & Hoch, 2004) how often certain behaviour or sets of behaviour occurred.

6.3.4.2 Data Collection Procedure

Observation took place during Intervention I (March 2003 to June 2003) for four-and-a-half months and Intervention II (October 2003 to November 2003) for one-and-a-half months. Two observers noted down the observation of participants in the classroom setting. The observers were not directly involved in the learning sessions. Special rules and time frames for the observation and reporting procedures were established. At the beginning of each session the exact time, place, seating position of each participant, and content of lesson with method were described. After a silent agreement between the observers, a 15-minute observation was done, during which each observer made field notes with interpretations and notes on the phenomena (Pellegrini et al., 2004). One observer measured time and finished the observation session with a nonverbal sign to the second observer. At the end, the observers coded the observed behaviour in the checklist separately from each other. A new observation started after each observer had finished the recording procedure. To avoid observer fatigue, only two participants were observed per week and session.

6.3.4.3 Data Analysis

For the purpose of analysis, the data gathered were analysed using predominantly qualitative description. The analysis was executed in three steps: (a) computerising and reporting of the checklist for each participant, (b) discussion of the similarities and differences and transformation of the results and (c) a final report on each participant about the observation findings.

6.3.4.4 Analysis of Instrument

The reliability of the checklist is judged in terms of consistency. Intra-observer reliability was assured by the involvement of consistent observer(s) who had a sound knowledge of the instrument. The definition of categories and coding was continuously repeated. In accordance with the statement above, two observers scored the same session live and at exactly the same time. One external observer was chosen to avoid interobserver biases.

The observer reliability, specified as interobserver reliability, was analysed by Kendall's Tau B and Pearson Correlation. The interobserver agreement was statistically measured by Kappa and was tested in a repeated reliability test of a sample of observations through immediate comparison sessions after the observations (Pellegrini et al., 2004). In short, while the interobserver reliability merely marks the similarity of ratings, the interobserver agreement reflects the exact agreement between observers. The interobserver reliability measured higher than the interobserver agreement. Although a significance in interobserver reliability was found, the degree of interobserver agreement was predominantly unsatisfactory (exactable are Kappa ≤ .75) (Table 6.2). Only the Observation Phase II (O2) values show adequate results for both interobserver reliability and interobserver agreement.

Table 6.2.

Interobserver Reliability measured by Kendall's Tau B and Pearson Correlation and Interobserver Agreement measured by Kappa.

Observation phase (t)	**Observation session**	**Interobserver reliability**		**Interobserver agreement**
		Kendall's Tau B	**Pearson correlation**	**Kappa**
1	1	.45	.52	.05
1	2	.65	.73	.31
1	3	.63	.73	.26
1	4	.50	.61	.24
1	5	.55	.61	.32
1	6	.85	.96	a)
2	1	.76	.42	.90
2	2	.71	.43	.86

Note. t = testing point. a) = Kappa could not be measured.

As the statistical analysis of the data shows, there were significant limitations to the reliability of the used instruments. Some limitations effecting validity and reliability are outlined in the following paragraphs.

6.3.4.5 Limitations and Strategies to Guarantee Data Correctness

Factors affecting validity can be the detection of being observed and observer bias. The detection of being observed was prevented by the observer being present during the entire session and distracting attention by looking around the whole class. In order to avoid observer bias and to increase objectivity different strategies were used: (a) the second observer was an external person who was unaware of the research hypotheses or group assignments; (b)

neither of the observers were informed about the profiles of the participants (social background, learning achievements, and characteristics); (c) interdependence was produced by immediately re-checking the results after the observations. However, two observers observed the same participants over a long period and therefore an increase in expectations and knowledge about the participants and a correspondent loss of objectivity could be noticed, which most probably influenced the derived data.

The poor visibility of the participants in the crowded and sometimes even dark classroom made it difficult for one or both observers to consistently observe the participants. Corresponding comments were made in the checklist and were considered in the analysis. Another limitation affecting reliability and validity was reactivity. The observers were noticed as special guests by the class and participants during the sessions. In addition, one explanation for the recurrence of reactivity could be that the observers were not part of the ethnic group that was being observed. It is assumed that reactivity played a role especially at the beginning of Observation Phase I. There were attempts to reduce this limitation by visiting the class before observation sessions took place. However, only one observer was present and known to the intervention group before the start of Intervention I. The external observer paid a first visit to the observation setting only one week before the first observation phase started. It is clear that this was insufficient time to reduce reactivity right from the start of Observation Phase I.

Furthermore, a third observation phase followed the completion of Intervention I and II. These sessions were held during normal school lessons. Limitations were due to (a) observed violence and corporal punishment in the participants' classes, which was assumed to influence the participants' social behaviour and observers' judgement; (b) the frequent absence of teachers resulting in the cancellation of several observation sessions; and (c) teachers who felt forced to hold the lesson because the observers were present and waiting in their class. As the limitations of the sessions were considerable and therefore uncontrollable, it was decided to cancel Observation Phase III. However, observation findings and experiences were taken into consideration in the final discussion.

6.4 Methods of the Outcome Evaluation

The outcome evaluation used two methods, one purely qualitative (questionnaire) and one consisting of qualitative and quantitative methods (opinion poll).

6.4.1 Questionnaire

The quantitative evaluation of the life skills programme employed a quasi-experimental design with an intervention group (IG) and control group (CG) using a self-administered questionnaire. The duration of the quantitative evaluation comprised the period from March 2003 until April 2004. The time between pre- and posttest was four-and-a-half months, between post- and follow-up test 1 five months and between follow-up tests 1 and 2 another four-and-a-half months. The long period between pretest and follow-up test 2 was chosen in order to provide results on the existing knowledge and individual psychological development of participants regarding the sustainability of the intervention results. The intervention group received a non-governmental school-based life skills programme on AIDS education (X) at Ikaya Primary School in Kayamandi (Stellenbosch) with two independently working health promotion trainers. Implementation and training procedures for staff are explained in chapter 7. During Intervention (X) I, which constituted the real intervention, learners received 16 sessions of 90 minutes each. Intervention (X) II had the character of a booster session to deepen the knowledge and skills from Intervention (X) I, with four sessions of 90 minutes each.

The control group at Nomlinganiselo Primary School in Crossroads (Cape Town) did not receive any intervention during the pre- and posttest period. During follow-up tests 1 and 2, the control group received the governmental life skills programme on AIDS (Y) (without prior notification of the researcher) under guidance of the Grade 4 class teachers and changed its character to a quasi-control group. This change was neither foreseeable nor preventable and resulted in a research design (Table 6.3) in which the control group underwent two pretests. Both intervention are indicated as (Y) I and (Y) II.

Table 6.3.

Factorial Analysis with Repeated Testing with Intervention Group and Control Group.

	t1		t2		t3		t4
Intervention group (IG)	Pretest *N* = 41	Intervention (X) I	Posttest *N* = 41	Intervention (X) II	Follow-up test I *N* = 41		Follow-up II *N* =41
Control group (CG)	Pretest *N* = 39		Pretest *N* = 39	Intervention (Y) I	Posttest *N* = 39	Intervention (Y) II	Follow-up I *N* =39
Period (months)	0		4 ½		5		4 ½

6.4.1.1 Variables and Hypotheses

The independent variable is the intervention itself (instead of behaviour). The reason for this is that health behaviour is assumed to be only just developing in pre-adolescence and therefore cannot yet be detected at this stage. The dependent variables are the cognitive variable (knowledge of HIV/AIDS), psychological variables (self-esteem, self-efficacy) and social variables (intergender communication, social responsibility). In the following section, the variables are explained in conjunction with the research hypotheses.

Knowledge of HIV/AIDS included providing information about HIV/AIDS. This information raised awareness and formed the fundamental basis for an adequate response to the health threat by HIV and AIDS. The hypothesis was that learners in the intervention group had developed a higher knowledge of HIV and AIDS than the control group. Global self-esteem is considered a multidimensional construct, consisting of affective, cognitive, motivational and behavioural domains. Rosenberg, Schoenbach, and Schooler, 1995 claims that global self-esteem is defined as the attitude towards an object (the Self) (see also Zanobini & Carmen, 2002). It is assumed that a person with high self-esteem will show a higher competence to make protective decisions in difficult life situations. Bandura (1977) defines self-efficacy as the judgement of one's capability to accomplish a certain level of performance. He states that perceived self-efficacy is a significant determinant of performance that operates partially independently of the underlying skills (Bandura, 1986). Schwarzer (1992) adds that individuals create and develop self-efficacy beliefs that become instrumental to the goals they pursue and to the control they are able to exercise over their environments. It was assumed that learners in the intervention group had higher levels of self-efficacy and, thus, displayed higher competence in protective behaviour.

Gender communication is a variable that denotes the ability of the learners to positively interact with others, their ability to take the perspectives of others into consideration as well as the degree of acceptance they gain from others. In other words, it assesses the social relationship qualities of girls and boys. It was assumed that girls and boys in the intervention group will show better intergender communication which makes it possible to talk about taboos and complicated issues with the other sex and to facilitate a common decision-making process, which will also protect the other sex in future intimate relationships. The study was designed to examine the learners' willingness and commitment to carry out tasks that are assigned to them by their teachers and their parents, including homework and other tasks. This entailed the learners' responsibility to abide by the rules and regulations of the school and/or home. The behaviour regarding social responsibility also expressed the value and

attitude system towards socially relevant and problematic issues like HIV-infection. The study analysed whether the learners in the intervention group showed a higher level of social responsibility than the control group. These variables tested the psychological and cognitive development of the participants of the intervention on the individual and interpersonal level. The used variables reflect the theoretical construct of the social cognitive theory (Bandura, 1986); the applicability of this construct in this research context is critically analysed in chapter 2.

In summary, in terms of the variables it was expected that individual self-esteem, self-efficacy, intergender communication, social responsibility, and knowledge about HIV and AIDS would increase from pretest to posttest and it is assumed that those results can be sustained over the follow-up test 1 and 2. Although all hypotheses are related to the non-governmental intervention (X), the presentation of the results explores the effects of the governmental intervention (Y), too.

6.4.1.2 Sampling

A total number of 80 Grade 4 level children were involved in the quantitative instrument, the questionnaire. Forty-one children belonged to the intervention group (Ikaya Primary School) and 39 children belonged to the control group (Nomlinganiselo Primary School). The gender distribution was balanced, with 40 girls and 40 boys in total. The age in the groups ranged from 8 to 14 years. More than three quarters of the participants (77.5%) were 9 to 11 years old; five children (6.3%) were eight and 11 children (13.8%) were 12 years and older. All the participants were from an African/black background. The ethnic distribution among learners was predominantly Xhosa; a small number were Tswana or Sotho.

6.4.1.3 Description of the Instrument

The open and closed questionnaire was employed to gather data from the children in pre-, post- and two follow-up tests. Because no standardised tests for this specific age group (pre-adolescents) and language (isiXhosa) were available at the start of the survey in South Africa, most of the variables were self-constructed (social responsibility, knowledge 1, knowledge 2) and partly made use of existing scales (Self-Esteem scale by Du Bois et al. [1996]; Self-Efficacy by Schwarzer [1996]; and Gender Communication by Hudson [1992]). Only the self-esteem scale had already been translated into isiXhosa, but had never been used for pre-adolescents.

The questionnaire is composed of three parts that deal with local and other factors that are presumed to be important for the development of healthy and protective behaviour in the individual and towards others (Appendix E, F). Part A consists of three open items on age, gender and grade, and one closed item on the family background. The question on family background, "With whom are you living now?" has twelve possible answers (e.g. mother, father, grandparents). In Part B, the items are constructed on the basis of theoretical as well as empirical grounds that may be used to identify psychological development in individuals that might protect them from HIV infection later in life. The items for self-esteem (Part B) were adapted from Du Bois et al. (1996) for assessing multiple domains of self-esteem in young adolescents; the items for self-efficacy (Part B) were taken from the Schwarzer self-efficacy scale[19] (Schwarzer 1996). The items for intergender communication were taken from the index of peer relations (IPR) (Hudson, 1992). These items were redrafted for the particular context and age group. The social responsibility items were developed by the researcher and had to be tested in this context. Finally, five variables for self-esteem, eight variables for self-efficacy, six variables for intergender communication and five variables for social responsibility were used. In the second part, the study uses a 3-point rating scale of "I agree", "I disagree" and "I am not sure". Thus, a high score (3) in a particular measure represented a higher degree of that behaviour or entity; a low score (1) presented a lower degree of that behaviour or entity. Missing or false values were scored with 0. In order to guard the results against possible bias due to the response style, items were negatively worded and the score was changed respectively. The value of the scale was standardised on the 3-point rating scale in which the additive scores were divided through the number of items for the specific variable.

Part C contains all items on knowledge of HIV/AIDS. The researcher formulated most of the items herself because the available questionnaires had not been used for pre-adolescents before. The researcher combined items from different questionnaires used in South Africa (Boshoff, Pretorius, & Ungerer, 1993; Valois & Kammermann, 1984; Everett, 1995). In addition, the items had to be formulated in a way that the young age of the participants and their general low literacy level regarding medical knowledge were accommodated. The items were orientated on the construct 'dangerous or non-dangerous'. The response format in part three consists of two scales on knowledge of HIV/AIDS. Knowledge scale 1 recorded general knowledge on HIV/AIDS. This scale used 16 items, for example "What does AIDS mean?", "What does safer sex mean?", "Where does the HI-Virus come from?" Knowledge scale 2

[19] At the beginning of the study only the self-efficacy scale for adults was accessible to the researcher.

used 10 items on HIV transmission and protection, and asked questions such as “How can someone become infected with the HI-Virus?”, “What kinds of body fluids transmit the HI-Virus?”, “What protects you from the HI-Virus?” The response format in part three used “Yes”, “No” and “Not Sure” options and therefore used a 2-point scale. A score of 1 is assigned for right answers and 0 for wrong, including missing and false answers. This means the right answers were counted and divided by the number of questions, and multiplied by 100 to get the percentage of right answers.

6.4.1.4 Considerations about the Language Applied

The items and questions were originally written in English, and then translated into isiXhosa. The questionnaire for the present study was translated by an independent translator of the Human Science Research Council whose first language is isiXhosa. The translation back into English was done by another person whose first language is isiXhosa. This translation was compared with the original version, and any discrepancies were resolved by negotiation between the two translators. Although the translated version of the questionnaire was tested in a pilot study, it cannot claim validity because of a too small number of samples participating. As the Du Bois self-esteem scale had already been used in South Africa and translated into isiXhosa (Wild, Flisher, Bhana, & Lombard, 2002), it was revised for this specific age group.

6.4.1.5 Data Collection Procedure

Both groups underwent the questionnaire sessions within the same school week. The questionnaire was administered in isiXhosa in a classroom situation under supervision of two trained research assistants, the class teacher, and the research manager. First, the intervention and control groups were identified; names were listed and coded to ensure data protection and anonymity. A specific data collection procedure was employed to motivate learners and ensure the correctness of the data collection. The procedure was as follows: (a) introduction of the research team and the purpose of the visit; (b) explanation of the code of ethics (every answer is voluntary and treated in confidence); (c) handing out of a questionnaire and pencil for each learner; (d) separating learners with reading and writing problems (identified by the class teacher, supervised by one research assistant); (e) slow reading of the questionnaire by either the class teacher or one research assistant and (d) slow reading of each item twice; (f) questions on the definitions of words during the reading; (g) the researcher checking the correctness of the procedure; and h) ending of session with the distribution of food and drinks to the learners. At the beginning of the first session, the trainers explained two items and

answer schemata. Many children used the opportunity to ask questions to ensure the correctness of their answers. A complete redesign was undertaken to avoid strenuous learning processes during follow-up test 1.

6.4.1.6 Data Analysis and Analysis of Instrument

The final categories for the analysis of the family background were entered into the Microsoft Excel 2003 database. Six categories were administered: 1) urban-extended (multigenerational including children, parents and grandparents), 2) nuclear (biological parents and children), 3) single-headed (one biological parent and children), 4) nuclear and stepparents (one biological parent, stepparent and children), 5) extended and stepparents (multigenerational, biological parent with one stepparent), and 6) special (legal guardians) family systems. The psychological and cognitive variables were computed using the Statistical Package for Social Sciences (SPSS 11.5 for Windows). Some cases were deleted from the database: being absent (including migration), reading and writing problems, mental disability, and refusal.

The data gathered from the questionnaires were analysed using means, factor analysis and exploratory data analysis. Factor analysis was used to determine the reliability and validity of the instrument, that is, the questionnaire. Between both scales there exists a slight correlative connection (r =.32; p <.01). Starting point of the realised scale formation on the constructs was an item analysis of the pretest results. Interestingly, regarding the psychological variables, items with negative wording on self-esteem (e.g. “I sometimes think I am a failure” or “I often feel ashamed of myself”), communication between genders (e.g. “The boys in my class do not seem to even notice me” or “The boys in my class seem to look down on me”), and social responsibility (e.g. “I do not care about what other people think about what I do” or “I do not feel responsible for whatever I do in my life”) could not be implemented in the scales because of an absent selectivity. The reason for this could be problems of the samples to understand the items. According to the educational personnel at the case study schools, children at that age do not use negative statements in their native language isiXhosa. Those items had to be excluded from the analysis and consequently caused a loss of information. Table 6.4 shows the internal consistency and the range of the selectivity of the scales after the item analysis.

Table 6.4.

Data Analysis of Questionnaire by Cronbach Alpha, Number of Items and Selectivity of Scales.

Variables	**Cronbach's alpha**	**No. of items**	**Range of selectivity**	
			Min	Max
Self-esteem	.61	5	.29	.46
Self-efficacy	.65	8	.22	.52
Gender communication	.66	6	.31	.62
Social responsibility	.64	5	.34	.46
Knowledge 1	.81	16	.25	.55
Knowledge 2	.72	10	.23	.50

The effects of the intervention were measured by factorial ANOVA to discover significances, the analysis of mean and the analysis of variances and error; the Greenhouse-Geisser was used to correct the degree of freedom for the assessment of critical coincidence of the *F*-Values. A Scheffétest was applied for the comparison of pairs (measurement by hand in accordance with Bortz, 1999). Finally, a McNemartest was used to carry out a full exploration of the examination between pretest and all following three-test phases on both knowledge scales.

6.4.1.7 Limitations and Strategies to Guarantee Data Correctness

Two limitations were regarded as the most limiting to the validity and reliability of the survey. First, at the time of the administering of the questionnaire no standardised tests were available for this age and language group or the research rationale in South Africa. The result was that a self-administered questionnaire had to be developed that consisted of different items from different scales. To reach reliability of this instrument it would have been appropriate to do an extensive pretest with the instrument. However, and this is the second most affecting limitation, the pretest turned out to be inappropriate due to constraints in timetables mainly effected by unanticipated events (see also par. 5.6.2).

Further limitations for this instrument have been the identification of the real ages of learners, among others. Many learners gave a different birth date than was written in the school register. Teachers provided the following explanations: (a) parents did not inform their children about their birth dates because of their own illiteracy, (b) some learners did not have birth certificates because they were born at private homes in rural areas away from public clinics or administration centres, and (c) because of the extreme poverty in many families special dates such as a birthday are not celebrated. In the end, the analysis of age groups was measured on the basis of listed birth dates in the school register. In addition, despite a system

of verification of marks to identify learners with learning problems, the procedure could not identify such cases because of confusing school marks in the registers, as was the case at Ikaya Primary School. Consequently, it can also be assumed that learners who had reading and writing problems were not identified. Both teachers explained that because of the high learner-teacher ratio many learners with learning problems were undetected. The teachers did, however, indicate those learners with reading and writing problems who were known to them and who were then excluded from the analysis.

The period between pretest and the second follow-up test amounted to 12 months during which learners underwent extensive biological and psychological changes from pre-adolescence to adolescence. These developments were taken into consideration in the analysis by writing the measured differences between means from test phase I to test phase IV. It was also assumed that learners underwent a learning process in answering the test items. This learning process could possibly influence test results; consequently, a new design of the questionnaire containing the same items was designed for test phase III.

There possibly existed additional learning input on HIV/AIDS. Media campaigns on HIV/AIDS, discussions with other people and learners about HIV/AIDS or about the life skills programme at school or at home may have had an influence on learners' knowledge. It was established that no other planned and direct intervention took place in the living environment of the children in either of the groups before intervention.

Furthermore, research results in general are assumed to be strongly influenced by the social environment, for example parents and school authorities that in turn influence the development of health and social behaviour outside of the intervention. Initial attempts to understand these influences were made in an extensive field study, field interviews and the literature review. Because of financial and time constraints interviews with the strongest pillars of socialisation for pre-adolescent children, namely their parents, could not be undertaken and is considered a further limitation.

6.4.2 Opinion Poll among the Intervention Group

The aim of the opinion poll was to examine children's long-term general attitude towards the implemented life skills programme on HIV/AIDS and sex education and their physical environment. The survey was done in August 2004, five months after follow-up test 2 and eight months after the end of Intervention II. Only learners from the intervention group who attended five different Grade 5 classes at Ikaya Primary School at the time, and who were specifically concentrated for this survey, took part in the poll.

6.4.2.1 Description of the Instrument

The opinion poll had the character of a voluntary activity session which used three methods to gain results: individual decision-making, brainstorming, and group work. During individual decision-making children were asked to assess their living environment ("What is Kayamandi like?"), express their attitude towards the life skills programme on HIV/AIDS and sex education ("Did you like or did you not like the life skills programme?") and if they would recommend the programme to other learners ("Do you think other children should receive the same life skills programme?"). These questions were answered by standing next to the appropriate opinion pinned on the black board. Participants were also asked to express what they think is ugly and/or beautiful in their community using the brainstorming method by which every learner was asked to give two answers. The final group work in mixed gender was aimed at clarifying questions ("What made you happy/sad in the life skills programme?"). The methods were used one after another; specific time frames were set to guarantee a flow of activities. The gathered quantitative and qualitative data were counted by two research assistants, immediately documented, computerised, and finally analysed.

6.5 Conclusion

This chapter illustrated how the research topic was translated into specific research aims and its measurable pendants within a quasi-experimental design. In order to guarantee a strong instrument design, the combination of qualitative and quantitative instruments was used to maximise validity. The applied research instruments provided information on the development of individual learners, as well as possible intervening factors from their environment. Additional issues such as cultural implications were taken into consideration. The research scheme was designed to collect comprehensive data that provides information about the research questions from different perspectives. The validity of data was proved by a clear explanation of the phenomena and by the control of all possible biases that may have falsified the research finding. The research results should be clear and detailed. To avoid the falsification of the research results, the key concept of the study is supported by an extensive literature review of similar experiments and their instruments in the field of health promotion and AIDS prevention in chapter 2.