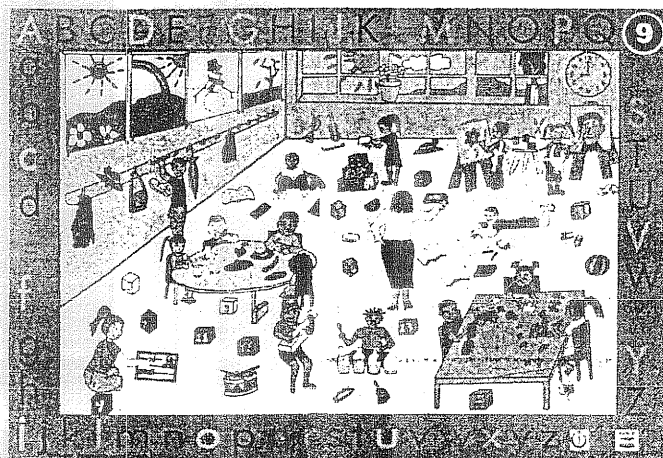
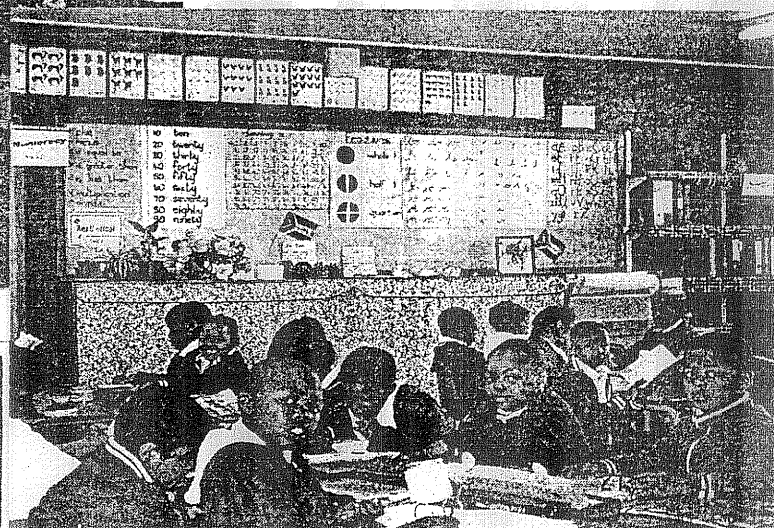


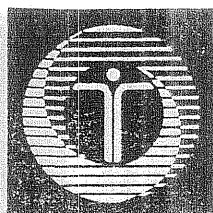
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DISTRICT DEVELOPMENT SUPPORT PROGRAMME (DDSP)

2003 Grade 3 Learner Assessment Results

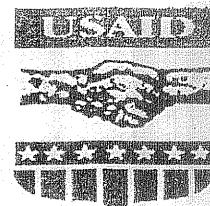


December 2003



HSRC

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HSRC REPORT
DISTRICT DEVELOPMENT SUPPORT PROGRAMME (DDSP)

Report on DDSP Grade 3 Learner Assessment 2003

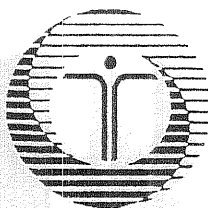
HUMAN SCIENCES RESEARCH COUNCIL

UNDER CONTRACT FROM

RTI International

December 2003

Nicolaas Claassen
Matthews Makgamatha
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EXECUTIVE SUMMARY

The District Development Support Programme (DDSP) is an education improvement initiative of the South African government funded by the United States Agency for International Development (USAID). USAID contracted the RTI International to collaborate with the Department of Education (DoE) and the four provincial departments of education in managing the implementation of the programme in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo.

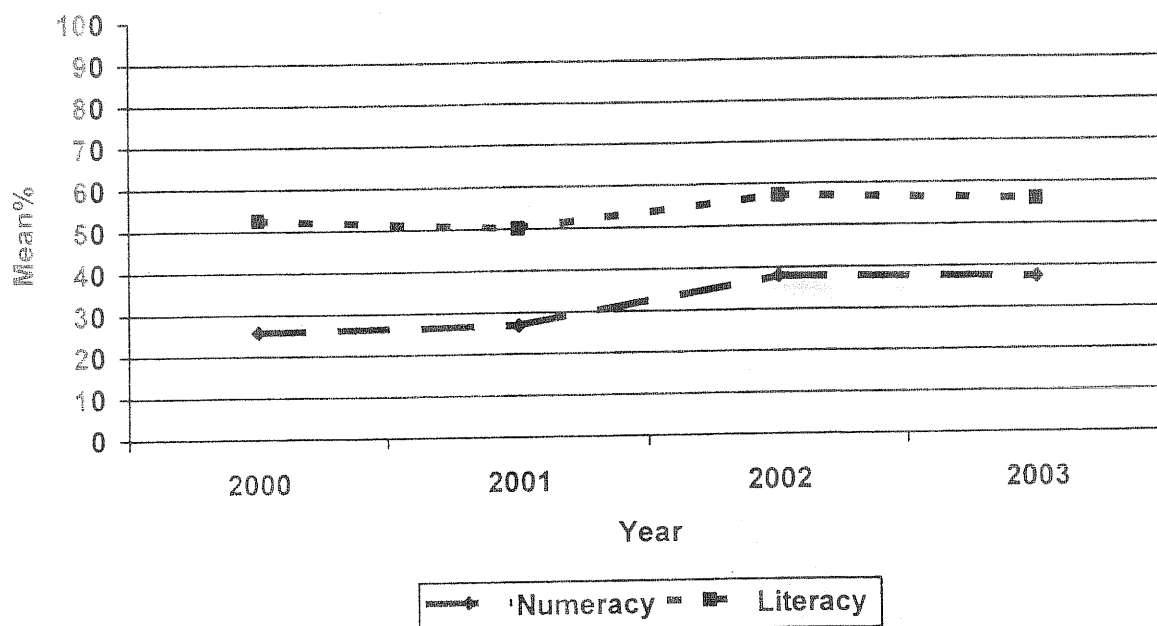
The DDSP's goal is to improve the quality of educational delivery for Grades 1-9. In the area of curriculum development, one of the ways the DDSP intends achieving this is through the Assessment Modeling Initiative (AMI). The fundamental purpose of the AMI is the development and piloting of an assessment model to contribute towards and inform the development and implementation of a fully functional national assessment system in South Africa. The Human Sciences Research Council (HSRC) was contracted by RTI International to implement the Assessment Modelling Initiative in the 500 DDSP schools in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo. The Assessment Modelling Initiative comprised the following:

- The development of Assessment Resource Banks (ARBs) for foundation phase educators.
- Conducting a uniform assessment of learner Numeracy and Literacy attainment levels in three consecutive years to determine changes in learner performance at Grade 3 level.

Paper-and-pencil assessment instruments to assess Grade 3 achievement in Literacy and Numeracy were developed in English by the Joint Education Trust. The tests were called the Mahlahle instruments and were translated into eight other languages offered by the DDSP schools. The Numeracy test is a test with free response questions (not multiple-choice) in four strands of Numeracy, namely counting and ordering, addition, subtraction and multiplication. In the Literacy test the learners were assessed on core Reading competencies such as recognition of frequently used words, sentence completion and comprehension of short fiction and non-fiction texts. All the questions in the reading test were multiple-choice, so the correct answer could be selected by chance. The assessment instruments were administered in all schools in October of 2000, 2001 and 2002 to see whether changes in level of achievement could be observed. In 2003 a representative sample of 77 schools was tested to determine whether the positive changes observed in 2002 were enduring.

Average scores obtained in the three years are given in the table below and graphically presented in the graph that follows.

	Mean %			
	2000	2001	2002	2003
Numeracy	25.84	26.78	38.04	37.32
Literacy	52.58	50.23	57.22	56.01
Total	36.71	36.08	45.65	44.74



Literacy scores were considerably higher than Numeracy scores, probably due to the nature of the sets of questions used and therefore they should not be directly compared. The average percentage of both Numeracy and Literacy remained essentially the same from 2000 to 2001 and leaped up by 9% in 2002. The increase of 9 percentage points from 2000 to 2002 is not only statistically significant, but this must be considered a large and meaningful increase in performance. For Numeracy the increase was 12 percentage points and for Literacy 5 percentage points. Performance on all Numeracy and Literacy tasks increased, indicating a general improvement and an improved level of mathematics and language understanding rather than better performance on some tasks due to specific training. DDSP service delivery to educators was discontinued at the end of 2002. By the end of 2003 Numeracy and literacy scores had declined by a mere 1%. Although statistically significant this is a very small decline.

The large increases in 2002 and subsequent slight decline in 2003 may have resulted from any one or more of a number of factors that could have influenced performance. Some of the possible factors are mentioned below.

- Service providers were probably better established in the districts in 2002 than in 2001 and were able to provide better training and support, leading to markedly improved performance. Their withdrawal in 2003 led to a slight decline from the high levels attained in 2002, but essentially the interventions proved to be sustainable in the sense of keeping up to the higher levels of performance realised in 2002.
- Educators probably became more comfortable with teaching in the new curriculum framework in 2002 and were succeeding better in translating curriculum goals into effective classroom practice. However, they were not able to facilitate another increase in performance in 2003 when no DDSP assistance in curriculum delivery was provided.

- The Assessment Resource Banks could have concretised the curriculum outcomes in a meaningful way for educators in 2002 and could have empowered them to teach more effectively towards desired curriculum outcomes. The effect of the mere availability of ARBs appears to be limited as no further increase was demonstrated in 2003 in spite of their availability through the year.
- As the increase did not continue in 2003 it is not really likely that support from the districts was a major factor in the changes. After all district support should be steadily increasing as the answers to the contextual questionnaire pointed to rather low district involvement.
- There is of course the remote possibility that the nature of the questions in the tests or some questions in the tests may have become known and could have resulted in some "teaching to the test". This is regarded as unlikely except in so far as this kind of information was divulged in the previous reports.

The influence of these and other factors on achievement need to be clarified before firm conclusions regarding the cause of the improvements and the efficacy of the assistance rendered can be arrived at. The following may be said particularly in connection with the Assessment Modelling Initiative.

The Assessment Resource Banks can bring clarity on content standards. It is important that educators know what is expected of learners at what stage. Clear examples of what is implied by the curriculum such as provided in the Assessment Resource Bank should be available to every educator. The Assessment Resource Banks also serve to bring clarity on what is meant by the four levels of attainment. Through the exercises in the Assessment Resource Banks the educator is lead to an understanding of performance standards. Having the same principles and curricula and implementing them in a commonly understood way are likely to lead to consistently appropriate standards.

It is important also to monitor the performance level of learners at district and school level to see whether learners meet performance standards at the end of each phase. Should performance lag behind, appropriate steps should be taken to ensure that all learners do learn at the required rate. For economic reasons this kind of assessment is probably best done by administering an instrument such as the Mahlale instruments at the end of a phase. A standardised instrument will be of more value than an ad hoc collection of items covering the curriculum such as was used in this case, as a standardised instrument will facilitate comparisons across learning areas and across various forms of the instrument used at various point in time. In addition performance on the monitoring instrument should be translated into performance standards such as Partially Attained or Attained.

It may be considered an unfortunate omission in study design that while desired changes were observed, the study does not provide us with an understanding of how the changes came about. It is likely to be of value to those who would like to facilitate positive change in education to gain this kind of understanding. An in depth study at a few sites at this point in time is likely to contribute valuable information to this end. The study should investigate in a qualitative way how the observed quantitative changes came about so that relevant and successful intervention programmes may be implemented.

CHAPTER 1

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

The District Development Support Programme (DDSP) is an education improvement initiative of the South African government funded by the United States Agency for International Development (USAID). USAID contracted RTI International to manage the DDSP, which is being carried out in conjunction with the Department of Education (DoE) and with the four provincial departments of education where the programme has been implemented, namely the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo.

The overall goal of the DDSP is to improve the quality of educational delivery for Grades 1-9 in the areas identified by the DDSP. This will entail an improvement in the quality of teaching and learning, in the quality of management and governance, as well as in the quality of support services provided to schools. The four subgoals are as follows:

- Subgoal 1: Improved quality of curriculum practices
- Subgoal 2: Improved quality of district and school management
- Subgoal 3: Enhanced school governance
- Subgoal 4: Refined theory and best practice for the entire school and district

The above subgoals and the initiatives to address them are conceptualised within existing key educational policies. In other words, the DDSP aims to operationalise key policies on teaching and learning (curriculum) in order to effect speedy improvements in learning and generate core policies on leadership, management and governance – the ultimate aim being to bring about more sustainable improvements in learning outcomes and to help the school act as a centre for development in the community.

In the area of curriculum development, one of the ways the DDSP intends doing this is through the Assessment Modeling Initiative (AMI). The purpose of the Assessment Modeling Initiative is the development and piloting of an assessment model, which will contribute towards and inform the development and implementation of a fully functional national assessment system in South Africa.

1.2 ASSESSMENT MODELING INITIATIVE

The HSRC was contracted by RTI International to implement the Assessment Modelling Initiative in the DDSP schools in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo. The objective of developing an assessment model will be achieved through the following measures:

- * Proposing a single assessment model with four operational applications (informed by each of the DDSP provinces) of key aspects of a district assessment system. Assessment of districts thus involves a systemic evaluation that focuses primarily on the level of the district, school and/or classroom.
- * Sharing of lessons learned from this process to stimulate informed discussion among relevant stakeholders in South Africa aimed at the development of a national assessment system.
- * Generating information needed by the DDSP to develop models of fully functional districts.
- * Correlating district-school-classroom factors with learner performance.

The Assessment Modelling Initiative will be restricted to:

- * Those aspects of a national assessment system operating at district, school, classroom and community levels.
- * The foundation phase and more particularly Grade 3 learners.
- * DDSP target districts and schools.

The Assessment Modelling Initiative is based on a two-pronged strategy to:

- a) help foundation phase educators improve the teaching and learning process through the utilisation of Assessment Resource Banks (ARBs);
- b) evaluate the performance of learners at the end of the foundation phase (Grade 3).

1.3 THE MAHLAHLE INSTRUMENTS

In preparation for the implementation of the Assessment Modeling Initiative, RTI international issued a special task order to the Joint Education Trust (JET) to develop a Grade 3 Numeracy test in consultation with the Department of Education, provincial departments and teacher unions. This test, as well as a Literacy test adapted by JET from the International Association for the Evaluation of Educational Achievement (IEA) Survey conducted in 27 countries, was used in the DDSP Grade 3 baseline study during 2000. These tests were called the Mahlahle instruments and were translated into eight other languages offered by the DDSP schools.

It is the understanding of the HSRC that the Mahlahle instruments do not attempt to cover all the outcomes specified or implied in the South African National Curriculum Statements (NCS). They do, however, assess learner performance for a number of the important outcomes that may be expected to be attained by the end of Grade 3. The relationship between the Mahalahle instruments, the curriculum and life in a broad sense as this is understood by the HSRC has been represented graphically in Figure 1.1.

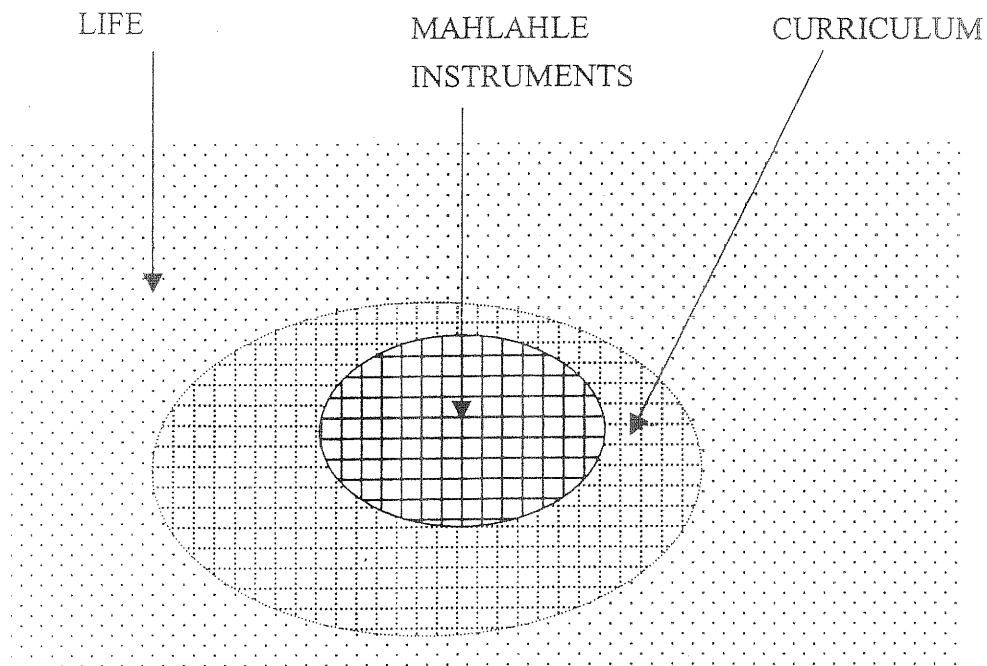


Figure 1.1: Relationship between the Mahlahle instruments and the curriculum

No boundaries have been drawn for that part of the figure indicating life in a broad sense. The blending of the curriculum into life outside school is indicated by a dotted line. The Mahlahle instruments themselves address a limited and clearly defined section of the broader curriculum in Numeracy and Reading. The Mahlahle instruments don't claim to cover all of which is covered by the intended curriculum, but they do claim to cover some important sections of the curriculum comprehensively. As such, performance, and changes in performance, in the Mahlahle instruments may be used as indicators of the degree to which certain knowledge and skills had been attained by the end of Grade 3. The skills required for performing well in the Mahlahle instruments form an important part of the skills specified in the curriculum. Scores obtained in the Mahlahle instruments can indicate how well that part of the curriculum had been mastered.

1.4 PURPOSE OF THE REPORT

This report is fourth in a series of four reports. The baseline report (prepared by JET) was issued during February 2001 and should be used as a reference. The 2001 report reflected short-term performance changes. The 2002 report reflected changes becoming manifest in the longer term during active intervention. The purpose of the present report is to reflect performance changes from 2002 to 2003 after interventions had been stopped. The overall aim of the Mahlahle tests administered by the HSRC during 2001, 2002 and 2003 is to compare the results of the various years to the 2000 baseline study to

ascertain whether and to what extent there has been any improvement in the Numeracy and Literacy scores of Grade 3 learners

1.5 LAYOUT OF THE REPORT

The report is laid out in the following way:

- **Chapter 2** deals with the methodology of the study, including a description of the tasks and the assessment instruments and questionnaires.
- In **Chapter 3** the results for the Mahlahle test instruments (Numeracy and Literacy) are presented and the items analysed in the light of the results.
- In **Chapter 4** the relationships between the performance in the Mahlahle instruments and various other variables are explored.
- Finally, in **Chapter 5** the conclusions based on the results of the study are discussed and some recommendations made.
- **Appendix 1** contains some longer tables and technical information relevant to this report.
- **Appendix 2** contains the School Questionnaire completed by the principal
- **Appendix 3** contains the Educator Questionnaire completed by educators in the foundation phase
- **Appendix 4** contains frequency tables of the School Questionnaire and the Educator Questionnaire as well as some comments on the observed results.

CHAPTER 2 METHODOLOGY

This chapter describes the methodology used for the administration of the Mahlahle instruments, and the data collection, processing and analysis methods.

2.1 INTRODUCTION

The HSRC was contracted by the RTI International (RTI) to administer the Grade 3 Numeracy and Literacy instruments and questionnaires to learners in the DDSP schools in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo provinces during October 2001, 2002 and 2003. These instruments were developed by the Joint Education Trust (JET) and were administered during 2000 to the same DDSP schools in order to obtain baseline information.

2.2 LEARNER POPULATION

In 2000, 2001 and 2002 learners in all DDSP schools were assessed. Only Grade 3 learners in schools in the DDSP project in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo Province were assessed. In each school 40 Grade 3 learners were randomly selected and assessed. If a class had fewer than 40 learners, the entire class was assessed. In cases where more than one Grade 3 class was found, a random sample of learners was selected from each class and assessed. Care was taken to include approximately equal numbers of boys and girls in the samples tested.

In 2003 assessment was done in a random sample of 77 of the DDSP schools only in order to save costs. Care was taken to sample from each district and to stratify according to district size.

2.3 MATERIALS

The materials used were the learners' assessment instruments for Numeracy and Literacy (with the test administration manuals and memoranda) and the contextual questionnaires. All instruments were developed by JET, in the following languages: Afrikaans, English, Sepedi, Setswana, South Sotho, Tshivenda, IsiXhosa, Xitsonga and IsiZulu.

2.3.1 LEARNER ASSESSMENT INSTRUMENTS

The learner assessment instruments included the following:

Numeracy test: This is a paper-and-pencil test with free response questions (not multiple-choice) in four strands of Numeracy, namely counting and ordering, addition, subtraction and multiplication. In particular, the test assesses learners in respect of the following:

- Counting, ordering, skip-counting forwards and backwards in ones, twos, fives, tens, 25s, 50s and 100s and the use of number lines.
- Addition - adding of various combinations of units, tens and hundreds including the carrying of units and tens.

- Subtraction - subtraction of various combinations of units, tens and hundreds including the carrying of units and tens.
- Multiplication - multiplying various combinations of numbers from 0–10.

Literacy test: This is also a paper-and-pencil test, but all the items are multiple-choice. The following core reading competencies or learning outcomes were assessed in the study: recognition of frequently used words; sentence comprehension; and comprehension of short fiction and non-fiction texts. In particular, the test assesses learners' ability to access information, infer information, use language in context, and apply information from a variety of text forms such as illustrations, invitations, instructions for a technical activity, timetables and short non-fiction passages. The Literacy test consists of three parts.

(i) Word Recognition test of 40 items

Learners have to match a simple word with one of four pictures. This test is identical to that used in the International Association for the Evaluation of Educational Achievement (IEA) Survey (1990-91) for nine year-olds in 27 countries. However, the time limit for the task was extended from one and a half minutes to eight minutes in the DDSP survey to allow most learners sufficient time to display their reading ability. The pictures in this sub-test were scanned by the HSRC in order to improve the quality of the pictures.

(ii) Sentence Comprehension test

Learners have to read incomplete sentences and choose the best word from four options to make a meaningful sentence. Each sentence has an accompanying illustration to aid comprehension.

(iii) IEA passages testing Reading Comprehension

This section was made up of four passages also from the IEA pilot tests in the international survey conducted by the IEA in 1990-1991 in 27 countries (at the nine-year-old level). Each of the four passages has four or five questions, adding up to a total of 17 questions. The learners in the study had to read the passages and answer the comprehension questions that followed.

2.3.2 CONTEXTUAL INSTRUMENTS

In addition to the learner performance instruments, the following short questionnaires were administered to obtain contextual information from the respondents:

- *List of learners*, which was used to gather the following learner data: learner's name, date of birth, age, gender, number of years in foundation phase, home language, and the educator's assessment of the learner's mastery levels of Grade 3 Numeracy and Literacy. The List of Learners consisted of 10 questions.
- *School questionnaire*, which captured the following school data: number of learners in Grades 1–3; number of educators teaching each grade; educator qualifications and teaching experience of these educators. The school questionnaire comprised 27 questions.
- *Educator questionnaire*, which requested educators to provide subject data such as: teaching experience, time spent teaching Numeracy and Literacy; main learning resources used; and the frequency of assessment tasks. The educator questionnaire comprised 14 questions.

2.4 PRE-ADMINISTRATION ACTIVITIES

2.4.1 PERMISSION FOR ADMINISTRATION

In June 2003 the HSRC was contracted by RTI International to administer the Mahlahle instruments to a sample of the DDSP schools. Prior to the administration of the Mahlahle instruments, letters requesting permission for access to schools were sent to the provincial and regional offices of the departments of education in the Eastern Cape, KwaZulu-Natal, Northern Cape and Limpopo Province. In all four provinces permission was granted to the HSRC to administer the Mahlahle instruments to Grade 3 learners during October 2003.

2.4.2 SAMPLING OF SCHOOLS IN 2003

RTI suggested something in the range of a 15% sample to limit costs to available funds. That would come to 69 schools. RTI also wanted to be able to report at both the provincial and the district level in addition to the national level. Drawing a 15% sample from each district would be unlikely to result in reliable scores for the smaller districts such as Cala where there were only 6 schools. In that case one school would have to be tested and if schools are diverse it is not possible to generalize from the performance of one school in the district to the performance of the district as a whole. Consequently more than 15% of the schools were to be selected in the small districts. The number of schools decided on for each district in consultation with RTI is indicated in Table 2.1. in the Appendix. Seventy-seven of the 456 schools in the population were selected for assessment. This comes to 17% of all the DDSP schools.

In each district the appropriate number of schools were randomly selected. Each school selected was also allocated a first and a second replacement school should it prove impossible to test at the selected school. Eventually one school in Hlanganani was replaced, as there was no Grade 3 class. In Kimberley two schools had to be replaced due to amalgamations. The three systematic replacements can be considered a very small deviation from the random sample of 77 and can be regarded as acceptable. The list of schools is presented in Table 2.2 in the Appendix. In view of the procedures described above it may be said that the sample was representative of all DDSP schools

It needed to be demonstrated that the national, provincial and district means were similar for the schools in the sample and those not in the sample. The national means for 2002 for (a) sampled schools (b) not sampled schools and (c) all schools tested in 2002 are presented in Table 2.3.

Table 2.3: National means (%) for 2002 for schools in the sample and not in the sample

Category	Numeracy		Literacy		Total	
	Mean	N	Mean	N	Mean	N
Not in sample	37.96	11026	56.81	11026	45.44	11026
In sample	38.40*	2399	59.11*	2399	46.62*	2399
Total	38.04	13425	57.22	13425	45.65	13425

* Difference significant at the 5% level

For both Numeracy and Literacy the means were higher for the sampled schools than for the not sampled schools at the national level. The differences were statistically significant. For Literacy the difference was 2.3% in favour of the schools sampled. The total mean reported for 2002 was 45.65%, but had this sample of schools been used the mean % would have been 46.6%. In other words this sample was performing slightly better than all the schools tested in 2002. When doing the 2003 analyses these findings should be borne in mind. We have sampled a group of schools slightly stronger than the population. One may therefore expect the 2003 results for these schools to be slightly better than the scores reported for the population in the 2002 report.

As additional schools were selected in the districts with only a few schools those districts were actually overrepresented in the sample. Strictly speaking appropriate weighting should be done to ensure correct proportional representation. Weights were calculated and the national means were recalculated with these weights. Numeracy was 0.2% lower and Literacy 0.2% higher than the means when no weighting was done. As no meaningful changes would result from weighting it was decided to use the data as it stood and to do no weighting.

2.4.3 PROVINCIAL CO-ORDINATORS

In order to facilitate the administration of the Grade 3 learner instruments, seven provincial co-ordinators were recruited for deployment in the four DDSP provinces. All co-ordinators had been to the schools before and had extensive knowledge and experience of Mahlahle administrations. They recruited test administrators from among the test administrators of 2002. They also visited all schools in the sample to inform them that assessments would be conducted in their schools in the first two weeks of October.

2.4.4 WORKSHOP FOR PROVINCIAL CO-ORDINATORS

A workshop for provincial co-ordinators was held at the HSRC in Pretoria on 3 October 2003 where the coordinators were briefed on the background to the AMI project and given a demonstration on the procedures for administering the Mahlahle Numeracy and Literacy tests and the related questionnaires. This was to prepare them for the training of fieldworkers. At the end of the workshop the co-ordinators were given the materials they would need to prepare for the training workshops in the provinces.

2.4.5 RECRUITMENT OF FIELDWORKERS (TEST ADMINISTRATORS)

Provincial co-ordinators were responsible for recruiting test administrators from their districts and provinces. They used the guidelines set by the HSRC for recruiting test administrators and were forbidden to recruit currently employed education officials. Some of the fieldworkers who participated in the 2001 and 2002 administration who were available were recruited for the 2003 study. All fieldworkers were recruited to administer the tests only. There was no need for markers as the HSRC had planned to mark the scripts electronically. Each co-ordinator was given the number of test administrators required for his or her district(s). All candidates had to submit their CVs and copies of their identity documents to a

co-ordinator who then made a preliminary selection. The AMI management team ratified the fieldworkers selected. A person selected as a test administrator had to:

- be a fluent speaker of the language of the schools he or she would be testing/visiting, in addition to English;
- be residing near the sampled schools;
- have some experience of teaching and/or educational research;
- have experience of working with children;
- have a recommendation of reliability;
- have a matric certificate as a minimum qualification.

Furthermore, half of the candidates had to have valid driver's licenses.

2.5 ADMINISTRATION FOR MAIN STUDY

2.5.1 PRINTING, PACKAGING AND DELIVERY OF MATERIALS

All printed materials were packaged at the HSRC for each school. A courier service was used to transport the materials to the various training centres in the four provinces. The delivery and checking of materials at the training centres was done a day prior to commencement of the training by the provincial co-ordinators.

2.5.2 TRAINING OF FIELDWORKERS

The fieldworkers were recruited in the DDSP provinces to ensure that they were familiar with the location of the schools, accessibility of the roads, etc. All the fieldworkers in each of the DDSP provinces attended a one-day training session, provided by the co-ordinators and monitored by HSRC researchers. The HSRC researchers made any additions to ensure that the training was up to standard. The fieldworkers were trained in the administration of Numeracy and Literacy instruments in the learners' respective languages of learning and in the use of the contextual instruments (learner, educator and school questionnaires). Although the administration manuals were written in English, the instructions to the learners were translated into their respective languages of learning.

In addition to the one-day training, the first day of the administration served as a further training exercise (practical component of the training) where the fieldworkers observed each other administering a section or sections of the instruments to the learners. In the afternoon the same fieldworkers held a debriefing session. The HSRC researchers, who had been assigned to the respective DDSP provinces to monitor the administration process, facilitated the discussions. During the debriefing session the fieldworkers had the opportunity to share their experiences with each other.

2.5.3 ADMINISTRATION OF THE TESTS

The administration of the tests took place from 6 October 2003 to 10 October 2003. Learners in each school were assessed using the language of assessment used in the baseline study as indicated by the

school principal to the co-ordinator during the visit in September 2003. Table 3.1 shows the number of schools that were assessed in each province and district in 2003.

2.5.4 QUALITY ASSURANCE

Steps were taken to ensure that the data collected during the administration of the Mahlahle instruments were of good quality. These steps included:

- intensive training of fieldworkers (discussed above)
- monitoring of the test administration process in selected schools
- feedback from the test administrators
- the data-capturing process
- electronic scoring (marking) of scripts¹

2.5.4.1 Monitoring of the test administration process

During the administration HSRC researchers and the provincial co-ordinators monitored the process in 30 schools. Each monitor had to complete a monitoring form by recording his or her observations of the test administration process and also interviewing the test administrator at the end of the testing session. The information sought by the monitor included:

- whether the test administrator was able to use and follow the test administrative manual
- the appropriateness and effectiveness of the training received by the test administrator
- whether the learners were able to follow the administration instructions clearly
- the conditions under which the test administration took place
- the suitability of the testing venue
- the appropriateness of the language of testing for the learners
- the test administrator's general ability to handle the testing situation

Data obtained from monitored and unmonitored schools was analysed and compared. Table 2.4 shows the means of learner performances in monitored and unmonitored schools. The sample of monitored schools was not systematically sampled from the larger sample of schools but schools were evenly sampled across all districts. The small difference between the means of monitored and unmonitored schools is not of any practical significance. The results indicate that the data obtained from this administration are reliable and valid.

¹ In 2001 electronic scoring of scripts proved to be more reliable than hand scoring

Table 2.4: Means of Numeracy and Literacy tests combined for monitored and unmonitored schools

	Number of schools (percentage)	Mean % of learners	Number of learners
Monitored schools	30 (39.0)	44.57	1 046
Unmonitored schools	47 (61.0)	44.86	1 388
Total	77 (100)	44.74	2 434

At the end of the fieldwork all the materials were checked, packaged and returned to the HSRC for coding, data capturing and scoring.

2.5.4.2 Feedback from monitors and test administrators

Feedback on the administration process was captured on a form specifically designed for this purpose by the HSRC. The form focussed on the following:

- schedule for testing
- identification of problems regarding the administration procedures
- identification of problems regarding resources available

The monitors, provincial co-ordinators and test administrators raised the following:

- Most of the schools provided testing venues that were suitable for administration purposes. This could be due to the fact that schools were notified well ahead of time about the Grade 3 assessment and had enough time to prepare.
- These classrooms were equipped with enough tables and chairs or desks.
- The seating arrangement for the learners allowed the test administrators to move around in the classrooms without difficulty while observing and attending to all learners. However, in some schools the physical facilities were rather limited.
- The testing sessions were very long for the Grade 3 learners. The learners were tired by the time they sat for the last sub-test (Text Comprehension). This was also noted in 2001 and 2002.

2.5.5 DATA CAPTURING

Data capturing involved capturing the learners' responses. The identification numbers of all tests and questionnaires were checked at the HSRC prior to the data capturing. Educators were linked to their learners via code numbers. The data were punched and electronically captured and then verified by punching them a second time. Discrepancies were investigated and appropriate changes were made to the final electronic data. Programmatic scoring of learner responses was carried out and edits were done to ensure the data were within the limits set. SPSS data sets were created, and data was merged with the data from previous years. The test booklets and questionnaires were appropriately filed and will to be kept available for three months.

2.6 RELIABILITY OF TASKS

Alpha coefficients were calculated in order to gain an idea of the reliability of the tasks. The Alpha coefficient can also be interpreted as an index of the degree of internal homogeneity or internal consistency of the items constituting the task. Alpha coefficients are shown in Table 2.5.

With 30 items in a task, an Alpha coefficient between 0.80 and 0.90 may be considered acceptable for tests of this nature. For 17 or 18 items, as is the case of Sentence Completion and Text Comprehension, an Alpha coefficient between 0.65 and 0.75 may be considered acceptable. The Alpha coefficients were acceptable for all the Numeracy tasks as well as for the first two Literacy tasks. However, the Alpha coefficient was rather low for Text Comprehension (0.57). The low reliability can be attributed to an abundance of very low scores, as the vast majority of learners found the task very difficult (see Chapter 3). Thus there was minimum information to discriminate between those who read poorly and those who could not make sense of the questions. The stability of measurement at particularly the school level where samples are relatively small may be negatively affected.

Table 2.5 Alpha coefficients for 2000, 2001, 2002 and 2003

Task	2000	2001	2002	2003
Counting and Ordering	0.88	0.87	0.88	0.86
Addition	0.91	0.91	0.92	0.92
Subtraction	0.91	0.90	0.92	0.92
Multiplication	0.89	0.88	0.89	0.88
Word Recognition	0.97	0.97	0.96	0.97
Sentence Completion	0.76	0.77	0.75	0.73
Text Comprehension	0.62	0.60	0.59	0.57

2.7 LIMITATIONS

Much effort went into ensuring a study design that would enable researchers to determine whether desired changes did occur. Yet it is necessary to point out some limitations.

Even though the seven tasks represent important fields in Numeracy and Literacy, they can in the first place not claim to represent the Numeracy and Literacy outcomes adequately and in the correct proportion. It was said that the Numeracy tasks measure counting and ordering, addition, subtraction and multiplication. In the Literacy tasks learners were assessed on core reading competencies such as recognition of frequently used words, sentence completion and comprehension of short texts. These limitations were admitted and do not constitute insurmountable obstacles. The more important issue here is the difficulty of the Literacy and Numeracy tests and the grading of difficulty of the questions. The tests were not developed in such a way that we can be sure that an increase of 5% in Numeracy is comparable to an increase in 5% in Literacy. So we don't know how to interpret the size of the increase in the two learning areas. It is also not possible to say that for 2000 the 26% obtained in Numeracy was less satisfactory than the 53% obtained in Literacy. The one test may have been relatively much more difficult

than the other. It would have been more meaningful to have Numeracy and Literacy scores that are comparable, but the way the assessment instruments were compiled did not make that possible. The decisions about items to be included were based essentially on the judgements of experts and very little if any relevant empirical evidence informed the selection of the questions included.

It is also a weakness in the assessment that the same instrument had to be used year after year. Even though every measure was put in place to ensure confidentiality the nature of such a large administration is such that the questions could have become known. This is especially true when an assessment gets to be viewed as a high stakes assessment. This means that the reputations of individuals or companies are at stake. It would have been more satisfactory to make use of secure parallel forms of the assessment instruments. Such instruments are necessary to ensure comparability of measures from year to year and of one learning area with another. Another alternative could have been to equate different tests via IRT modelling.

The three hours testing was necessary to sample adequately from a variety of areas, but three hours testing on one day is rather much for Grade 3. Even though adequate breaks were allowed some learners did become exhausted. Unfortunately the whole test procedure was not tried out adequately beforehand and all possible alternatives to get adequate sampling of a broad spectrum of performance in a limited time were not investigated. Had the tests been split in half with one half of the class doing say Form A and the other doing Form B the same coverage could have been achieved in much less time.

2.8 CONCLUSION

- The Numeracy and Literacy tests assessed skills required for an important part of the curriculum and were generally reliable.
- The tests were administered in the language of learning of the learners to ensure optimal accessibility.
- According to the reports of the monitors, the tests were properly administered. This is also evident from comparisons of the mean scores.
- The data were accurately captured and scored.
- Meaningful comparisons of performance levels in 2000, 2001, 2002 and 2003 can therefore be made based on the data obtained.

CHAPTER 3

COMPARISON OF RESULTS

3.1 THE LEARNERS

This section of the report provides the results of the Literacy and Numeracy tests administered in all DDSP schools in 2000, 2001, 2002 and 2003. Table 3.1 gives a breakdown of the number of Grade 3 learners in the DDSP schools in 2000 by district and province, and the number of Grade 3 learners tested in the four consecutive years.

Table 3.1: Number of Grade 3 learners tested in various years

Province	District	Primary schools with Grade 3	Schools tested in 2002	Grade 3 learners in schools visited	Learners tested in 2000	Learners tested in 2001	Learners tested in 2002	Learners tested in 2003
Eastern Cape	Cala	7	6	493	225	228	219	104
	Cofimvaba	12	12	532	390	373	433	118
	Herschel	18	17	1 108	570	496	489	138
	Lady Frere	10	9	433	234	216	209	88
	Queenstown East	27	26	1 903	810	805	772	109
	Queenstown West	13	13	864	423	427	415	130
	Total	87	83	5 333	2 652	2 545	2 537	687
KwaZulu-Natal ¹	Chwezi	20	20	1 091	660	635	557	69
	Ekhombe	22	22	1 152	643	653	602	61
	Godide	33	33	1 218	816	774	739	104
	Sibudheni	23	23	1 282	726	695	578	69
	Sigananda	28	28	1 794	1 004	968	931	138
	Total	126	126	6 537	3 848	3 725	3 407	441
Northern Cape	Kimberley	53	52	2 327	1 256	1 187	1 234	274
	Total	53	52	2 327	1 256	1 187	1 234	274
Limpopo	Apel	27	27	1 428	898	867	796	126
	Hlanganani	28	26	2 648	1 118	970	921	132
	Mkhuhlu	40	40	4 047	1 325	1 279	1 215	215
	Palala	34	34	1 855	1 091	1 092	992	204
	Polokwane	27	27	2 008	1 013	967	962	160
	Vuwani	41	41	2 309	1 499	1 542	1 361	195
	Total	195	195	14 295	6 944	6 717	6 247	1 032
Total		461	456	28 492	14 700	14 174	13 425	2 434

¹ The five subsections of KwaZulu-Natal are actually wards of the Nkandla circuit, but as they each serve a large number of learners, they will be treated as districts in this report.

Table 3.2 shows the age distribution of the learners who wrote the tests. The table reveals that the majority of the children tested were between the ages of eight and ten and that about a third of them were above the "expected" age of nine years for Grade 3. The age distribution changed slightly over the years with the percentage of 9 year olds steadily increasing. In 2002 the percentage of learners below the expected age of 9 declined from 25% to 18%. In 2003 it further declined to 14%. This could in part have resulted from the policy of passing all learners or because more learners were earning pass marks. The lower percentage of 8 year olds could also result from better enforcement of learners entering Grade 1 in the year when they turn 7 and not earlier.

Table 3.2: Age distribution of learners tested²

Age at test	2000		2001		2002		2003	
	No. of learners	Percentage of learners	No. of learners	Percentage of learners	No. of learners	Percentage of learners	No. of learners	Percentage of learners
<8	437	3.0	*	*	*	*	*	*
8	3 786	25.8	3 471	24.5	2 421	18.0	329	13.5
9	5 182	35.3	5 550	39.2	5 796	43.2	1115	45.8
10	3 024	20.6	2 604	18.4	2 772	20.6	550	22.6
11	1 220	8.3	1 332	9.4	1 141	8.5	224	9.2
12	546	3.7	523	3.7	563	4.2	95	3.9
13	250	1.7	198	1.4	201	1.5	55	2.3
>13	234	1.6	138	1.0	130	1.0	29	1.2
Unknown	21	0.1	358	2.5	401	3.0	35	1.5
Total	14 700	100.0	14 174	100.0	13 425	100.0	2434	100.0

3.2 CHANGES IN MEAN SCORES AT THE GLOBAL LEVEL

3.2.1 Comparison of mean percentages

The 2001, 2002 and 2003 administrations tried to determine the extent and nature of improved performance displayed by learners in the Mahlahle instruments. Small fluctuations from one assessment to another may be expected due to chance variation of the data. This is why significance testing is usually done to ascertain whether differences observed are due to chance fluctuations. A statistical-test could be conducted to ascertain the significance of the change, and with numbers as large as 13 000 even a very small change such as half a percentage point might well be significant.

The means, standard deviations and standard errors for the Numeracy and Literacy tasks and the combined score are reported in Table 3.3. The information is graphically represented in Figure 3.1. The combined or total percentage was calculated by dividing the total number of items answered correctly by the total number of items (189).

² This table assumes that a learner who was born up to and including September and would turn 9 in 2000 etc. would count as 9, and so forth, but if he/she was born in October, November or December he/she would count as 8. *Ages less than 8 or greater than 18 were recoded to the modus age, which is 9 as coding was probably done wrongly.

Table 3.3: Mean percentages for the Numeracy, Literacy and combined tasks

	Year	N	Mean	Std. Deviation	Std. Error
Numeracy	2000	14366	25.84	17.592	.147
	2001	14174	26.78	17.519	.147
	2002	13425	38.04	20.571	.178
	2003	2434	37.32	19.805	.401
Literacy	2000	13828	52.58	20.697	.176
	2001	14174	50.23	21.699	.182
	2002	13425	57.22	20.252	.175
	2003	2434	56.01	20.348	.412
Total	2000	13550	36.71	16.859	.145
	2001	14174	36.08	17.135	.144
	2002	13425	45.65	18.451	.159
	2003	2434	44.74	18.059	.366

N: number of learners tested

SD: standard deviation – provides an indication of the breadth of the spread of scores

Std error: provides an estimate of the accuracy of the mean obtained.

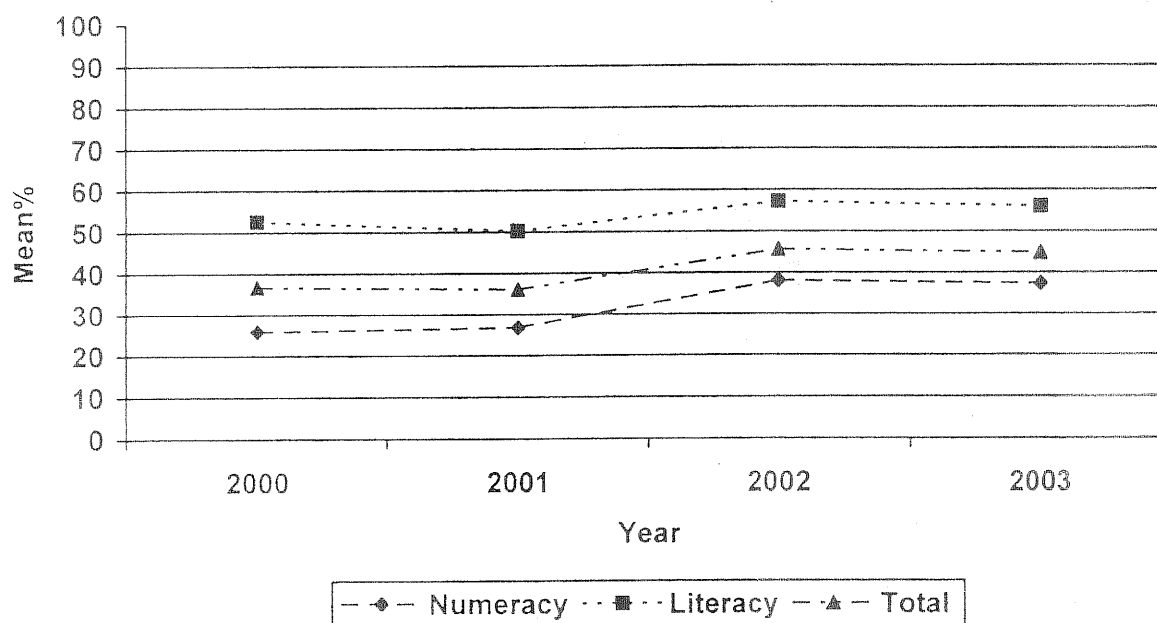


Figure 3.1: Means for Numeracy, Literacy and Total scores in various years

There was little difference between performance in 2000 and 2001. In 2002 performance increased significantly over 2000. Numeracy increased by 12% and Literacy by 5%. This was followed by a very small decrease in 2003. In 2003 Numeracy declined by almost 1% and Literacy by 1%. This means that the increase facilitated by the DDSP activities in the course of 2000 to 2002 still had beneficial consequences in 2003. The performance increase brought about by DDSP interventions was essentially maintained after intervention stopped. On the other hand the upward trend could not be maintained.

A rough estimate of the size of the difference between the means that could be characterised as significant at the 5% level can be obtained by multiplying the standard error by two. If the difference between the means is larger than two standard errors the difference is significant. As the numbers of learners are smaller at district level, the standard errors do become larger. In the smallest district with a sample of 61, the standard error increases to 2.3, implying that means will have to differ by 5 percentage points for the difference to be statistically significant. Considering the above we decided to draw attention to differences of at least one percentage point at the national level, at least 2% at the provincial level and at least 3% at the district level as smaller differences could readily be attributed to chance. The standard errors provided down to provincial level.

The percentages obtained in Literacy were in all cases much higher than the percentages obtained in Numeracy. This merely means that learners performed much better on the set of questions presented in the Literacy test than in the set of questions presented in the Numeracy test. It does not mean that they did better in Literacy than in Numeracy. Some specific reasons for this could be that all questions were multiple choice questions or that the Literacy questions were less cognitively demanding. As mentioned in the 2000 report the 40 Word Recognition questions actually originate from a test of speed of word recognition that was presented to 8 year olds in 1.5 minutes.

3.2.2 Performance in the Numeracy tasks

The Numeracy test (114 questions) consists of four tasks: Counting and Ordering (30 questions), Addition (30 questions), Subtraction (28 questions) and Multiplication (26 questions). The means for the four Mahlahle Numeracy tasks are presented in Table 3.4. Means are graphically presented in Figure 3.2.

Table 3.4: Mean percentage correct in Numeracy tasks

	Year	N	Mean	Std. Std. Error Deviation	
Counting and Ordering	2000	14637	16.16	16.103	.133
	2001	14174	18.15	16.170	.136
	2002	13425	32.21	19.290	.166
	2003	2434	30.09	17.940	.364
Addition	2000	14616	34.17	22.103	.183
	2001	14174	34.86	22.160	.186
	2002	13425	48.27	25.133	.217
	2003	2434	46.62	24.429	.495
Subtraction	2000	14577	28.78	21.607	.179
	2001	14174	29.54	21.704	.182
	2002	13425	37.46	24.806	.214
	2003	2434	38.64	24.661	.500
Multiplication	2000	14555	24.13	21.092	.175
	2001	14174	24.43	19.928	.167
	2002	13425	33.58	22.807	.197
	2003	2434	33.52	21.912	.444

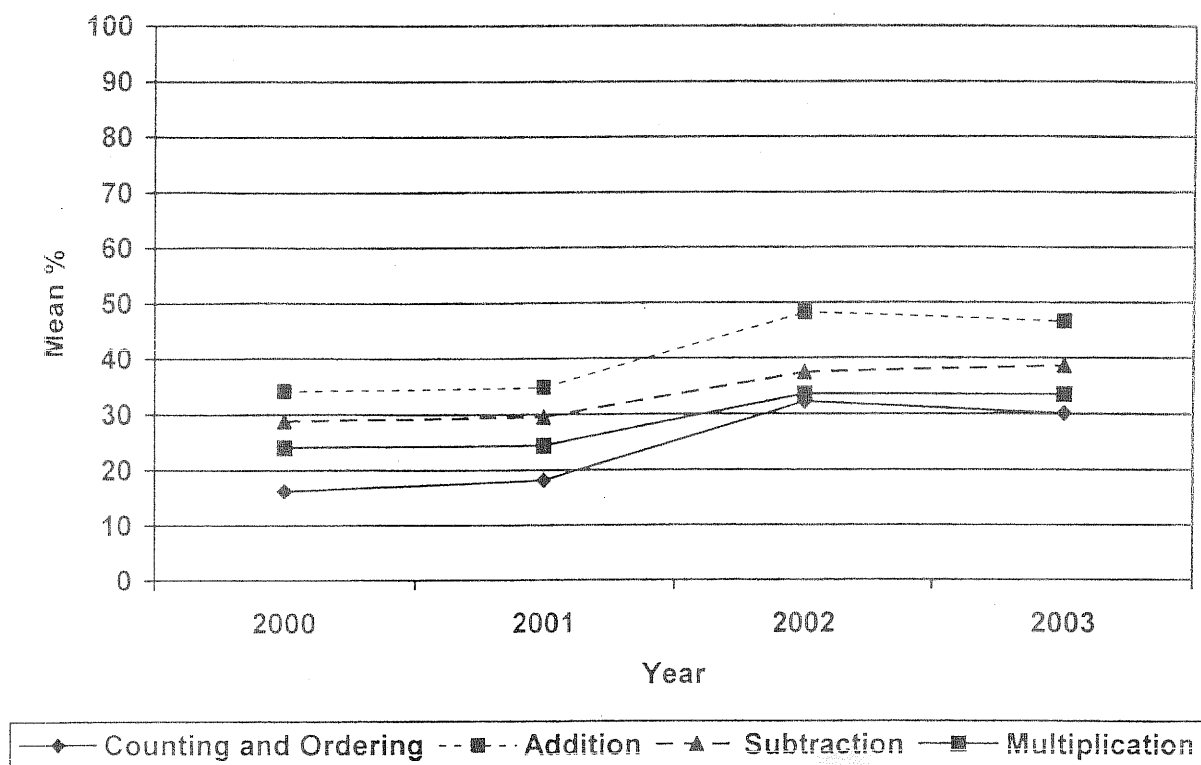


Figure 3.2: Means for the Numeracy tasks in various years

For Counting and Ordering there was a steady increase from 16% in 2000 to 32% in 2002, followed by a slight decline to 30% in 2003. Addition started at 34% in 2000, moved up to 48% in 2002 and then declined slightly to 47% in 2003. Subtraction moved up from 29% in 2000 to 37% in 2002 and ended at 38% in 2003. There was no sign of any decline here. Multiplication moved up from 24% in 2000 to 34% in 2002 and remained at 34% in 2003. The pattern of improvement from 2000 to 2003 was consistent across the three areas.

Please note that these difference scores should be treated with circumspection. It cannot simply be assumed that an increase of say 9% in Multiplication is equal to an increase of 9% in Subtraction, as the questions in the two tasks may not be distributed similarly as regards difficulty. Although experts tried to make the two tasks relevant to the curriculum and of comparable difficulty the difficulty of the questions was never empirically investigated before the administration.

3.2.3 Analyses of some Numeracy questions

Although the above data provide useful information on the learners' relative strengths and weaknesses in the Numeracy strands for 2000, 2001, 2002 and 2003, the data do not indicate what Numeracy content the learners have mastered. The above data consequently have limited application in the design of an appropriate Numeracy intervention, although they can of course be useful for general accountability and research purposes. Information on specific strengths and weaknesses – to underpin an instructional improvement strategy – can be gained more fruitfully by item analysis of performance in individual items. The

actual questions in the test are confidential. In order to present information at the item level meaningfully questions very similar to those in the test were made up for examples.

The Numeracy test covered the following tasks and subtasks:

Counting and ordering	Addition	Subtraction	Multiplication
Counting	Context	Context	Context
Number line	No context	No context	No context
Ordering	< 100 no carrying	< no carrying	
Skip-counting forwards	<100 carrying	<100 carrying	
Skip-counting backwards	> 100 no carrying	> 100 no carrying	
	> 100 carrying	> 100 carrying	

3.2.3.1 Numeracy Task 1: Counting and Ordering

This task of 30 items involved the counting and ordering of numbers and was the most difficult for the learners. Only a few of the learners could solve some of the problems correctly. Table 3.6 below shows the item and the percentage of learners that answered a particular item correctly in 2000, 2001, 2002 and 2003.

Table 3.5: Examples of Numeracy Task 1: Counting and Ordering

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
1	Subtask: Skip-counting forwards (< 100) Count forwards in 2s and fill in the number on the line: 34 36 38 _____	48%	50%	74%	72%
2	Subtask: Skip-counting forwards (> 100) Count forwards in 50s. Complete the pattern: 250 300 _____	11%	11%	37%	32%
3	Subtask: Skip-counting backwards (< 100) Count backwards in 10s and fill in the number on the line: 80 _____ 60	38%	42%	63%	62%
4	Subtask: Skip-counting backwards (> 100) Count backwards in 100s and fill in the number on the line: 570 470 370 _____	8%	9%	29%	25%
5	Subtask: Ordering Arrange these numbers from smallest to biggest: 509 424 495 516 485 _____ _____	10%	9%	25%	23%
6	Subtask: Number line				

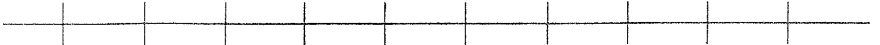
Item number, subtask and item content	% of all learners that had the item correct			
	2000 29%	2001 36%	2002 60%	2003 56%
<p>9 10 11 16</p>  <p>To which number is the arrow pointing?</p> <p>Number _____</p>				

Table 3.5 indicates that the performance in 2001 was slightly better in some cases than in 2000 and much better in all cases in 2002. In 2003 performance was only slightly down against 2002. Again the items the DDSP learners found the easiest were those requiring simple skip-counting. The learners found counting in 2s easier than counting in 5s and 10s, and counting in 5s and 10s easier than counting in 25s and 50s. Counting backwards was much more difficult than counting forwards, although counting backwards in 100s was easier for more learners than counting backwards or skip-counting backwards in 2s. By 2003 about 40% of the learners still could not answer simple questions on number lines correctly. In each of the years learners had considerably more difficulty with items requiring the application or interpretation of a diagram or word problem than with "straight" arithmetic problems.

3.2.3.2 Numeracy Task 2: Addition

In each of the years Task 2, which contained 30 Addition items, was the easiest of the four tasks for the DDSP learners. In 2002 there was a very large (14%) improvement on the baseline score and this was continued in 2003. However, Table 3.6 shows that a considerable number of learners' ability in addition is still confined to adding two single-digit numbers. The learners' capacity to add one and two-digit numbers decreased rapidly as the numbers involved in the problem increased. The learners struggled particularly with the addition of numbers requiring carrying – many could not correctly solve items requiring carrying or crossing with numbers larger than 100. Word or application problems also posed a severe challenge to many learners. This can be observed in the percentages of learners who respectively had items 4 and 5 correct. It may be that they lacked the required reading ability. These observations are similar to those made in the 2000 report.

Table 3.6: Examples of Numeracy Task 2: Addition

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
1	Subtask: <100 no carrying 7 + 5 = _____	89%	89%	92%	92%
2	Subtask: <100 carrying (no context) 18 + 7 = _____	84%	85%	87%	88%
3	Subtask: <100 no carrying 42 + 6 = _____	74%	74%	81%	81%

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
4	Subtask: <100 carrying (no context) $34 + 8 = \underline{\hspace{2cm}}$	57%	54%	67%	68%
5	Subtask: <100 carrying (in context) My mother is 36 years old. My father is 7 years older. How old is my father? $\underline{\hspace{2cm}}$ years	21%	22%	34%	29%
6	Subtask: <100 no carrying (no context) $50 + 24 = \underline{\hspace{2cm}}$	44%	44%	57%	56%
7	Subtask: >100 carrying (no context) $50 + 60 = \underline{\hspace{2cm}}$	19%	19%	41%	37%
8	Subtask: >100 carrying (no context) $240 + 60 = \underline{\hspace{2cm}}$	14%	14%	29%	29%

The fact that the learners displayed greater proficiency in Item 2 ($18 + 7$), which requires carrying, than in Item 3 ($42 + 6$), which does not require carrying, may be explained by the habit of many learners to use their fingers or "sticks" on the page to solve addition problems. In other words, the learners, for example, draw 42 sticks and then six sticks and then count them. Greater levels of accuracy are therefore required for larger numbers of sticks.

3.2.3.3 Numeracy Task 3: Subtraction

In each year Task 3, containing 28 Subtraction items, was more difficult than the task on addition for the DDSP learners. Table 3.7 shows that as many as a quarter of the learners were unable to subtract simple tens and units. The number of learners able to solve subtraction problems correctly, decreased rapidly as the numbers used in the problems became larger. In 2000 very few learners were able to solve problems requiring carrying or crossing with numbers larger than 100, but the situation improved considerably by the end of 2002 and remained constant in 2003.

Table 3.7: Examples of Numeracy Task 3: Subtraction

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
1	Subtask: <100 carrying (no context) $16 - 8 = \underline{\hspace{2cm}}$	73%	74%	75%	76%
2	Subtask: <100 no carrying (no context) $28 - 7 = \underline{\hspace{2cm}}$	59%	57%	62%	64%
3	Subtask: <100 carrying (no context)				

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
	40 – 26 = _____	41%	38%	43%	47%
4	Subtask: <100 carrying (context) Peter has R30. He spends R13. How much money remains? R _____	27%	30%	33%	35%
5	Subtask: >100 carrying (in context) 101 – 98 = _____	11%	14%	18%	19%
6	Subtask: >100 no carrying (no context) 115 – 15 = _____	24%	25%	40%	40%
7	Subtask: >100 no carrying (context) A book has 125 pages. Sisi has read 100 pages. How many pages does she still have to read to finish the book? _____ pages.	11%	18%	24%	24%
8	Subtask: >100 no carrying (no context) 100 – 35 = _____	14%	12%	21%	22%

In Item 4 the problem is contextualised while no context is provided for Item 3. In 2002 only 33% of the learners answered Item 4 correctly, while 43% answered Item 3 correctly, even though the calculation is probably more complicated. The same kind of difference can be observed between Items 7 and 6. This indicates again that the learners experienced greater difficulty with word type problems than with pure number tasks. For both kinds of items improvement was evident.

3.2.3.4 Numeracy Task 4: Multiplication

Task 4 contains 26 Multiplication items, 15 of which are word or application problems. The DDSP learners found this task more difficult than the tasks on addition and subtraction. Table 3.8 contains some examples. Note that the mean scores for Multiplication were 24% in 2000, 24% in 2001 and 34% in 2002 and 2003.

Table 3.8: Examples of Numeracy Task 4: Multiplication

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
1	Subtask: (no context) 8 x 4 = _____	53%	54%	62%	62%
2	Subtask: (in context) A dog has 4 legs. How many legs do 7 dogs have? _____ legs.	20%	21%	32%	32%
3	Subtask: (no context) 2 x 9 = _____	46%	48%	60%	61%

Item number, subtask and item content		% of all learners that had the item correct			
		2000	2001	2002	2003
4	Subtask: (in context) Nomsa has 6 bags of 10 oranges each. How many oranges are there all together? _____ oranges.	15%	14%	25%	24%
5	Subtask: (no context) $10 \times 6 =$ _____	43%	45%	59%	59%
6	Subtask: (no context) $7 \times 8 =$ _____	27%	25%	33%	32%

In the 2000 report it was noted that in many cases the learners could not distinguish between an addition and a multiplication sign so that the answer to 8×4 was given as 12 by a large number of learners. The same phenomenon occurred in 2001 and to a lesser extent in 2002 and 2003. In Item 2 the problem is contextualised, while no context is given for Item 1. Only 32% of the learners answered Item 2 correctly, while 62% got Item 1 right. The same kind of difference can be observed between Items 4 and 5. The learners generally performed significantly better on the "straight" multiplication problems than on the word or application problems. As noted above this kind of performance may be due to inadequate reading ability. In this case it could in addition suggest that the learners have learnt their multiplication table by heart but do not understand the concept of multiplication. In all four years a considerable number of learners did the multiplication problems using continuous addition.

In all the Numeracy tasks learners did much better on items where the problem was presented as numbers only than on items where the problem was presented as numbers in a word problem. This is in line with the findings of Nagasaki & Senuma (2002) in the TIMSS study for students around the world. Part of the difference found with the Grade 3 learners in DDSP schools may be due to limited reading ability or limited ability to understand the language of instruction, but it is highly unlikely that the difference could be totally attributed to the language factor as this kind of difference is common in most countries. It is likely that the problem-solving element in such problems constitutes a particular challenge to learners here as elsewhere.

3.2.4 Performance in the Literacy tasks

The Literacy test (75 questions) consists of three tasks: Word Recognition (40 questions), Sentence Completion (18 questions) and Text Comprehension (17 questions). The means for the three Mahlahle Literacy tasks are presented in Table 3.9. Means are graphically presented in Figure 3.3.

Table 3.9: Mean percentage correct in Literacy tasks

	Year	N	Mean	Std. Deviation	Std. Error
Word Recognition	2000	14607	67.80	30.313	.251
	2001	14174	62.72	31.645	.266
	2002	13425	71.12	28.449	.246
	2003	2434	69.78	29.265	.593
Sentence Completion	2000	14512	43.31	20.693	.172
	2001	14174	43.46	20.734	.174
	2002	13425	50.05	20.237	.175
	2003	2434	50.19	19.640	.398
Comprehension	2000	14021	25.54	16.420	.139
	2001	14174	28.01	16.405	.138
	2002	13425	32.13	16.694	.144
	2003	2434	29.78	16.113	.327

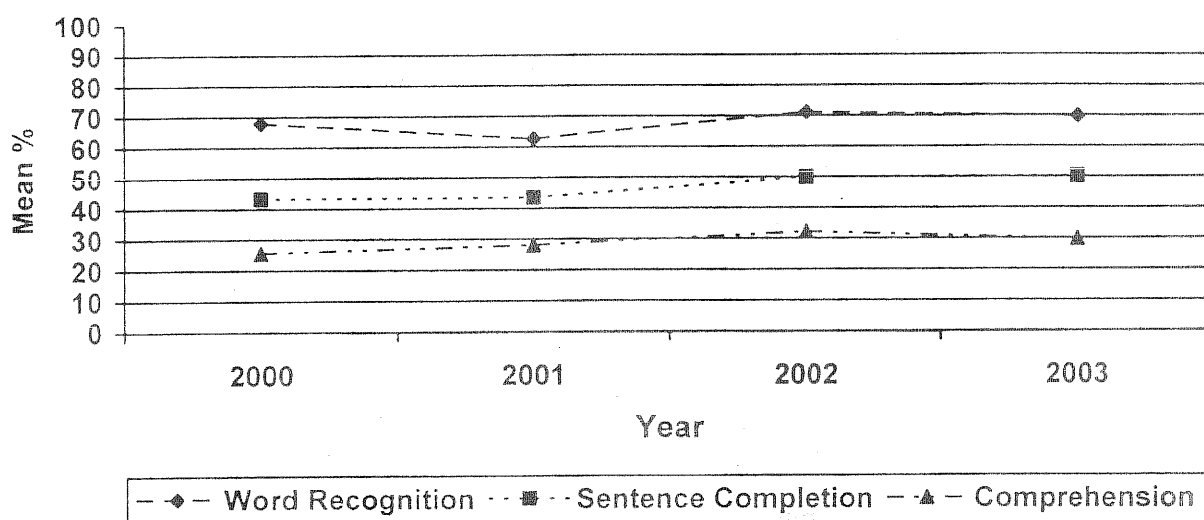


Figure 3.3: Means for the Literacy tasks in various years

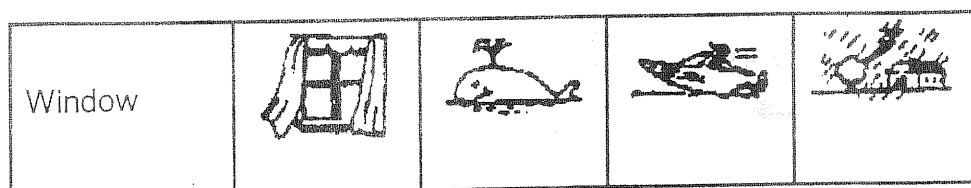
Word Recognition improved from 68% in 2000 to 71% in 2002 and remained at 70% in 2003. This task showed very little change over the three years. The Sentence Completion score increased from 43% in 2000 to 50% in 2002 and remained at that level in 2003. Reading Comprehension came from a low of 26% in 2000 to 32% in 2002 and then declined slightly to 30% in 2003. Broadly speaking the same pattern of improvement could be discerned across the three Literacy tasks.

Each of the Literacy tasks is analysed in more detail below.

3.2.4.1 Word Recognition

This test consisted of 40 items in which the learners were required to match a simple word with one of four pictures. Even if a learner could not read the word properly and took a chance on the picture to match the word, he/she would still have a one in four chance of getting it right. This test was identical to that used in the IEA survey in 1990-91, involving nine year olds in 27 countries. However, the time limit was extended from

one and a half minutes to eight minutes in the Mahlahle testing to enable most of the learners to finish the task. An example of a Word Recognition item follows:



In order to give the reader a feel for how learners responded to the items over the spread of the task, the percentage of learners who answered every 5th item correctly is presented in Table 3.10. Note that the mean scores in Word Recognition across all DDSP districts were 68% in 2000, 63% in 2001, 71% in 2002 and 70% in 2003.

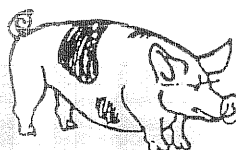
Table 3.10: Percentage correct in Literacy Task 1: Word Recognition

Year	Item 1	Item 6	Item 11	Item 16	Item 21	Item 26	Item 31	Item 36
2000	87	74	69	64	69	62	68	62
2001	79	69	71	63	61	57	64	56
2002	83	77	78	70	71	66	74	69
2003	79	75	77	68	70	65	72	68

Initially the Word Recognition task was developed as a speed test, allowing the learners one and a half minutes to complete all the items. However, in the Mahlahle administration the test was not used as a speed test, as the learners had eight minutes to complete the items. It has to be noted that even at the end of the Word Recognition task, the items were not experienced as exceptionally difficult as most learners got them correct.

3.2.4.2 Sentence Completion

This test consists of 18 items in which the learners had to read incomplete sentences and choose the best word, from four, to make meaningful sentences. Each sentence had an accompanying illustration to aid comprehension. An example of a Sentence Completion item follows:



B. The pig has four _____.
 ears
 tails
 legs

The percentage of learners who answered every 3rd item correctly is presented in Table 3.11. Note that the mean scores in Sentence Completion across all DDSP districts were 43% in 2000, 43% in 2001, 50% in 2002 and 50% in 2003. The performance increase in 2002 and 2003 is evident in all items. Learners

consistently found earlier items easier. This is the pattern to be expected in a well graded test assessing a certain ability.

Table 3.11: Percentage correct in Literacy Task 2: Sentence Completion

Year	Item 1	Item 4	Item 7	Item 10	Item 13	Item 16
2000	81	36	61	44	41	22
2001	83	42	61	45	41	20
2002	87	46	67	52	52	26
2003	88	46	78	53	53	26

3.2.4.3 Text Comprehension

This section was made up of four passages taken from the IEA pilot tests in the international survey conducted by the IEA in 32 countries in 1990-91. Examples of the kind of passages that had to be read and the kind of questions asked, may be found in the Assessment Resource Banks that were made available to DDSP schools in April 2002.

Each of the passages had four or five questions, totalling 17 questions all together. The learners had to read the passages and answer the comprehension questions which followed. Note that the mean scores in Text Comprehension across all DDSP districts were 25.54% in 2000, 28.01% in 2001, 32.13% in 2002 and 30% in 2003..

Table 3.12 shows the mean percentages of correct answers obtained by the learners

Table 3.12: Mean percentage correct in four IEA comprehension passages

	Number of items	2000	2001	2002	2003
Invitation	4	30.11	32.19	38.76	36.21
Timetable	4	24.80	27.39	31.17	29.16
Instructions	4	25.98	28.14	31.91	28.57
Non-fiction	5	22.12	25.05	27.78	26.09
Total	17	25.54	28.01	32.13	29.78

In 2000 learner performance was at the chance level. Each following year there was some improvement in each task, but learner performance remained low. In 2003 the score in each of the parts declined by 1% to 2%.

3.3 NUMERACY MEANS FOR DDSP SUBPOPULATIONS

3.3.1 Provinces

The mean percentage of correct answers for the Numeracy test as a whole is presented in Table 3.13. Errors of estimate are also reported. The information is graphically presented in Figure 3.4.

Table 3.13: Mean percentage in Numeracy in the various provinces

PROVINCE	Year	N	Mean	Std. Deviation	Std. Error
Eastern Cape	2000	2578	26.85	17.211	.339
	2001	2545	28.97	17.262	.342
	2002	2537	38.32	19.927	.396
	2003	687	36.59	18.605	.710
KwaZulu-Natal	2000	3780	26.14	15.876	.258
	2001	3725	25.79	16.647	.273
	2002	3407	38.47	19.524	.334
	2003	441	41.31	17.819	.849
Northern Cape	2000	1243	36.86	25.270	.717
	2001	1187	38.74	24.442	.709
	2002	1234	46.95	24.000	.683
	2003	274	36.77	20.284	1.225
Limpopo	2000	6765	23.26	16.028	.195
	2001	6717	24.38	15.565	.190
	2002	6247	35.93	20.160	.255
	2003	1032	36.26	21.036	.655

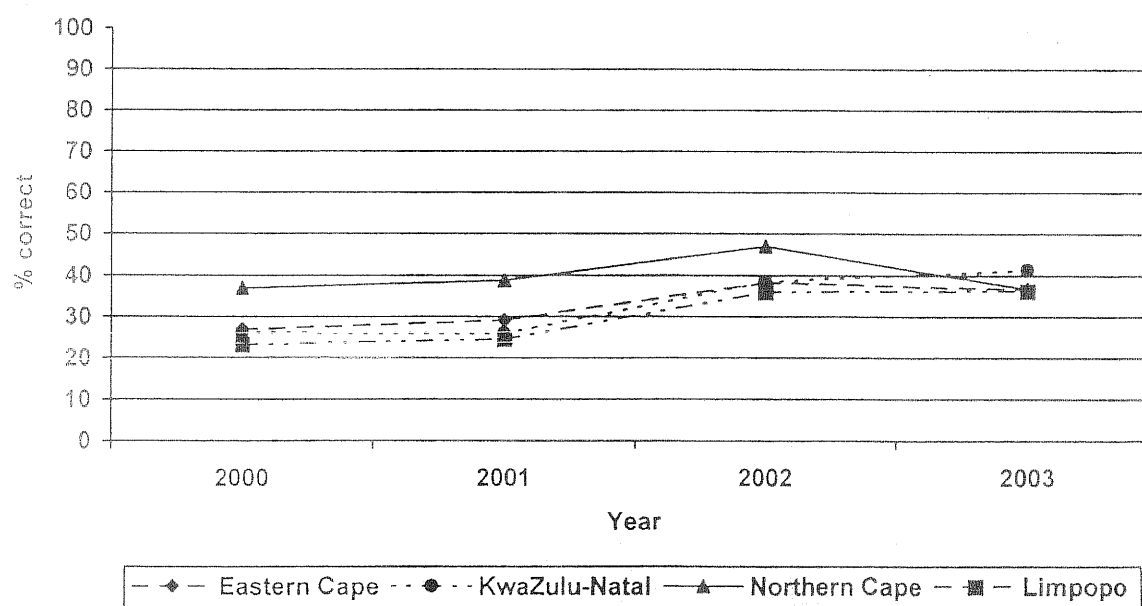


Figure 3.4: Numeracy means for provinces

From 2000 to 2001 there was an improvement of approximately 2% in each of the four provinces. From 2001 to 2002 there was about a 10% improvement in each province. For 2002 to 2003 performance remained about the same for KwaZulu-Natal, Eastern Cape and Limpopo, but declined considerably for Northern Cape. A detailed investigation of Northern Cape schools showed up some possible explanations. In one school Setswana-speaking learners were tested in 2003 whereas Afrikaans learners were tested in the previous years. This was done as the majority of learners in the school are, at this point in time, Tswana-speaking. Another school was combined with two nearby schools causing the nature of the group tested to change considerably. This nevertheless remains a disappointing outcome.

3.3.2 Districts

Means for districts are presented in Figure 3.5. The corresponding table of results appear in Table 3.13b in the Appendix.

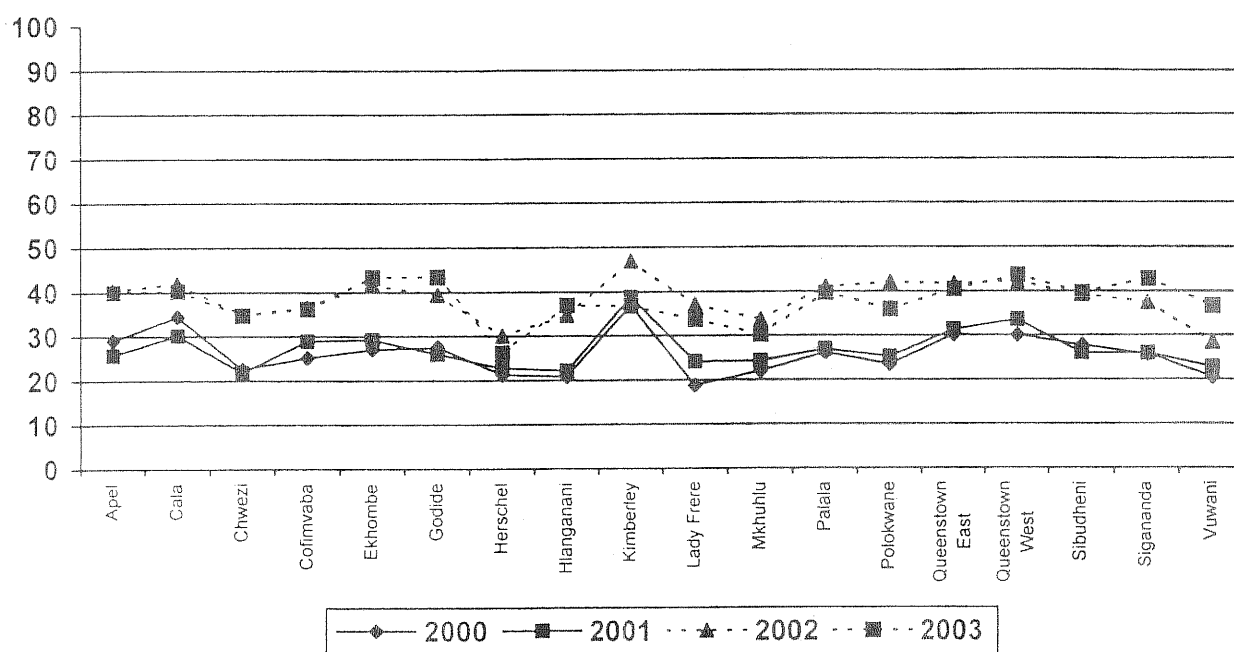


Figure 3.5: Numeracy means for districts

For districts the difference in Numeracy performance between 2002 and 2003 were generally fairly small and given the small numbers per group the differences were seldom statistically significant.

3.3.3 Gender

The gender means for the Numeracy tasks are given in Table 3.14.

Table 3.14: Numeracy scores by gender

Gender	Mean				N			
	Year				Year			
	2000	2001	2002	2003	2000	2001	2002	2003
Male	24.74	25.68	36.19	35.79	7213	7018	6717	1185
Female	26.86	27.81	40.20	38.96	6996	6836	6338	1210
Total	25.78	26.73	38.14	37.39	14209	13854	13055	2395

In all years the girls outscored the boys in the Numeracy tasks. The perceived increase from 2000 to 2001 is much the same for the boys and the girls, but the difference seemed to increase, particularly for 2002. The reason for this is not evident and requires further investigation.

3.4 LITERACY MEANS FOR DDSP SUBPOPULATIONS

3.4.1 Provinces

The mean percentage of correct answers for the Literacy test as a whole is shown in Table 3.15 for provinces. Mean percentages for Literacy in the various provinces are graphically presented in Figure 3.6.

Table 3.15: Mean percentage in Literacy in the various provinces

	Year	N	Mean	Std. Deviation	Std. Error
PROVINCE					
Eastern Cape	2000	2579	52.07	22.295	.439
	2001	2545	51.20	22.652	.449
	2002	2537	62.38	20.082	.399
	2003	687	58.96	20.288	.774
KwaZulu-Natal	2000	3759	57.87	18.886	.308
	2001	3725	52.99	20.981	.344
	2002	3407	58.78	20.060	.344
	2003	441	60.91	17.926	.854
Northern Cape	2000	1240	55.53	23.243	.660
	2001	1187	57.21	22.057	.640
	2002	1234	62.23	20.855	.594
	2003	274	58.09	19.350	1.169
Limpopo	2000	6250	49.01	19.742	.250
	2001	6717	47.10	21.125	.258
	2002	6247	53.29	19.490	.247
	2003	1032	51.40	20.700	.644

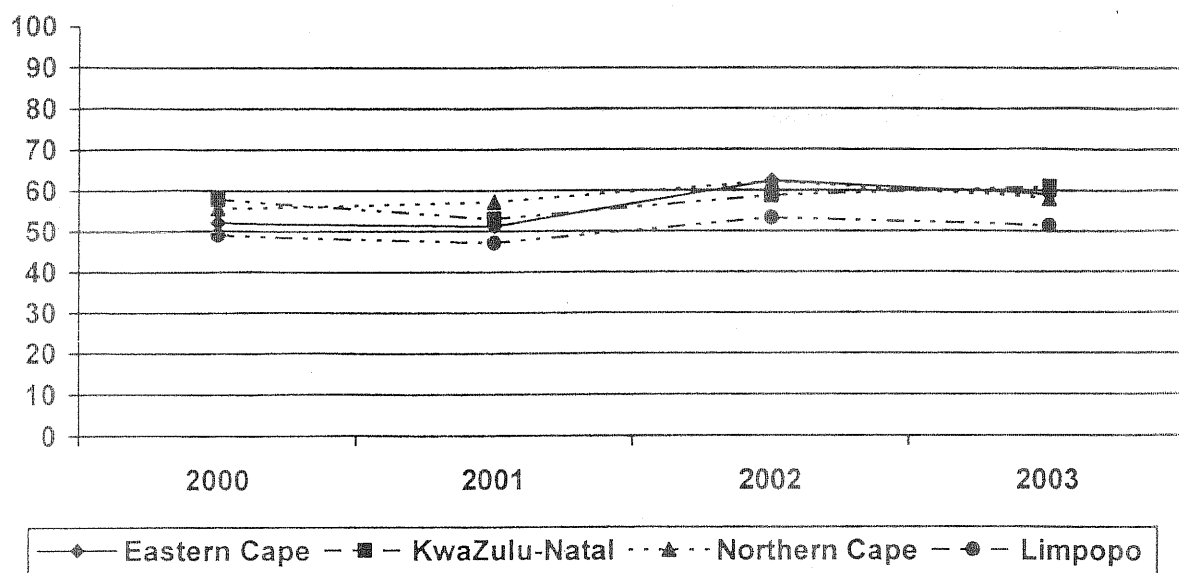


Figure 3.6: Literacy means for provinces

Except for KwaZulu-Natal the 2003 performance was slightly down on the 2002 performance in all the provinces.

3.4.2 Districts

Means for districts are presented in Figure 3.7. The corresponding table of results appear in Table 3.15b in the Appendix.

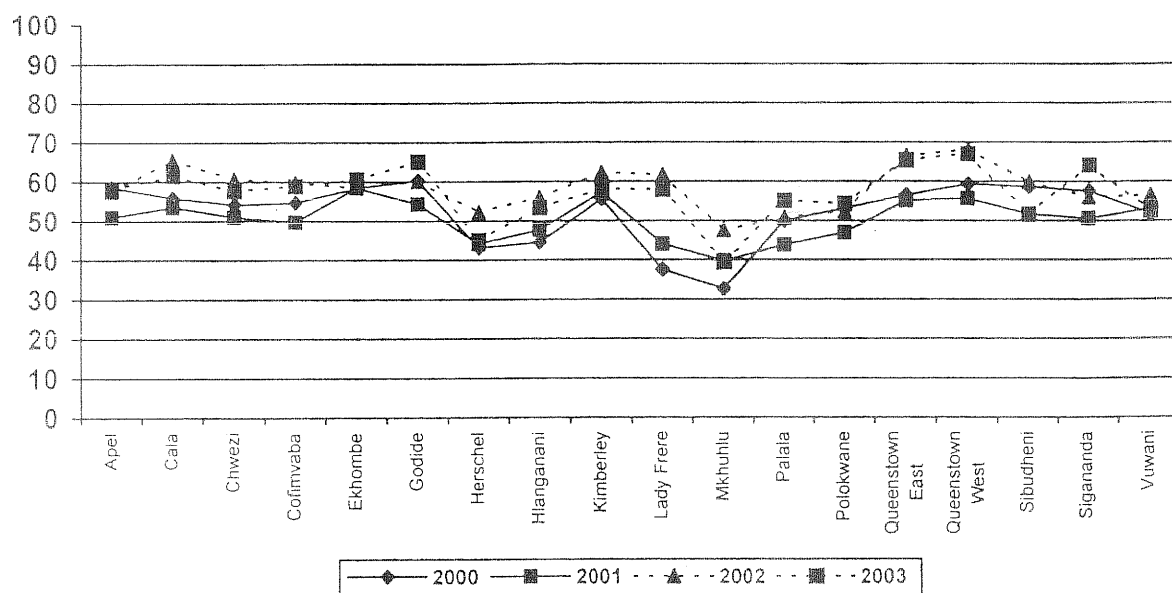


Figure 3.7: Literacy means for districts

In 2001 only a few districts improved by more than 2%. In fact the Literacy scores of some declined considerably. In 2002 performance increased over the 2000 performance in most districts. The Eastern Cape districts appeared to have improved most. For districts the difference in Literacy performance between 2002 and 2003 were generally fairly small and given the small numbers per group the differences were seldom statistically significant.

3.4.3 Gender

The gender means for the Literacy tasks are given in Table 3.16.

Table 3.16: Literacy scores by gender

Gender	Mean				N			
	Year				Year			
	2000	2001	2002	2003	2000	2001	2002	2003
Male	49.77	47.13	54.02	52.65	6944	7018	6717	1185
Female	55.48	53.48	60.84	59.24	6729	6836	6338	1210
Total	52.58	50.26	57.33	55.98	13673	13854	13055	2395

In all years the girls outscored the boys in the Literacy tasks. The reason for this is not evident and requires further investigation.

3.5 COMBINED SCORE MEANS FOR PROVINCES

The provincial means for the combined Mahlahle instruments are presented in Table 3.17.

Table 3.17: Means for the combined Mahlahle instruments by province

	Year	N	Mean	Std. Deviation	Std. Error
PROVINCE					
Eastern Cape	2000	2508	37.11	17.163	.343
	2001	2545	37.79	17.211	.341
	2002	2537	47.87	17.951	.356
	2003	687	45.46	17.173	.655
KwaZulu-Natal	2000	3701	38.93	15.233	.250
	2001	3725	36.59	16.524	.271
	2002	3407	46.53	18.055	.309
	2003	441	49.09	15.822	.753
Northern Cape	2000	1229	44.51	22.881	.653
	2001	1187	46.07	21.699	.630
	2002	1234	53.01	21.065	.600
	2003	274	45.23	17.854	1.079
Limpopo	2000	6112	33.63	15.454	.198
	2001	6717	33.40	15.710	.192
	2002	6247	42.82	17.730	.224
	2003	1032	42.27	19.170	.597

In 2001 the means for the combined score increased slightly for the Eastern Cape Province and the Northern Cape Province, while the mean for the KwaZulu-Natal Province decreased slightly. The mean for the Limpopo Province remained very much the same. In 2002 mean scores increased between 8% and 11% in the various provinces over the baseline assessment. In 2003 the KwaZulu-Natal score increased slightly, Limpopo remained the same and the scores of the other two provinces decreased significantly. Northern Cape decreased by 8% and ended about where it started in 2000.

3.6 CONCLUSION

In 2001 the Numeracy scores increased by about 1% and Literacy scores decreased by about 2%. The increase in the Numeracy scores could mainly be attributed to better performance in the task that assessed counting and ordering. The decrease in the Literacy scores could be attributed mainly to the 5% decrease observed in the Word Recognition task. The Northern Cape was the only province to improve performance both in Numeracy and Literacy, while KwaZulu-Natal showed rather large decreases for Literacy. The analysis of individual items revealed very little difference between 2000 and 2001. For a large majority of learners, many expected outcomes as defined by the items in the Mahlahle instruments were not attained.

In 2002 there was a large overall improvement in performance in all the districts. Numeracy performance increased on average by 12 percentage points and Literacy by 5 percentage points. This is a very large improvement and the factors leading to the improvement should be investigated to understand the reasons for the change.

In 2003 there was a small overall decrease of 1% in performance. This means that the increase facilitated by the DDSP activities in the course of 2000 to 2002 still had beneficial consequences in 2003. The performance increases brought about by DDSP interventions were essentially maintained after intervention programmes had stopped.

It should be borne in mind that although the 8% increase in performance in Numeracy and Literacy from 37% to 45% is laudable, the aim of the appropriate and adequate development of the scholastic skills of learners, have not yet been attained. Having attained 45% does not mean that adequate knowledge and skills have been mastered in the foundation phase to proceed with the rest of a school career. Much higher levels of mastery are required in order to provide a sound foundation to benefit optimally from the educational opportunities offered from Grade 4 onwards.

Chapter 3: Results

CHAPTER 4

RELATIONSHIPS BETWEEN MEASURES

4.1 PURPOSE

This chapter will look at the relationship between the performance in the Mahlahle instruments and various other variables on which information was obtained in order to contextualise performance in the school and the curriculum. The Mahlahle instruments assess part of what is implied in the curriculum. Educators are also expected to assess learner performance relative to the curriculum. Only, they have to assess performance in numeracy and literacy across a broad spectrum of expected outcomes in line with the expected outcomes stated in the curriculum. Even though there is no perfect correspondence between the outcomes stated in the curriculum and the outcomes operationalised in the Mahlahle instruments, it will be informative to see how educator assessments based on the curriculum relate to performance in the Mahlahle tasks.

The Mahlahle instruments consist of four Numeracy tasks and three Literacy tasks. Each task assesses a relatively homogeneous facet of either Numeracy or Literacy. The nature of the relationships between the tasks will be investigated to try to get a better understanding of the interrelatedness of tasks in the larger curriculum.

Educators were requested to provide information about their experience and classroom practices. Questions regarding years of training, frequency and nature of assessments undertaken and preferred learning material were asked. The relevance of these variables for performance will be reported on. It should be borne in mind that this is self-reported information.

4.2 CORRELATION BETWEEN EDUCATOR ASSESSMENTS AND MAHLAHLE RESULTS

The strength of association between two measures may be expressed as a correlation coefficient. If two variables are perfectly associated and all values correspond perfectly between the two variables the correlation will be 1, if there is no association between the measures the correlation will be 0. Any value between 1 and 0 is possible and the higher the value the stronger the association or correspondence between measures.

It may be expected that two measures of the same learning area will correlate higher than two measures of the same kind measuring different abilities. This implies that two measures of numeracy, for example an educator assessment of numeracy and the Mahlahle Numeracy test score, may be expected to correlate higher with each other than the correlation between the Mahlahle Numeracy and Literacy tests scores. Granted that the educator is looking at a broader span of outcomes when assessing the numeracy performance level of a learner, a strong correlation must still be expected between the two measures of numeracy if the educator assessments are accurate and valid. The correlation between the

two measures of numeracy may be expected to be higher than the correlation between the Mahlahle Numeracy instrument and the Mahlahle Literacy instrument as these two instruments measure different proficiencies. It is true that the Mahlahle Numeracy test measures only a part, although be it a very important part, of the Numeracy curriculum. Nevertheless a very strong correlation may be expected as this is in fact a part-whole correlation. Part-whole correlations are generally found to be quite high. The same argument as for Numeracy will also apply to Literacy.

To determine the correlation between educator assessment and the Mahlahle results, the educators were requested to assess the performance of each learner in their class in numeracy and literacy respectively and rate them on the following four-point scale that is in line with the assessment scales suggested by the Department of Education for Numeracy and Literacy.

- 4 - Learner performance *has exceeded* the requirements for Grade 3.
- 3 - Learner performance *has satisfied* the requirements for Grade 3.
- 2 - Learner performance *has partially satisfied* the requirements for Grade 3.
- 1 - Learner performance *has not satisfied* the requirements for Grade 3.

The educator assessments of learners were then correlated with Numeracy and Literacy scores that learners obtained in the Mahlahle tests. Correlation coefficients between educator assessments of the learners and learner performance in the Mahlahle instruments are reported in Table 4.1.

Table 4.1: Correlations between educator assessments and the Mahlahle instruments

	Year	Numeracy (Mahlahle)	Literacy (Mahlahle)	Numeracy (Educator)	Literacy (Educator)
Numeracy (Mahlahle)	2001	1.00			
	2002	1.00			
	2003	1.00			
Literacy (Mahlahle)	2001	0.59	1.00		
	2002	0.61	1.00		
	2003	0.61	1.00		
Numeracy (Educator)	2001	0.32	0.30	1.00	
	2002	0.49	0.46	1.00	
	2003	0.46	0.45	1.00	
Literacy (Educator)	2001	0.32	0.33	0.76	1.00
	2002	0.46	0.50	0.77	1.00
	2003	0.46	0.50	0.75	1.00

In 2001 the correlation between the two measures of numeracy (educator assessment and Mahlahle test score) was 0.32 and the correlation between the two measures of literacy was 0.33. In 2002 this correlation increased considerably to 0.49 and 0.50 respectively. This points to a much-improved ability of educators to rate the performance of their learners accurately and consistently. They are now much better

Table 4.3: Proficient learners getting items right (Subtraction)

Item number, subtask and item content		% of all learners evaluated as proficient that had the item correct		
		2001	2002	2003
1	Subtask: <100 carrying (no context) 16 – 8 = _____	78%	82%	82%
2	Subtask: <100 no carrying (no context) 28 – 7 = _____	62%	69%	70%
3	Subtask: <100 carrying (no context) 40 – 26 = _____	42%	50%	54%
4	Subtask: <100 carrying (context) Peter has R30. He spends R13. How much remains? R _____	33%	41%	42%
5	Subtask: >100 carrying (in context) 101 – 98 = _____	15%	24%	26%
6	Subtask: >100 no carrying (no context) 115 – 15 = _____	29%	50%	49%
7	Subtask: >100 no carrying (context) A book has 125 pages. Sisi has read 100 pages. How many pages does she still have to read to finish the book? _____ pages	20%	31%	30%
8	Subtask: >100 no carrying (no context) 100 – 35 = _____	14%	27%	29%

All the items in both tables are specific instances of expected outcomes to be realised before the end of Grade 3. These examples reveal that a large proportion of learners, evaluated as proficient by their educators in 2001, could not do the kind of elementary calculations that may be expected from learners by the end of Grade 3. The situation had improved considerably by the end of 2002 and remained so in 2003. Our design does not allow us to come up with clear reasons for this positive result. It could be that initially the educators did not understand exactly what was required of learners and thus classified learners incorrectly very frequently in 2001 and through training this was changed. It could be that the educators lacked clarity on the kinds of skills that should be mastered by the end of Grade 3 and exercises as well as examples of assessment instruments brought greater clarity to both educators and learners. It could be that the educators tended to rate their learners too high and through training came to set more appropriate standards. The Assessment Resource Banks could have been one of the important sources of information that assisted educators in setting an appropriate course for instruction and remediation. There may also be some other reasons for the improvement. Whatever the case, it is clear that a desired change has been brought about. More in depth research is needed to clarify this important issue adequately.

4.3 RELATIONSHIP BETWEEN MAHLAHLE TASKS

It is of interest to know how the seven Mahlahle tasks relate to one another. If for instance the ability to add is closely related to the ability to subtract a high correlation between these tasks could be expected. If, on the other hand, the ability to add were unrelated to the ability to subtract a correlation of 0 might be expected. In addition one would expect the correlation between numeracy tasks to be higher than the correlation between numeracy and literacy tasks as they represent different learning areas. The correlations between the Mahlahle tasks for the 2002 and 2003 results are presented in Table 4.4. The 2003 results will be discussed in detail. As can be seen in the table there are essentially no differences between the two years.

Table 4.4: Intercorrelation matrix of task scores for the 2002 and 2003 results

2002	N1	N2	N3	N4	L1	L2	L3
Numeracy Task 1 Counting and ordering (N1)	1.00						
Numeracy Task 2 Addition (N2)	0.75	1.00					
Numeracy Task 3 Subtraction (N3)	0.71	0.78	1.00				
Numeracy Task 4 Multiplication (N4)	0.70	0.72	0.73	1.00			
Literacy Task 1 Word recognition (L1)	0.54	0.47	0.43	0.46	1.00		
Literacy Task 2 Sentence completion (L2)	0.59	0.49	0.47	0.52	0.57	1.00	
Literacy Task 3 Text comprehension (L3)	0.42	0.35	0.35	0.39	0.35	0.46	1.00
2003	N1	N2	N3	N4	L1	L2	L3
Numeracy Task 1 Counting and ordering (N1)	1.00						
Numeracy Task 2 Addition (N2)	0.73	1.00					
Numeracy Task 3 Subtraction (N3)	0.70	0.79	1.00				
Numeracy Task 4 Multiplication (N4)	0.68	0.71	0.71	1.00			
Literacy Task 1 Word recognition (L1)	0.51	0.47	0.45	0.47	1.00		
Literacy Task 2 Sentence completion (L2)	0.57	0.52	0.49	0.52	0.54	1.00	
Literacy Task 3 Text comprehension (L3)	0.39	0.34	0.34	0.36	0.35	0.44	1.00

The correlation coefficients for both 2002 and 2003 were slightly higher than those reported in 2001 (HSRC 2002). In 2003 correlations between the Numeracy tasks were all higher than 0.68. These are strong correlations and indicate that performance in all of them is dependent on strongly related abilities. The highest correlation (0.79) is that between Addition and Subtraction. This could be expected, as these two are closely related skills for a Grade 3 learner. The high correlation indicates that one is unlikely to find learners who do very well in subtraction problems and cannot add. Numeracy tasks correlated moderately with the Literacy tasks indicating that these abilities lie further apart than the Numeracy tasks lie from one another. Literacy tasks correlated only moderately with one another and did not correlate any stronger with one another than they did with the Numeracy scores. The correlation between Text Comprehension and the other tasks was rather low (0.34 to 0.44), but this could at least partly be attributed to the low reliability reported for this task (see Chapter 2).

It can be deduced from this correlation matrix in combination with the reliability coefficients reported in Chapter 2 that the Numeracy tasks represent a fairly closely knit body of knowledge and skills. The

Literacy tasks are related, but appear to be less closely related than the Numeracy tasks. The performance in all the tasks appear to be influenced to a large extent by the same factors as all the correlations are substantive and positive.

4.4 EDUCATOR QUALIFICATION AND LEARNER PERFORMANCE

The educators completed a questionnaire containing questions regarding their training, experience and classroom practices.

Formal training was classified into four categories and the mean percentage of learners having educators in each category was calculated. Mean learner performance of the educators in each of the categories is given in Table 4.5.

Table 4.5: Mahlahle means for learners with educators with different levels of formal training

Educator Qualification	Numeracy	Literacy
Grade 12 + 1 years or less	36.41	57.15
Grade 12 + 2 years	37.12	54.01
Grade 12 + 3 years	38.82	57.10
Grade 12 + 4 or more years	36.07	54.12

The mean scores of the learners of educators in the various categories did not differ significantly, so the level of training per se does not seem to be a determining factor in learner performance. The correlations between Mahlahle performance and educator qualification as well as some other variables are reported in the Appendix (Table 4.6). The correlations with formal training reported there were also not significant.

4.5 EDUCATOR EXPERIENCE AND LEARNER PERFORMANCE

The means of learners having educators with different numbers of years of experience are given in Table 4.7. The results indicate that those learners where educators had more than 20 years of experience did significantly better than the rest, but no clear pattern was observed for those with less than 20 years experience. The correlation between Numeracy and experience was 0.05 and that between Literacy and experience was 0.08. Both were significant at the 5% level. All told educator experience did not seem to be of much importance for learner performance when experience was categorised as it was done in table 4.7.

Table 4.7: Mahlahle means for learners with educators with different levels of experience

Educator years of experience	Numeracy	Literacy
1 to 5	34.34	53.06
6 to 10	38.96	56.26
11 to 15	36.71	55.96
16 to 20	36.06	49.34
21 and more	40.28	62.34

In table 4.6 in the Appendix it can be seen that there was a significant negative correlation between level of qualification and experience (-0.13), implying that educators with higher qualifications generally have slightly less experience than the others. This is in line with what can be expected from the longer courses introduced over the past 20 years for obtaining a teacher's diploma.

4.6 CLASS SIZE AND LEARNER PERFORMANCE

The means of learners in classes of different size are given in Table 4.8. The performance of the learners in smaller classes tended to be slightly better than that of the learners in larger classes. The correlation between Numeracy and class size was -0.02 and that between Literacy and class size was -0.13. The latter is statistically significant, implying that large classes do tend to impact negatively on performance.

Table 4.8: Mahlahle means for learners in classes of different size

Class size	Numeracy	Literacy	Number in category
1 to 20	36.36	57.62	112
21 to 30	37.05	60.16	411
31 to 40	39.80	57.27	748
41 to 50	33.83	52.68	463
51 to 60	43.62	56.66	176
Over 60	34.05	50.01	200

4.7 RELATIONSHIP BETWEEN SOME OTHER VARIABLES AND LEARNER PERFORMANCE

The correlations between Mahlahle performance and time spent on Numeracy and Literacy respectively were not significant. Mahlahle performance correlated negatively with frequency of assessment in class for Numeracy (-0.06) and for Literacy (-0.08). This means that the learners of those educators who reported more frequent assessments scored poorer. The relationship between frequency of assessment and improved results needs further investigation, as no reasons can be provided for this finding.

The educators were also asked to indicate learning material used most frequently. These included worksheets, the blackboard, textbooks, etc. For Numeracy, classes where worksheets and materials like blocks, charts and tins were used performed significantly better than the others. For Literacy classes where worksheets figured prominently performed significantly better than the others.

4.8 CONCLUSION

The four Numeracy tasks are strongly related to one another and the three Literacy tasks somewhat less so. Consequently learners who do well in one task are also likely to do well in the other. The relevance of some factors for learner performance was investigated. The use of learning materials such as worksheets were associated with good learner performance but a factor such as time on task as reported by the

educator, bore no relationship with learner performance. Other factors such as educator training and experience and class size appeared to have very little effect on learner performance.

In both 2002 and 2003 a stronger correspondence than in 2001 was observed between educator assessment of performance level in a certain learning area, and performance in the relevant Mahlahle instrument. This is indicative of a better-developed ability on the part of educators to assess learner performance accurately. It was demonstrated with reference to a number of examples that the educators still tended to rate learner performance as proficient when many of the expected Grade 3 learning outcomes had not been met. This finding points to a need on the part of educators for much greater clarity on what is meant by performance at a certain performance level. In other words clear guidelines are needed so that educators can set performance standards in a consistent way from school to school. It may also be that there is at present insufficient clarity about the expected outcomes to be attained by the end of Grade 3.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 FINDINGS

In the District Development Support Programme the Assessment Modelling Initiative provided Assessment Resource Banks to assist educators with the setting of goals and the setting of performance criteria as well as with a number of examples of exercises for week-to-week assessment in Grade 0 to 3. The Assessment Modelling Initiative also assessed Literacy and Numeracy performance at Grade 3 level at the beginning of programme implementation, in the middle and at the end. In this report the administration of assessment instruments at the end of each year was described and the findings at various points in time have been detailed.

In 2000, 2001 and 2002 the Numeracy and Literacy tests were administered to about 14 000 Grade 3 learners (approximately 50%) in 449 DDSP schools. In 2003 a stratified random sample of 77 of the 449 DDSP schools was tested. The sample of learners was smaller (2 434) yet still large enough to allow for valid comparisons at the national and provincial levels. The sampling procedures ensured that the sample could be regarded as representative. It is important to note that in terms of statistical validity, comparisons made between the results of the Grade 3 baseline study in 2000 and the 2001, 2002 and 2003 administrations are accurate. Most mean percentages reported are statistically valid to approximately 1 percentage point (i.e. the standard error is around 0.41) at the national level and about 2 percentage points at the provincial level.

Furthermore, measures of reliability achieved were in the range of 0.90 for Numeracy tasks and 0.70 for Literacy tasks (a minimum desirable level for a test with 17 items is around 0.65). Thus, the differences reported reflect real performance differences and the results consequently will be useful in informing the national assessment process.

The average performance in the Numeracy and the Literacy is indicated in Table 5.1 below as well as in Figure 5.1.

Table 5.1: Average percentages for the Numeracy and the Literacy tests and the combined score

	Mean %			
	2000	2001	2002	2003
Numeracy	25.84	26.78	38.04	37.32
Literacy	52.58	50.23	57.22	56.01
Total	36.71	36.08	45.65	44.74

In 2000 learners obtained an average of 53% in the Literacy instrument and 26% in the Numeracy instrument. The situation did not change much in 2001, but in 2002 the Literacy score increased by 5% and the Numeracy score by 12%. This was followed by a slight decline in 2003 of about 1% in both Numeracy and Literacy.

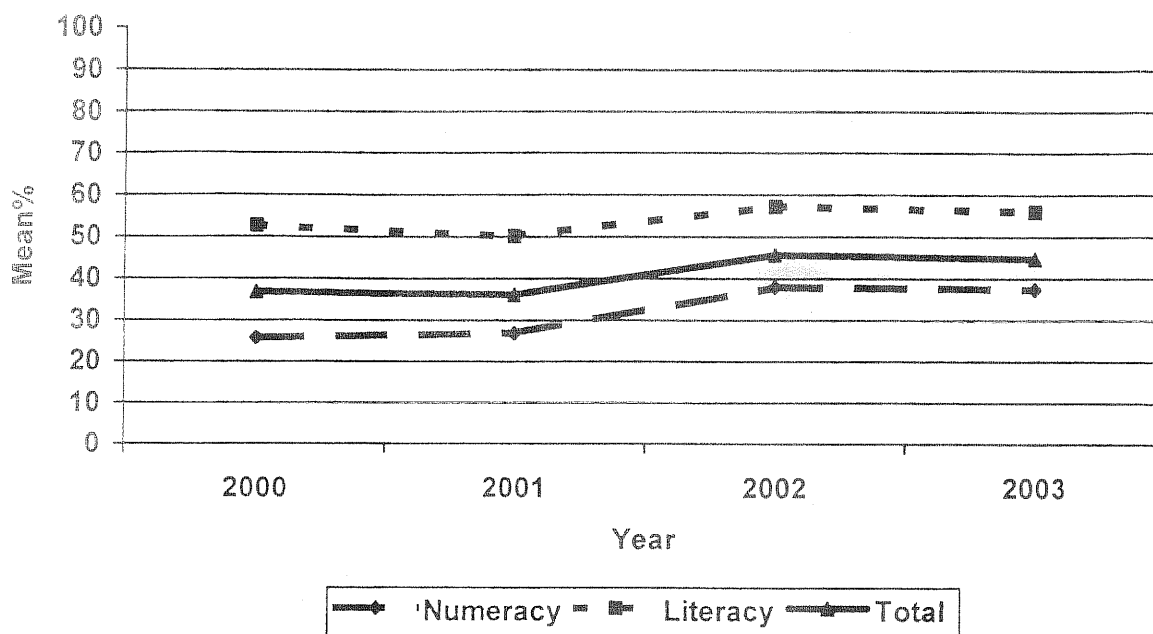


Figure 5.1: Mean percentages for the Numeracy and the Literacy tests

Performance on all Numeracy and Literacy tasks increased substantially in 2002 (See Chapter 3), indicating a general improvement rather than better performance on some tasks due to specific training. The same kind of general improvement was also observed at the level of individual questions. Learners performed better on all questions in 2002, indicating an improved level of maths and language understanding rather than the mastering of some isolated bits of knowledge and understanding. Had they done markedly better in only a few questions that could have been construed as specific training in particular techniques. The slight decline in 2003 was observed for most of the seven tasks and for most of the individual questions, indicating a slight general decrease in performance.

Learners obtained higher scores in the Literacy than in the Numeracy tasks in all years, but this does not necessarily imply that they did better in Literacy than in Numeracy. In the first place the correct answer had to be recognised and selected in Literacy (multiple choice questions) while the correct answer had to be produced in Numeracy. For the Literacy questions the correct one of the four answers might have been selected by chance, while for Numeracy the chances are really slim to get an answer correct by chance. Percentages obtained on these two sets of tasks do not necessarily imply mastery to the same degree. The percentage obtained is also a function of the cognitive complexity of the items and the way in which questions are asked. It is furthermore also debatable whether 40 of the 75 marks that could be earned for Literacy should be very easy word recognition items taken over from what was essentially a test of speed of word recognition for 8 year olds.

Over the four years girls outperformed boys each year in both Numeracy and Literacy as indicated in Table 5.2.

Table 5.2: Average percentage obtained by boys and girls

Gender	Average percentage							
	Numeracy				Literacy			
	2000	2001	2002	2003	2000	2001	2002	2003
Male	24.74	25.68	36.22	35.79	49.77	47.13	54.08	52.65
Female	26.86	27.81	40.21	38.96	55.48	53.48	60.80	59.24

In Numeracy girls outperformed boys by 2% in 2000 and 2001, by 4% in 2002 and by 3% in 2003. In Literacy the girls outperformed boys by 6% in each of the four years. This is a large difference and there is no indication that the difference may be shrinking. It is generally found that girls mature faster than boys emotionally and socially during the foundation phase, and it may be that they also naturally progress faster in schoolwork. On the other hand it is possible that learning conditions at schools are favouring girls over boys and are continuing to do so in spite of the implementation of OBE and in spite of the assistance rendered to schools by the DDSP.

It is an essential element of Curriculum 2005 that continuous assessment should be done and that educators should know what individual learners know and can do. They should know to what extent each learner has attained the outcomes expected according to the curriculum. By the end of the year such knowledge about their learners may be expected from all educators. This study also obtained assessments of learner performance from educators. The correspondence between educator assessment of learner performance and learner performance in the Mahlahle tests was low in 2001, but increased substantially in 2002 and 2003. This points to a better quality assessment of learner performance in 2002 and 2003 than in 2001. It is likely that training in the use of the Assessment Resource Banks and training in assessment provided by other service providers equipped the educators to make more appropriate assessments of learner performance. The Assessment Resource Banks provided to educators also clarified the curriculum objectives by concretising the curriculum objectives into concrete examples of questions the learners should be able to answer. The fact that appropriate Assessment Resource Banks were provided for each grade in the foundation phase also assisted in making clear the standards of performance expected from learners in the various grades.

5.2 HOW COULD IMPROVEMENTS BE EXPLAINED

Based on comparison between the results of 2000, 2001 and 2002 in the Mahlahle instruments, it is clear that small changes occurred between 2000 and 2001 as well as between 2002 and 2003. Large increases of performance occurred between 2001 and 2002. These large increases may have resulted from any one or more of a number of factors that could have influenced performance. A number of these are mentioned below. As the study was not designed to indicate which of these factors influenced performance and which did not it is to be expected that the data will not assist us well in determining

which of these actually did influence performance changes and to what extent the various factors contributed to performance changes. It is, however, necessary to mention these as some of the possibilities as the study did not adequately plan to account for them.

- Service providers were probably better established in 2002 and could consequently be more effective than before which resulted in large increases in performance. Yet, by 2003 the work of service providers with educators had ceased almost completely and there was no further increase. There was only very limited support for implementing the ARBs in 2003. All factors considered this appears to be the most appropriate explanation for the performance changes observed.
- The support from the districts could have succeeded in improving educational practice, leading to the considerable improvement in 2003. Had this been the major factor in the change one would have expected the increase to continue in 2003 and this did not happen.
- School support officers could have been focussing their efforts more directly on Grade 3. This is unlikely for 2003, as it only became known late in the year that the Mahlahle instruments would again be administered.
- It could have taken a year or more for the training of educators and the provision of teaching materials to take effect in the schools in the form of tangible results. The increase in 2002 is in line with this hypothesis. One would have hoped for internalisation on the part of educators that would have led to a continued increase in 2003.
- The feedback session in January 2002 that indicated to service providers that desired shifts in attainments were not occurring could have had a beneficial motivating effect on service providers and educators. This could have resulted in a concerted effort to make a difference. In 2003 no such added motivation was provided.
- The nature of the questions in the tests may have become known and could have resulted in some "teaching to the test". This is regarded as unlikely except in so far as this kind of information was divulged in the 2000, 2001 and 2002 reports. Directing teaching toward outcomes assessed in the test need not be a bad thing if desired outcomes are achieved. It is unlikely that this kind of teaching had an adverse effect in the form of rote learning as performance increases were observed on all questions.
- The Assessment Resource Banks or other material provided by some of the service providers could have concretised the curriculum objectives in a meaningful way for educators and could have empowered them to teach more effectively towards desired curriculum outcomes. The ARBs only became available in April 2002 and could thus only have an influence during a large part of 2002. The ARBs were available in 2003, but very little support to educators was provided. So results are in line with the hypothesis that the ARBs made a meaningful contribution.
- Educators could have been becoming more comfortable with teaching in the new curriculum framework and could have been succeeding in translating curriculum goals into effective classroom practice on their own. Had this been an adequate explanation one would expect continued increases in 2003.

- Educators could have motivated learners much better to do well in the tests in 2002 because the educators realised that much was at stake regarding continued support of the kind provided by the DDSP. The same argument could be made for 2003, but no similar increase was observed so this is unlikely to be a major cause.
- The exclusion of very young learners from formal education through implementing a school admission age of 7 years could have resulted in the exclusion of a number of educationally less mature students in 2002 and 2003.

The influence of these and other factors on achievement need to be clarified before firm conclusions regarding the nature of the improvements and the efficacy of the assistance rendered can be arrived at. Nevertheless at a minimum it may be said that a number of outcomes had been better attained in 2002 and 2003 than before.

5.3 RECOMMENDATIONS

As the support given to districts by the District Development Support Programme did make a difference to learners it should be recommended that this kind of support should be continued. It is likely that some aspects of the support rendered were more crucial than others. From the data obtained in the Mahlahle administrations it is not possible to say which aspects of the support rendered were essential in the changes that were brought about. Some aspects of the programme not influential at this point in time may be germane to fundamental long-term improvements. Some suggestions regarding assessment could, however be made with a fair degree of certainty.

The Assessment Resource Banks can bring clarity on content standards. It is important that educators know what is expected of learners at what stage. Clear examples of what is implied by the curriculum such as were provided in the Assessment Resource Banks should be available to every educator. It is important that the examples of questions learners should be able to answer are available for each grade so that all educators are clear on the kinds of skills and knowledge learners are expected to possess at the end of each year. The Assessment Resource Banks of the previous year may be used at the beginning of the year by an educator as a diagnostic tool to determine the level of mastery of the various facets of the curriculum. Appropriate remedial action may then be taken before proceeding with more advanced work. The Assessment Resource Banks can be skilfully integrated with the continuous assessment done in the classroom each day.

The Assessment Resource Banks also serve to bring clarity on what is meant by the four levels of attainment. Through the exercises in the Assessment Resource Banks the educator is offered an opportunity to develop a better understanding of performance standards. In these exercises she can see what degree of mastery should be characterised as partially achieved, fully achieved, etc. Again the primary gain lies in making concrete the principles stated in policy and the curriculum. Having the same

principles and curricula and implementing them in a commonly understood way are likely to lead to consistently appropriate standards.

It is also necessary to monitor the performance level of learners at a district level to see whether learners meet performance standards at the end of each phase. Should performance lag behind, the necessary steps should be taken to ensure that all learners do learn at the required rate. For economic reasons this kind of assessment is probably best done by administering an instrument such as the Mahlahle instruments at the end of a phase. The purpose of such an assessment is mainly to assess level of performance rather than to provide a fine-grained diagnostic assessment. The fine-grained diagnostic assessment with a view to appropriate instruction is of course required in the continuous assessment done in the classroom. The cost implied by the administration of fine-grained common assessment tasks to each learner in a standard way will be prohibitive and the money could probably be spent more productively. A group administered assessment instrument assessing broad outcomes will be adequate for the purpose of determining level of performance.

As has been demonstrated in this report it is not necessary to assess all learners to obtain information on the level of performance of learners in for instance a province. The necessary information may be obtained by assessing representative samples. Only 10% or 30% of learners may have to be assessed for one day to obtain adequate information at the national or provincial level. In this way officials can obtain objective evidence about the degree to which expected outcomes had been attained in various locations.

Standardised instruments will be of more value than mere collections of items considered appropriate by experts. It is necessary not merely to know what facet of the curriculum is assessed by a particular item, but it is also necessary to know how difficult the item is, in other words it is necessary to know how cognitively demanding the item is. In addition, as was seen from the differences between the mean scores for Numeracy and Literacy, it has repeatedly been shown that the judgements of experts is not enough to determine whether questions are suitable for a particular group of learners. Empirical evidence is also needed and this implies a longer term-perspective on the design of assessment instruments. The one-shot ad-hoc instrument approach is bound to deliver instruments with very limited value when it comes to comparability across time and across subject areas. In a standardised instrument these factors can be adequately accounted for by empirical investigation and consequently the comparison of results become more meaningful. The creation of banks of secure questions of which the difficulty is known will greatly facilitate the provision of comparable measures that are secure.

A related shortcoming may be found in the way reporting was done of learner performance in the Mahlahle instruments. It would have been more meaningful to users of the information to know what percentage of learners did not attain, partially attained, attained or fully attained the expected outcomes. It is important to translate percentages obtained on assessment instruments into performance standards to indicate the implications of the performance obtained for the classification performance standards. On

one assessment instrument 53% may correspond to fully attained, whereas on another it may correspond to partially attained.

It may be considered an unfortunate omission in study design that desired changes were observed, but the study does not provide us with an understanding of how the changes came about. It is likely to be of value to those who would like to facilitate positive change in education to gain this kind of understanding. An in depth study at a few sites at this point in time is likely to contribute valuable information to this end. The study should investigate in a qualitative way, how the observed quantitative changes came about. The most important recommendation flowing from this study is probably that such a study be conducted without delay as the dynamics of change may become less clear as time draws on. If the dynamics of change are not adequately understood actions may be directed by prejudice rather than fact. The hypotheses generated in the qualitative study may then be further researched in quantitative studies to verify the findings of the qualitative research. Policy should be informed by firm evidence of the causes of positive changes.

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APPENDIX 1

Additional tables

The appendix contains the longer tables and provides additional information on the standard deviation, number of learners and standard error of the mean. The table numbers refer to table numbers in Chapters 3 and 4.

Table 2.1: Number of schools to be randomly drawn in each district

Province	District	Primary schools with Grade 3	Schools tested in 2002	Sample for 2003
Eastern Cape	Cala	7	6	3
	Cofimvaba	12	12	4
	Herschel	18	17	4
	Lady Frere	10	9	3
	Queenstown	27	26	4
	East			
	Queenstown	13	13	4
	West			
	Total	87	83	22
KwaZulu- Natal ¹	Chwezi	20	20	3
	Ekhombe	22	22	3
	Godide	33	33	4
	Sibudheni	23	23	3
	Sigananda	28	28	4
	Total	126	126	17
Northern Cape	Kimberley	53	52	8
	Total	53	52	8
Limpopo	Apel	27	27	4
	Hlanganani	28	26	4
	Mkhuhlu	40	40	6
	Palala	34	34	6
	Polokwane	27	27	4
	Vuwani	41	41	6
	Total	195	195	30
Total		461	456	77

Table 2.2: Sample of schools tested in 2003

Province	District	School Number	School
Eastern Cape	Cala	2400272	Holy Cross S.P.S
		2600295	Indwana J.S.S
		2600360	L.M. Silingela J.P.S
	Cofimvaba	600535	Mvuzo
		601052	Mhlobo
		601054	Ntshingeni
	Herschel	2600386	Ncora Flats J.S.S
		600181	Entsimekweni
		2600046	Bikizana J.S.S
		2600422	Makhetha S.P.S
	Lady Frere	2600966	Umlamli S.P.S
		2600454	Mathyantya J.S.S
		2600632	Nozuko Primary
		2600740	Sidakeni Primary
	Queenstown East	2500588	Masizakhe J.P.S
		2600019	Anako Primary
		2600102	Chris Hani Primary
		2600919	Windvogel Farm School
	Queenstown West	2401304	Zingisa
		2600522	Mthawelanga
		2600564	New Hope
		2600608	Nomzamo
KwaZulu-Natal	Chwezi	147260	Gawulashiye (Fort Louis)
		237281	Nqamboshana
		290191	Upper - Mhlathuze (Chwezi)
	Ekhombe	202168	Matshana (Gubazi)
		238206	Nsingabantu (Gubazi)
		309209	Mndunduzeli (Makhathini)
	Godide	130943	Emakhwabe (Mfongosi)
		152329	Gubhela (Manyane)
		197765	Manyane (Nodal school)
		239945	Ntingwe (Manyane)
	Sibudheni	139046	Enyawoshane (Khomo)
		170089	Iwangu (Khomo)
		178895	Kwabiyela (Khomo)
	Sigananda	121804	Dlabe (Sigananda)
		197950	Manzamnyama (Ethalaneni)

Province	District	School Number	School
Northern Cape	Kimberley	206275	Mdelanga (Phalane)
		237577	Nqundu (Phalane)
		12216	Tadcaster Primary Farm School
		13214	Ulco Primere Skool
		13207	Laerskool Hartsvaal*
		13203	G.N. Pressly Primere Skool*
		17213	Tlhatlogang Primary School
		17214	Valspan Public Primary School
	Hlanganani	17220	Reaipela Farm School
		17402	HS Vaalharts
		925610322	Jacob Marwale Primary School
		925610384	Phukubjane Primary School
		925610605	Moletse Primary School
		925610766	Lerajane Primary School
Limpopo	Mkuu	912520849	N'wa-Mhandzi Primary School*
		912520696	Mhluri Primary School
		912521064	Xilumani Primary School
		931520733	Mulindathavha Primary School
		914150353	Londhindha
		914450056	Bhejani Primary School
		914450919	Saringwa Primary School
		927450520	Marongwane
		927450698	Mogolane
		927450971	Shatleng Primary School
	Palala	901322590	Ikitsing
		908110761	Motlhasedi
		921110464	Makhurumela
		921110631	Moabi
		921110723	Moroe
	Polokwane	921111191	Tshukudu
		922220118	Chokwe Primary School
		922220323	Kaputla Nkoana Primary School
		922220385	Komape Molapo Primary School
		922221456	Sehlagane Primary School
	Vuwani	905320995	Hanani Primary School
		930320902	Edward Mpfuneni Primary School
		930320919	Ndaeni Primary School
		930321035	Tshitamba Munwe Primary School

Province	District	School Number	School
		930321400	Lupedze Primary School
		930351180	Tshivhulani Primary School

* replacement schools

Table 3.13b: Numeracy means for districts

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
Eastern Cape	Cala	2000	34.39	223	22.844	1.530
		2001	30.16	228	17.179	1.138
		2002	41.96	219	22.684	1.533
		2003	40.26	104	16.814	1.649
		Total	36.07	774	21.039	.756
	Cofimvaba	2000	25.11	386	14.773	.752
		2001	28.94	373	17.045	.883
		2002	36.53	433	18.786	.903
		2003	36.28	118	16.589	1.527
		Total	30.98	1310	17.661	.488
	Herschel	2000	21.24	549	13.347	.570
		2001	22.76	496	14.076	.632
		2002	30.10	489	17.608	.796
		2003	26.20	138	14.474	1.232
		Total	24.69	1672	15.446	.378
	Lady Frere	2000	18.79	225	13.406	.894
		2001	24.11	216	15.541	1.057
		2002	37.04	209	20.116	1.391
		2003	33.66	88	19.744	2.105
		Total	27.29	738	18.496	.681
	Queenstown East	2000	30.13	782	18.624	.666
		2001	31.36	805	17.749	.626
		2002	41.75	772	20.279	.730
		2003	40.46	109	18.264	1.749
		Total	34.62	2468	19.568	.394
	Queenstown West	2000	30.04	413	15.300	.753
		2001	33.52	427	18.240	.883
		2002	42.20	415	18.175	.892
		2003	43.67	130	20.133	1.766
		Total	36.04	1385	18.392	.494
	Total	2000	26.85	2578	17.211	.339
		2001	28.97	2545	17.262	.342
		2002	38.32	2537	19.927	.396
		2003	36.59	687	18.605	.710
		Total	31.78	8347	18.874	.207
KwaZulu-Natal	Chwezi	2000	22.56	655	14.481	.566
		2001	21.75	635	13.793	.547
		2002	34.83	557	18.449	.782
		2003	34.77	69	16.625	2.001
		Total	26.30	1916	16.692	.381
	Ekhombe	2000	27.04	632	15.185	.604
		2001	29.24	653	17.137	.671
		2002	41.61	602	18.602	.758
		2003	43.44	61	17.787	2.277
		Total	32.79	1948	18.226	.413
	Godide	2000	27.49	799	17.559	.621
		2001	25.91	774	17.798	.640
		2002	39.43	739	19.528	.718
		2003	43.45	104	16.348	1.603
		Total	31.32	2416	19.285	.392
	Sibudheni	2000	27.71	707	16.017	.602

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
Northern Cape	Sigananda	2001	25.93	695	16.903	.641
		2002	39.21	578	20.571	.856
		2003	39.70	69	20.798	2.504
		Total	30.76	2049	18.783	.415
		2000	25.72	987	15.287	.487
	Total	2001	25.93	968	16.352	.526
		2002	37.39	931	19.678	.645
		2003	42.82	138	17.255	1.469
		Total	30.16	3024	18.164	.330
		2000	26.14	3780	15.876	.258
	Kimberley	2001	25.79	3725	16.647	.273
		2002	38.47	3407	19.524	.334
		2003	41.31	441	17.819	.849
		Total	30.32	11353	18.402	.173
		2000	36.86	1243	25.270	.717
Limpopo	Total	2001	38.74	1187	24.442	.709
		2002	46.95	1234	24.000	.683
		2003	36.77	274	20.284	1.225
		Total	40.58	3938	24.687	.393
		2000	36.86	1243	25.270	.717
	ApeI	2001	38.74	1187	24.442	.709
		2002	46.95	1234	24.000	.683
		2003	36.77	274	20.284	1.225
		Total	40.58	3938	24.687	.393
		2000	29.10	878	17.801	.601
	Hlanganani	2001	25.79	867	16.244	.552
		2002	40.45	796	20.267	.718
		2003	40.06	126	21.149	1.884
		Total	31.93	2667	19.316	.374
		2000	20.83	1003	15.841	.500
	Mkhuhlu	2001	22.16	970	16.036	.515
		2002	34.67	865	20.139	.685
		2003	36.96	132	23.217	2.021
		Total	26.01	2970	18.749	.344
		2000	21.97	1261	13.975	.394
	Palala	2001	24.28	1279	12.927	.361
		2002	33.63	1215	17.893	.513
		2003	30.31	215	18.097	1.234
		Total	26.74	3970	15.993	.254
		2000	26.12	1058	17.107	.526
	Polokwane	2001	26.92	1092	17.681	.535
		2002	40.98	992	22.024	.699
		2003	39.62	204	20.473	1.433
		Total	31.61	3346	20.254	.350
		2000	23.48	1004	15.757	.497
	Vuwani	2001	25.23	967	14.605	.470
		2002	42.04	962	19.274	.621
		2003	35.94	160	17.582	1.390
		Total	30.44	3093	18.606	.335
		2000	20.50	1561	14.877	.377
	Total	2001	22.75	1542	15.501	.395
		2002	28.46	1417	18.231	.484
		2003	36.61	195	24.193	1.732
		Total	24.29	4715	17.109	.249
		2000	23.26	6765	16.028	.195
	Grand Total	2001	24.38	6717	15.565	.190
		2002	35.93	6247	20.160	.255
		2003	36.26	1032	21.036	.655
		Total	28.08	20761	18.444	.128
		2000	25.84	14366	17.592	.147

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
		2001	26.78	14174	17.519	.147
		2002	38.04	13425	20.571	.178
		2003	37.32	2434	19.805	.401

Table 3.15b: Literacy means for districts

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
Eastern Cape	Cala	2000	55.89	213	22.873	1.567
		2001	53.54	228	21.460	1.421
		2002	65.51	219	21.397	1.446
		2003	61.56	104	18.242	1.789
		Total	58.72	764	21.970	.795
	Cofimvaba	2000	54.64	378	20.080	1.033
		2001	49.71	373	21.669	1.122
		2002	59.75	433	20.344	.978
		2003	58.92	118	18.550	1.708
		Total	55.32	1302	20.889	.579
	Herschel	2000	43.10	555	21.870	.928
		2001	44.15	496	21.939	.985
		2002	52.34	489	20.724	.937
		2003	45.08	138	20.601	1.754
		Total	46.27	1678	21.800	.532
	Lady Frere	2000	37.51	227	22.934	1.522
		2001	44.07	216	26.508	1.804
		2002	61.73	209	21.273	1.471
		2003	57.95	88	22.273	2.374
		Total	48.70	740	25.573	.940
	Queenstown East	2000	56.52	792	21.036	.747
		2001	55.15	805	21.771	.767
		2002	66.45	772	18.747	.675
		2003	65.41	109	17.412	1.668
		Total	59.56	2478	21.056	.423
	Queenstown West	2000	59.27	414	19.003	.934
		2001	55.59	427	21.522	1.042
		2002	68.08	415	14.639	.719
		2003	66.93	130	16.139	1.415
		Total	61.49	1386	19.143	.514
	Total	2000	52.07	2579	22.295	.439
		2001	51.20	2545	22.652	.449
		2002	62.38	2537	20.082	.399
		2003	58.96	687	20.288	.774
		Total	55.51	8348	22.157	.243
KwaZulu-Natal	Chwezi	2000	54.14	656	19.223	.751
		2001	51.00	635	20.722	.822
		2002	60.76	557	19.185	.813
		2003	57.74	69	18.918	2.278
		Total	55.15	1917	20.084	.459
	Ekhombe	2000	58.35	622	19.210	.770
		2001	58.38	653	18.656	.730
		2002	58.48	602	19.521	.796
		2003	60.57	61	17.440	2.233
		Total	58.47	1938	19.060	.433
	Gódide	2000	60.24	792	17.759	.631
		2001	54.23	774	21.509	.773
		2002	60.10	739	20.764	.764
		2003	65.14	104	13.695	1.343
		Total	58.48	2409	20.045	.408
	Sibudheni	2000	58.63	710	18.542	.696
		2001	51.63	695	20.676	.784
		2002	59.85	578	19.354	.805

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
Northern Cape	Sigananda	2003	51.57	69	18.799	2.263
		Total	56.37	2052	19.854	.438
		2000	57.61	979	19.233	.615
		2001	50.64	968	21.729	.698
		2002	56.06	931	20.519	.672
		2003	64.13	138	18.215	1.551
	Total	Total	55.19	3016	20.707	.377
		2000	57.87	3759	18.886	.308
		2001	52.99	3725	20.981	.344
		2002	58.78	3407	20.060	.344
		2003	60.91	441	17.926	.854
		Total	56.66	11332	20.084	.189
	Kimberley	2000	55.53	1240	23.243	.660
		2001	57.21	1187	22.057	.640
		2002	62.23	1234	20.855	.594
		2003	58.09	274	19.350	1.169
		Total	58.32	3935	22.062	.352
		Total	55.53	1240	23.243	.660
Limpopo	Total	2001	57.21	1187	22.057	.640
		2002	62.23	1234	20.855	.594
		2003	58.09	274	19.350	1.169
		Total	58.32	3935	22.062	.352
	Apel	2000	58.53	878	17.268	.583
		2001	50.95	867	20.124	.683
		2002	57.52	796	18.029	.639
		2003	57.96	126	18.598	1.657
		Total	55.74	2667	18.815	.364
		Total	44.47	967	20.406	.656
	Hlanganani	2001	47.66	970	23.467	.753
		2002	55.92	865	21.337	.725
		2003	53.32	132	24.467	2.130
		Total	49.30	2934	22.409	.414
	Mkhuhlu	2000	32.62	821	14.812	.517
		2001	39.77	1279	18.560	.519
		2002	47.61	1215	18.590	.533
		2003	39.42	215	20.375	1.390
		Total	40.78	3530	18.756	.316
		Total	50.05	1050	17.407	.537
	Palala	2001	43.83	1092	19.937	.603
		2002	50.81	992	18.468	.586
		2003	55.18	204	16.592	1.162
		Total	48.55	3338	18.853	.326
	Polokwane	2000	53.10	1000	17.124	.541
		2001	47.00	967	18.776	.604
		2002	52.43	962	17.180	.554
		2003	54.34	160	14.339	1.134
		Total	51.04	3089	17.755	.319
		Total	51.82	1534	20.290	.518
	Vuwani	2001	53.03	1542	22.070	.562
		2002	56.50	1417	20.565	.546
		2003	52.70	195	22.853	1.637
		Total	53.67	4688	21.163	.309
	Total	2000	49.01	6250	19.742	.250
		2001	47.10	6717	21.125	.258
		2002	53.29	6247	19.490	.247
		2003	51.40	1032	20.700	.644
		Total	49.82	20246	20.344	.143
		Total	52.58	13828	20.697	.176
Grand Total	Grand Total	2001	50.23	14174	21.699	.182
		2002	57.22	13425	20.252	.175

PROVINCE	DISTRICT	YEAR	Mean	N	SD	Std. Error
		2003	56.01	2434	20.348	.412

Table 4.6: Correlation between achievement and some classroom variables

		Numeracy	Literacy	Experience	Class size	Qualification
Numeracy	Pearson Correlation	1	.613	.047	-.022	-.015
	Sig. (2-tailed)	.	.000	.032	.309	.492
	N	2434	2434	2088	2110	2052
Literacy	Pearson Correlation	.613	1	.081	-.125	-.032
	Sig. (2-tailed)	.000	.	.000	.000	.153
	N	2434	2434	2088	2110	2052
Experience	Pearson Correlation	.047	.081	1	-.022	-.133
	Sig. (2-tailed)	.032	.000	.	.312	.000
	N	2088	2088	2088	2039	1981
Class size	Pearson Correlation	-.022	-.125	-.022	1	.035
	Sig. (2-tailed)	.309	.000	.312	.	.123
	N	2110	2110	2039	2110	2003
Qualification	Pearson Correlation	-.015	-.032	-.133	.035	1
	Sig. (2-tailed)	.492	.153	.000	.123	.
	N	2052	2052	1981	2003	2052

SCHOOL QUESTIONNAIRE

To be completed by the principal

For office
use only

Card 1

School Number _____

School year ☐ 2003

2-11
12

Name of the school _____

1. Provide the number of teachers and pupils at your school in Grades 1 – 3.

Grade	Number of pupils	Number of Teachers
Grade 1		
Grade 2		
Grade 3		

13-15, 16-18

19-21, 22-24

25-27, 28-30

2. Qualifications of the teachers in Grades 1 – 3 of your school
Please write down for every grade the number of teachers that have the listed qualifications.

Grade	M+1	M+2	M+3	M+4
Grade 1				
Grade 2				
Grade 3				

31-32, 33-34
35-36, 37-38

39-40, 41-42
43-44, 45-46

47-48, 49-50
51-52, 53-54

3. Years of teacher experience in Grade 1 to 3
Please write down for every Grade the number of teachers with less than 3 years experience, between 3 – 9 years' experience and more than 9 years' experience.

Grade	Number of Teachers with experience		
	< 3 years	3 – 9 years	> 9 years
Grade 1			
Grade 2			
Grade 3			

55-56, 57-58, 59-60

61-62, 63-64, 65-66

67-68, 69-70, 71-72

4. Assessment Resource Banks (ARBs)

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use only

		Circle one box in each row	
		Yes	No
a)	Do you have knowledge of ARBs?	1	2
b)	Do you have copies of the ARB booklets?	1	2
c)	Do you have ARB posters?	1	2

73

74

75

5. ARB training

Circle one box only

Card 2

		Yes	No
a)	Were you trained in the use of ARBs?	1	2

12

b)	If yes, who trained you and how many workshops did you attended?	Circle all that is applicable to you	Indicate the number of workshops you attended
----	--	--------------------------------------	---

i)	The HSRC	1	
ii)	The Assessment Resource Person(s)	2	
iii)	The School Assessment Team	3	
iv)	DDSP service providers	4	
vi)	Other NGO (please specify):	5	

13, 14-15

16, 17-18

19, 20-21

22, 23-24

25, 26, 27-28

6. ARBs Application Support

a)	Do you support your educators in applying and using the RBs in your school?	Yes	No
b)	If yes, briefly explain the type of support you give to your educators in applying and using ARBs in class:		

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30-31

32-33

7. Please comment on the usefulness of ARBs in your school:

34-35

36-37

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use only

		Circle one box only
8.	How far do you have to travel to the school where you teach every day from the place where you stay?	
a)	0 to 5 km	1
b)	6 to 20 km	2
c)	21 to 50 km	3
d)	51 to 100 km	4
e)	more than 100 km	5

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		Circle one box only
9.	How far is it from your home to the school where you teach?	
a)	0 to 5 km	1
b)	6 to 20 km	2
c)	21 to 50 km	3
d)	51 to 100 km	4
e)	more than 100 km	5

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		Circle one box only	
10a	Do you have a family? (spouse and/or children)	Yes =1	No =2

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10b.	If you answered yes to 3a, answer the following question.	Circle one box only
How frequently do you spend some time at home?		
a)	Almost every night or every night	1
b)	Weekends and holidays only	2
c)	Some weekends and holidays only.	3

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Thank you very much

EDUCATOR QUESTIONNAIRE

To be completed by each educator in the foundation phase in 2003
Confidential: For research purposes only and not for departmental use
 (A separate form must be filled in for each grade taught)

For office
use only

Card 1

1.	Name of school _____	2.	School Number _____	2-11				
3.	Name and surname of Educator _____			12-13				
4.	Institution where you obtained your teacher qualification: _____			14-15				
5.	Circle the highest qualification obtained	<table border="1"> <tr> <td>No M</td> <td>M+1</td> <td>M+2</td> <td>M+3</td> <td>M+4 or more</td> </tr> </table>	No M	M+1	M+2	M+3	M+4 or more	16 17-20
No M	M+1	M+2	M+3	M+4 or more				
6.	Year when qualification was obtained: _____							
7.	Years of experience in the foundation phase: _____ years			21-22				
8.	Circle the grade taught this year:	<table border="1"> <tr> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	0	1	2	3	23 24-26	
0	1	2	3					
9.	How many learners are in your class in this grade? _____ learners							
10.	How much time <u>per week</u> is generally spent on Literacy? _____ hours			27-28				
11.	How much time <u>per week</u> is generally spent on Numeracy? _____ hours.			29-30				
12.	Circle only one code to indicate the <u>main</u> Learning Material (Learning Support Material) that is used for Literacy. If you make use of code 6 please write down on the line provided what kind of material is used.							
	Textbook	1						
	Learner workbook	2						
	Worksheets	3						
	Reading books	4						
	Chalkboard	5						
	Something else (specify) _____	6		31 32				
13.	Circle only one code to indicate the <u>main</u> Learning Material (Learning Support Material) that is used for Numeracy. If you make use of code 6 please write down on the line provided what kind of material is used.							
	Textbook	1						
	Learner workbook	2						
	Worksheets	3						
	Blocks/charts/tins etc	4						
	Chalkboard	5						
	Something else (specify) _____	6		33 34				
14.	Circle the appropriate code to indicate how frequently you make use of tests or assessment tasks to monitor the progress of the learners in literacy and numeracy. Circle only one code for each learning area.							
	Never	Incidental	On average, once a month	On average, once a week				
Literacy	1	2	3	4				
Numeracy	1	2	3	4				

ASSESSMENT RESOURCE BANKS

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use only

1. POSITION OF EDUCATOR

1	What is your current position at your school? (<i>Circle more than one box if applicable</i>)		
			Circle
b)	Deputy school principal		1
c)	Head of Department (HOD)		2
d)	An educator		3
d)	Other (please specify):		4

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38

		Circle one box only	
2	Are you a member of the School Assessment Team?	Yes	No

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2. ARB MATERIALS

		Circle one box in each row	
1.	Did you receive the following ARB materials?	Yes	No
a)	English ARB booklets for Numeracy	1	2
b)	English ARB booklets for Literacy	1	2
c)	Numeracy ARB booklets with translated tasks	1	2
d)	Literacy ARB booklets with translated tasks	1	2
e)	ARB posters	1	2

40
41
42
43
44

3. ARB TRAINING

		Circle one box only	
		Yes	No
1.	Were you trained in the use of ARBs?	1	2
2.	If yes, who trained you and how many workshops did you attended?	Circle all that is applicable to you	Indicate the number of workshops you attended
a)	The HSRC	1	
b)	The Assessment Resource Person(s)	2	
c)	The School Assessment Team	3	
d)	DDSP service providers	4	
e)	Other NGO (please specify):	5	

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46, 47-48
49, 50-51
52, 53-54
55, 56-57
58, 59, 60-61

4. CLASSROOM APPLICATION OF ARBs

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use only

		Circle one box in each row				
		Always	Sometimes	Rarely	Never	
1.	How often do you use ARBs in the classroom in the following ways?					
a)	As assessment task or test	4	3	2	1	62
b)	As a lesson in class	4	3	2	1	63
c)	Integrated as part of a lesson	4	3	2	1	64
d)	Some items selected from an ARB task	4	3	2	1	65
e)	Other (specify):	4	3	2	1	66, 67
		Circle one box in each row				
		Always	Sometimes	Rarely	Never	
2.	How often do you receive support in the application of ARBs from the following persons?					
a)	School principal	4	3	2	1	68
b)	Deputy school principal	4	3	2	1	69
c)	School Assessment Team	4	3	2	1	70
d)	Foundation Phase educators not in the School Assessment Team	4	3	2	1	71
e)	Assessment Resource Person(s)	4	3	2	1	72
f)	ECD or Foundation Phase specialist(s)	4	3	2	1	73

5. THE COMPOSITION OF ARB TASKS

		Circle one box in each row			
		Yes	No	Not sure	
1.	Please comment on the following statements about ARB tasks?				
a)	The format and structure of assessment tasks are user-friendly.	1	2	3	12
b)	The curriculum outcomes and assessment standards are clearly stated.	1	2	3	13
c)	Curriculum outcomes are linked to assessment tasks.	1	2	3	14
d)	The content of the items is relevant to most learners.	1	2	3	15
e)	It is easy to select and apply a relevant task.	1	2	3	16
f)	It is easy to report on learner performance.	1	2	3	17
g)	Guidelines for recording scores are easy to understand and apply.	1	2	3	18
h)	Assessment tasks are easy to adapt if necessary.	1	2	3	19

Card 2

6. ADVANTAGES IN ARBs APPLICATION

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use only

		Circle one box in each row			
1.	How often do the following contribute to the successful application of the ARBs in your class?	Always	Sometimes	Rarely	Never
a)	The format and structure of assessment tasks.	4	3	2	1
b)	Selecting the correct task	4	3	2	1
c)	Linking the curriculum outcomes to assessment tasks.	4	3	2	1
c)	The content of the tasks	4	3	2	1
e)	Applying the task in class	4	3	2	1
f)	Using a scoring guide	4	3	2	1
g)	Recording of learners' scores	4	3	2	1
h)	Adapting assessment tasks to your needs	4	3	2	1

7. LIMITATIONS IN ARBs APPLICATION

		Circle one box in each row			
1.	How often do you experience problems in using ARBs with regard to the following?	Always	Sometimes	Rarely	Never
a)	The format and structure of assessment tasks.	4	3	2	1
b)	Selecting the correct task	4	3	2	1
c)	Linking the curriculum outcomes to assessment tasks.	4	3	2	1
d)	The content of the tasks	4	3	2	1
e)	Applying the task in class	4	3	2	1
f)	Using a scoring guide	4	3	2	1
g)	Recording of learners' scores	4	3	2	1
h)	Adapting assessment tasks to your needs	4	3	2	1

8. Write down any comments on your experiences in using ARBs in class.

36-37

38-39

9. ACCESS

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use only

Circle one box only	
1. How far do you have to travel to the school where you teach every day from the place where you stay?	
a) 0 to 5 km	1
b) 6 to 20 km	2
c) 21 to 50 km	3
d) 51 to 100 km	4
e) more than 100 km	5

40

Circle one box only	
2. How far is it from your home to the school where you teach?	
a) 0 to 5 km	1
b) 6 to 20 km	2
c) 21 to 50 km	3
d) 51 to 100 km	4
e) more than 100 km	5

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Circle one box only		
3a Do you have a family? (spouse and/or children)	Yes =1	No =2

42

Circle one box only	
3b. If you answered yes to 3a, answer the following question. How frequently do you spend some time at home?	
a) Almost every night or every night	1
b) Weekends and holidays only	2
c) Some weekends and holidays only.	3

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Thank you very much

APPENDIX 4

Chapter 4 dealt with some of questions asked in the School Questionnaire and in the Educator Questionnaire. Among these were class size, educator training and educator experience. In addition to the questions dealt with in Chapter 4, we also asked questions related to the Assessment Resource Banks and related to the access of educators to schools. Frequency tables of the responses to these questions and some comments are presented below.

The School Questionnaire

Frequency tables for the School Questionnaire are presented below.

Question 4a: Do you have knowledge of ARBs?

Year			Frequency	Percent
2002	Valid	Yes	367	85.5
		No	49	11.4
		Total	416	97.0
	Missing	System	13	3.0
		Total	429	100.0
2003	Valid	Yes	62	84.9
		No	8	11.0
		Total	70	95.9
	Missing	System	3	4.1
		Total	73	100.0

Question 4b: Do you have copies of the ARB booklets?

Year			Frequency	Percent
2002	Valid	Yes	389	90.7
		No	29	6.8
		Total	418	97.4
	Missing	System	11	2.6
		Total	429	100.0
2003	Valid	Yes	65	89.0
		No	5	6.8
		Total	70	95.9
	Missing	System	3	4.1
		Total	73	100.0

Question 4c: Do you have ARB posters?

Year			Frequency	Percent
2002	Valid	Yes	340	79.3
		No	69	16.1
		Total	409	95.3
	Missing	System	20	4.7
		Total	429	100.0
2003	Valid	Yes	56	76.7
		No	12	16.4
		Total	68	93.2
	Missing	System	5	6.8
		Total	73	100.0

Question 5a: Were you trained in the use of ARBs?

Year			Frequency	Percent
2002	Valid	Yes	254	59.2
		No	152	35.4
		Total	406	94.6
	Missing	System	23	5.4
		Total	429	100.0
2003	Valid	Yes	37	50.7
		No	32	43.8
		Total	69	94.5
	Missing	System	4	5.5
		Total	73	100.0

Question 6a: Do you support your educators in applying and using the ARBs in your school?

Year			Frequency	Percent
2002	Valid	1	348	81.1
		2	49	11.4
		Total	397	92.5
	Missing	System	32	7.5
		Total	429	100.0
2003	Valid	Yes	64	87.7
		No	6	8.2
		Total	70	95.9
	Missing	System	3	4.1
		Total	73	100.0

Question 8: How far do you have to travel to the school where you teach every day from the place where you stay?

Year			Frequency	Percent
2002	Missing	System	429	100.0
2003	Valid	0 to 5 km	30	41.1
		6 to 20 km	20	27.4
		21 to 50 km	13	17.8
		51 to 100 km	7	9.6
		Total	70	95.9
	Missing	System	3	4.1
	Total		73	100.0

Question 9: How far is it from your home to the school where you teach?

Year			Frequency	Percent
2002	Missing	System	429	100.0
2003	Valid	0 to 5 km	19	26.0
		6 to 20 km	16	21.9
		21 to 50 km	15	20.5
		51 to 100 km	11	15.1
		more than 100 km	9	12.3
		Total	70	95.9
	Missing	System	3	4.1
	Total		73	100.0

Question 10b: How frequently do you spend some time at home?

Year			Frequency	Percent
2002	Missing	System	429	100.0
2003	Valid	Almost every night or every night	50	68.5
		Weekends and holidays only	9	12.3
		Some weekends and holidays only	11	15.1
		Total	70	95.9
	Missing	System	3	4.1
	Total		73	100.0

The answers of principals were much the same in 2002 and 2003. From questions 4 to 8 it is clear that almost all principals know about the ARBs and support the idea that their staff should be using them. However, only half of them had received training in using the ARBs.

From questions 8 to 10 it appears that about a quarter of the principals are effectively migrant workers as they do not go home every night because of the distance from school. This would also imply that they are not really part of the community served by the school.

The Educator Questionnaire

Frequency tables for the Educator Questionnaire are presented below. All educators from Grade 1 to Grade 3 were included.

Question 1.2: Are you a member of the School Assessment Team?

Year			Frequency	Percent
2002	Valid	Yes	603	33.3
		No	1001	55.3
		Total	1604	88.6
	Missing	System	207	11.4
		Total	1811	100.0
2003	Valid	Yes	120	32.3
		No	212	57.1
		Total	332	89.5
	Missing	System	39	10.5
		Total	371	100.0

The HSRC requested schools through the respective district managers to establish School Assessment Teams (SATs). Although the HSRC didn't prescribe the number of members per team, the recommended number was four. In many instances HODs in the Foundation Phase and/or educators who attended the introductory workshops headed these teams. The SATs' mandate included the cascading of the training received, co-ordinating assessment activities in the phase and supporting educators by conducting classroom observations. A fair number of schools introduced these teams.

Question 2.1a: Did you receive English ARB booklets for Numeracy?

Year			Frequency	Percent
2002	Valid	Yes	1707	94.3
		No	46	2.5
		Total	1753	96.8
	Missing	System	58	3.2
		Total	1811	100.0
2003	Valid	Yes	345	93.0
		No	17	4.6
		Total	362	97.6
	Missing	System	9	2.4
		Total	371	100.0

Question 2.1b: Did you receive English ARB booklets for Literacy?

Year			Frequency	Percent
2002	Valid	Yes	1715	94.7
		No	38	2.1
		Total	1753	96.8
	Missing	System	58	3.2
		Total	1811	100.0
2003	Valid	Yes	332	89.5
		No	17	4.6
		Total	349	94.1
	Missing	System	22	5.9
		Total	371	100.0

Question 2.1c: Did you receive Numeracy ARB booklets with translated tasks?

Year			Frequency	Percent
2002	Valid	Yes	1464	80.8
		No	162	8.9
		Total	1626	89.8
	Missing	System	185	10.2
		Total	1811	100.0
2003	Valid	Yes	286	77.1
		No	43	11.6
		Total	329	88.7
	Missing	System	42	11.3
		Total	371	100.0

Appendix 4

Question 2.1d: Did you receive Literacy ARB booklets with translated tasks?

Year			Frequency	Percent
2002	Valid	Yes	1458	80.5
		No	170	9.4
		Total	1628	89.9
	Missing	System	183	10.1
Total			1811	100.0
2003	Valid	Yes	288	77.6
		No	40	10.8
		Total	328	88.4
	Missing	System	43	11.6
Total			371	100.0

Question 2.1e: Did you receive ARB posters

Year			Frequency	Percent
2002	Valid	Yes	1532	84.6
		No	153	8.4
		Total	1685	93.0
	Missing	System	126	7.0
Total			1811	100.0
2003	Valid	Yes	281	75.7
		No	58	15.6
		Total	339	91.4
	Missing	System	32	8.6
Total			371	100.0

All educators in the Foundation Phase were supplied with ARBs. Question 2 indicates the percentage of educators who received ARBs. It appears that the vast majority of educators had ARBs available in both years. It may be that in 2003 a few educators construed the questions as implying that they should have received additional ARBs in 2003 and that this lead to slightly lower percentages.

Question 3.1: Were you trained in the use of ARBs

Year			Frequency	Percent
2002	Valid	Yes	1253	69.2
		No	453	25.0
		Total	1706	94.2
	Missing	System	105	5.8
Total			1811	100.0
2003	Valid	Yes	243	65.5
		No	101	27.2
		Total	344	92.7
	Missing	System	27	7.3
Total			371	100.0

Various workshops were held in districts by various projects aimed at developing educator skills. This included the HSRC, which was tasked to design and develop ARBs and to train educators in using them. About two thirds of educators received training in the use of the ARBs.

Question 4.1a: Do you use ARBs in the classroom as assessment task or test?

Year			Frequency	Percent
2002	Valid	Never	33	1.8
		Rarely	57	3.1
		Sometimes	1005	55.5
		Always	652	36.0
		Total	1747	96.5
	Missing	System	64	3.5
Total			1811	100.0
2003	Valid	Never	10	2.7
		Rarely	32	8.6
		Sometimes	195	52.6
		Always	120	32.3
		Total	357	96.2
	Missing	System	14	3.8
Total			371	100.0

Question 4.1b: Do you use ARBs in the classroom as a lesson in class?

Year			Frequency	Percent
2002	Valid	Never	105	5.8
		Rarely	173	9.6
		Sometimes	951	52.5
		Always	486	26.8
		Total	1715	94.7
	Missing	System	96	5.3
	Total		1811	100.0
2003	Valid	Never	33	8.9
		Rarely	29	7.8
		Sometimes	214	57.7
		Always	73	19.7
		Total	349	94.1
	Missing	System	22	5.9
	Total		371	100.0

Question 4.1c: Do you use ARBs in the classroom as an integrated part of a lesson?

Year			Frequency	Percent
2002	Valid	Never	54	3.0
		Rarely	134	7.4
		Sometimes	895	49.4
		Always	611	33.7
		Total	1694	93.5
	Missing	System	117	6.5
	Total		1811	100.0
2003	Valid	Never	17	4.6
		Rarely	42	11.3
		Sometimes	193	52.0
		Always	94	25.3
		Total	346	93.3
	Missing	System	25	6.7
	Total		371	100.0

Question 4.1d: Do you use ARBs in the classroom as some items selected from an ARB task?

Year			Frequency	Percent
2002	Valid	Never	45	2.5
		Rarely	109	6.0
		Sometimes	1123	62.0
		Always	392	21.6
		Total	1669	92.2
	Missing	System	142	7.8
	Total		1811	100.0
2003	Valid	Never	11	3.0
		Rarely	38	10.2
		Sometimes	223	60.1
		Always	67	18.1
		Total	339	91.4
	Missing	System	32	8.6
	Total		371	100.0

Having received ARBs is one thing and using them is another matter. More than 80% of educators used the ARBs as assessment tasks. Unfortunately about 80% were using ARBs as lessons in class, indicating a misconception on the part of educators. This was not the intention with the ARBs, but the answer may be reflecting inadequate clarity on terminology.

Appendix 4

Question 4.2a: Do you receive support from the school principal?

Year			Frequency	Percent
2002	Valid	Never	550	30.4
		Rarely	162	8.9
		Sometimes	571	31.5
		Always	311	17.2
		Total	1594	88.0
	Missing	System	217	12.0
	Total		1811	100.0
2003	Valid	Never	103	27.8
		Rarely	53	14.3
		Sometimes	126	34.0
		Always	43	11.6
		Total	325	87.6
	Missing	System	46	12.4
	Total		371	100.0

Question 4.2b: Do you receive support from the deputy school principal?

Year			Frequency	Percent
2002	Valid	Never	671	37.1
		Rarely	103	5.7
		Sometimes	283	15.6
		Always	127	7.0
		Total	1184	65.4
	Missing	System	627	34.6
	Total		1811	100.0
2003	Valid	Never	151	40.7
		Rarely	14	3.8
		Sometimes	83	22.4
		Always	17	4.6
		Total	265	71.4
	Missing	System	106	28.6
	Total		371	100.0

Question 4.2c: Do you receive support from the School Assessment Team?

Year			Frequency	Percent
2002	Valid	Never	323	17.8
		Rarely	153	8.4
		Sometimes	646	35.7
		Always	448	24.7
		Total	1570	86.7
	Missing	System	241	13.3
	Total		1811	100.0
2003	Valid	Never	100	27.0
		Rarely	28	7.5
		Sometimes	131	35.3
		Always	63	17.0
		Total	322	86.8
	Missing	System	49	13.2
	Total		371	100.0

Question 4.2d: Do you receive support from Foundation Phase educators not in the School Assessment Team?

Year			Frequency	Percent
2002	Valid	Never	303	16.7
		Rarely	147	8.1
		Sometimes	622	34.3
		Always	512	28.3
		Total	1584	87.5
	Missing	System	227	12.5
	Total		1811	100.0
2003	Valid	Never	66	17.8
		Rarely	41	11.1
		Sometimes	148	39.9
		Always	73	19.7
		Total	328	88.4
	Missing	System	43	11.6
	Total		371	100.0

The level at which educators receive support differs according to source of support in 4.2a to 4.2d. On the whole educators received slightly more support from the school principal, deputy school principal, School Assessment Team and Foundation Phase educators in 2003 than in 2002. Within the school, principals

provided more support than the deputy principals. Support from the principal could possibly be in a form of allowing educators to attend workshops, or conducting workshops or classroom observations.

Question 4.2e: Do you receive support from Assessment Resource Person(s)

Year			Frequency	Percent
2002	Valid	Never	294	16.2
		Rarely	259	14.3
		Sometimes	741	40.9
		Always	254	14.0
		Total	1548	85.5
	Missing	System	263	14.5
	Total		1811	100.0
2003	Valid	Never	96	25.9
		Rarely	60	16.2
		Sometimes	115	31.0
		Always	24	6.5
		Total	295	79.5
	Missing	System	76	20.5
	Total		371	100.0

Assessment Resource Person(s) (ARPs) were contracted by HSRC in 2002 to support educators on the use of ARBs. During their period of contract in 2002 the ARPs provided more support than in 2003. In 2003 they were tasked to do support for only three months.

Question 4.2f: Do you receive support from ECD or Foundation Phase specialist(s)

Year			Frequency	Percent
2002	Valid	Never	690	38.1
		Rarely	193	10.7
		Sometimes	384	21.2
		Always	148	8.2
		Total	1415	78.1
	Missing	System	396	21.9
	Total		1811	100.0
2003	Valid	Never	169	45.6
		Rarely	44	11.9
		Sometimes	60	16.2
		Always	14	3.8
		Total	287	77.4
	Missing	System	84	22.6
	Total		371	100.0

ECD is a section/unit based at the district offices tasked with the responsibility of providing support to Foundation phase educators. Their support ranges from monitoring the delivery of learner support material, classroom visits, exhibitions of learner activities to facilitating workshops. In brief, ECD officials are departmental officials tasked with providing support broadly in the Foundation Phase and one of the items in their job description is assessment. In both years they did not figure prominently in providing assessment support, although in 2002, they did in fact do slightly better than in 2003. Their low presence could be resulting from the contextual realities within their job description.

Question 5.1a: The format and structure of assessment tasks are user-friendly

Year			Frequency	Percent
2002	Valid	Yes	1417	78.2
		No	85	4.7
		Not sure	229	12.6
		Total	1731	95.6
	Missing	System	80	4.4
	Total		1811	100.0
2003	Valid	Yes	263	70.9
		No	30	8.1
		Not sure	52	14.0
		Total	345	93.0
	Missing	System	26	7.0
	Total		371	100.0

Question 5.1b: The curriculum outcomes and assessment standards are clearly stated

Year			Frequency	Percent
2002	Valid	Yes	1522	84.0
		No	83	4.6
		Not sure	145	8.0
		Total	1750	96.6
	Missing	System	61	3.4
2003	Valid	Yes	288	77.6
		No	18	4.9
		Not sure	45	12.1
		Total	351	94.6
	Missing	System	20	5.4
Total			371	100.0

From an analysis of frequencies in 2002 and 2003, it appears in question 5.1a that format and structure of assessment tasks are user-friendly. 78% of educators in 2002 and 71% in 2003 felt the format and structure to be user friendly. Perhaps this can be attributed to curriculum/learning Outcomes and Assessment Standards that are clearly provided in each ARB task. Considering the % level in question 5.1b Curriculum Outcomes and Assessment Standards are clearly stated, and teachers may not often be consulting the policy document.

Question 5.1c: Curriculum outcomes are linked to assessment tasks

Year			Frequency	Percent
2002	Valid	Yes	1605	88.6
		No	31	1.7
		Not sure	108	6.0
		Total	1744	96.3
	Missing	System	67	3.7
2003	Valid	Yes	305	82.2
		No	7	1.9
		Not sure	34	9.2
		Total	346	93.3
	Missing	System	25	6.7
Total			371	100.0

Educators agree that there is adequate linkage between the curriculum and the ARBs.

Question 5.1d: The content of the items is relevant to most learners

Year			Frequency	Percent
2002	Valid	Yes	1225	67.6
		No	306	16.9
		Not sure	207	11.4
		Total	1738	96.0
	Missing	System	73	4.0
2003	Valid	Yes	216	58.2
		No	73	19.7
		Not sure	59	15.9
		Total	348	93.8
	Missing	System	23	6.2
Total			371	100.0

The relevance of ARB content has been one of the contested items throughout the implementation of the project. Posters and booklets were filled with items such as the sea, robots, etc, and educators sometimes contested their relevancy in terms of in-land and rural learners, respectively. The majority of educators conceded that the ARBs are relevant for most learners.

Question 5.1e: It is easy to select and apply a relevant task

Year			Frequency	Percent
2002	Valid	Yes	1443	79.7
		No	169	9.3
		Not sure	129	7.1
		Total	1741	96.1
	Missing	System	70	3.9
	Total		1811	100.0
2003	Valid	Yes	280	75.5
		No	49	13.2
		Not sure	20	5.4
		Total	349	94.1
	Missing	System	22	5.9
	Total		371	100.0

Due to the fact that ARBs are aligned to the pace setters and work programmes of educators, many tasks lend themselves for easy selection and application. The majority of educators (80% in 2002, 76% in 2003) found that it is easy to select and apply a task. Phase organisers as provided in the curriculum plan and work programme designed at cluster workshops guided educators in the selection of tasks.

Question 5.1f: It is easy to report on learner performance

Year			Frequency	Percent
2002	Valid	Yes	1584	87.5
		No	77	4.3
		Not sure	81	4.5
		Total	1742	96.2
	Missing	System	69	3.8
	Total		1811	100.0
2003	Valid	Yes	295	79.5
		No	21	5.7
		Not sure	38	10.2
		Total	354	95.4
	Missing	System	17	4.6
	Total		371	100.0

Most educators believe that the format of ARBs makes it is easy to report on learner performance.

Question 5.1g: Guidelines for recording scores are easy to understand and apply

Year			Frequency	Percent
2002	Valid	Yes	1507	83.2
		No	88	4.9
		Not sure	150	8.3
		Total	1745	96.4
	Missing	System	66	3.6
	Total		1811	100.0
2003	Valid	Yes	281	75.7
		No	21	5.7
		Not sure	47	12.7
		Total	349	94.1
	Missing	System	22	5.9
	Total		371	100.0

Question 5.1h: Assessment tasks are easy to adapt if necessary

Year			Frequency	Percent
2002	Valid	Yes	1396	77.1
		No	120	6.6
		Not sure	211	11.7
		Total	1727	95.4
	Missing	System	84	4.6
	Total		1811	100.0
2003	Valid	Yes	245	66.0
		No	30	8.1
		Not sure	69	18.6
		Total	344	92.7
	Missing	System	27	7.3
	Total		371	100.0

Most educators say they find the suggested structure for recording easy to apply. About two thirds find the ARBs easy to adapt for their learners.

Question 6.1a: Contribute to the successful application of ARBs - The format and structure of assessment tasks

Year			Frequency	Percent
2002	Valid	Never	38	2.1
		Rarely	76	4.2
		Sometimes	958	52.9
		Always	642	35.5
		Total	1714	94.6
	Missing	System	97	5.4
	Total		1811	100.0
2003	Valid	Never	14	3.8
		Rarely	30	8.1
		Sometimes	189	50.9
		Always	111	29.9
		Total	344	92.7
	Missing	System	27	7.3
	Total		371	100.0

Question 6.1b: Contribute to the successful application of ARBs - Selecting the correct task

Year			Frequency	Percent
2002	Valid	Never	25	1.4
		Rarely	72	4.0
		Sometimes	787	43.5
		Always	825	45.6
		Total	1709	94.4
	Missing	System	102	5.6
	Total		1811	100.0
2003	Valid	Never	9	2.4
		Rarely	31	8.4
		Sometimes	154	41.5
		Always	149	40.2
		Total	343	92.5
	Missing	System	28	7.5
	Total		371	100.0

Question 6.1c: Contribute to the successful application of ARBs - Linking the curriculum outcomes to assessment tasks

Year			Frequency	Percent
2002	Valid	Never	23	1.3
		Rarely	65	3.6
		Sometimes	661	36.5
		Always	976	53.9
		Total	1725	95.3
	Missing	System	86	4.7
	Total		1811	100.0
2003	Valid	Never	11	3.0
		Rarely	14	3.8
		Sometimes	149	40.2
		Always	168	45.3
		Total	342	92.2
	Missing	System	29	7.8
	Total		371	100.0

Question 6.1d: Contribute to the successful application of ARBs - The content of the tasks

Year			Frequency	Percent
2002	Valid	Never	23	1.3
		Rarely	96	5.3
		Sometimes	822	45.4
		Always	739	40.8
		Total	1680	92.8
	Missing	System	131	7.2
	Total		1811	100.0
2003	Valid	Never	10	2.7
		Rarely	26	7.0
		Sometimes	169	45.6
		Always	128	34.5
		Total	333	89.8
	Missing	System	38	10.2
	Total		371	100.0

Question 6.1e: Contribute to the successful application of ARBs - Applying the task in class

Year			Frequency	Percent
2002	Valid	Never	26	1.4
		Rarely	36	2.0
		Sometimes	752	41.5
		Always	903	49.9
		Total	1717	94.8
	Missing	System	94	5.2
	Total		1811	100.0
2003	Valid	Never	9	2.4
		Rarely	22	5.9
		Sometimes	169	45.6
		Always	143	38.5
		Total	343	92.5
	Missing	System	28	7.5
	Total		371	100.0

Question 6.1f: Contribute to the successful application of ARBs - Using a scoring guide

Year			Frequency	Percent
2002	Valid	Never	67	3.7
		Rarely	100	5.5
		Sometimes	553	30.5
		Always	994	54.9
		Total	1714	94.6
	Missing	System	97	5.4
	Total		1811	100.0
2003	Valid	Never	18	4.9
		Rarely	26	7.0
		Sometimes	141	38.0
		Always	157	42.3
		Total	342	92.2
	Missing	System	29	7.8
	Total		371	100.0

Question 6.1g: Contribute to the successful application of ARBs - Recording of learners scores

Year			Frequency	Percent
2002	Valid	Never	48	2.7
		Rarely	86	4.7
		Sometimes	548	30.3
		Always	1031	56.9
		Total	1713	94.6
	Missing	System	98	5.4
	Total		1811	100.0
2003	Valid	Never	12	3.2
		Rarely	32	8.6
		Sometimes	116	31.3
		Always	186	50.1
		Total	346	93.3
	Missing	System	25	6.7
	Total		371	100.0

Question 6.1h: Contribute to the successful application of ARBs - Adapting assessment tasks to your needs

Year			Frequency	Percent
2002	Valid	Never	51	2.8
		Rarely	113	6.2
		Sometimes	921	50.9
		Always	599	33.1
		Total	1684	93.0
	Missing	System	127	7.0
	Total		1811	100.0
2003	Valid	Never	15	4.0
		Rarely	35	9.4
		Sometimes	173	46.6
		Always	115	31.0
		Total	338	91.1
	Missing	System	33	8.9
	Total		371	100.0

Questions 6.a to 6.h enquire whether various components of the tasks contributed successfully to the application of ARBs. Ratings were quite positive and slightly higher for 2002.

Appendix 4

Question 7.1a: Experience problems with the format and structure of assessment tasks

Year			Frequency	Percent
2002	Valid	Never	290	16.0
		Rarely	376	20.8
		Sometimes	903	49.9
		Always	156	8.6
		Total	1725	95.3
	Missing	System	86	4.7
	Total		1811	100.0
2003	Valid	Never	65	17.5
		Rarely	67	18.1
		Sometimes	162	43.7
		Always	48	12.9
		Total	342	92.2
	Missing	System	29	7.8
	Total		371	100.0

Question 7.1b: Experience problems with selecting the correct task

Year			Frequency	Percent
2002	Valid	Never	490	27.1
		Rarely	320	17.7
		Sometimes	715	39.5
		Always	201	11.1
		Total	1726	95.3
	Missing	System	85	4.7
	Total		1811	100.0
2003	Valid	Never	104	28.0
		Rarely	56	15.1
		Sometimes	137	36.9
		Always	50	13.5
		Total	347	93.5
	Missing	System	24	6.5
	Total		371	100.0

Question 7.1c: Experience problems with the linking of curriculum outcomes to assessment tasks

Year			Frequency	Percent
2002	Valid	Never	528	29.2
		Rarely	290	16.0
		Sometimes	640	35.3
		Always	249	13.7
		Total	1707	94.3
	Missing	System	104	5.7
	Total		1811	100.0
2003	Valid	Never	98	26.4
		Rarely	61	16.4
		Sometimes	131	35.3
		Always	55	14.8
		Total	345	93.0
	Missing	System	26	7.0
	Total		371	100.0

Question 7.1d: Experience problems with the content of the tasks

Year			Frequency	Percent
2002	Valid	Never	445	24.6
		Rarely	330	18.2
		Sometimes	712	39.3
		Always	170	9.4
		Total	1657	91.5
	Missing	System	154	8.5
	Total		1811	100.0
2003	Valid	Never	80	21.6
		Rarely	64	17.3
		Sometimes	155	41.8
		Always	40	10.8
		Total	339	91.4
	Missing	System	32	8.6
	Total		371	100.0

Question 7.1e: Experience problems with applying the task in class

Year			Frequency	Percent
2002	Valid	Never	571	31.5
		Rarely	303	16.7
		Sometimes	633	35.0
		Always	205	11.3
		Total	1712	94.5
	Missing	System	99	5.5
	Total		1811	100.0
2003	Valid	Never	97	26.1
		Rarely	68	18.3
		Sometimes	130	35.0
		Always	48	12.9
		Total	343	92.5
	Missing	System	28	7.5
	Total		371	100.0

Question 7.1f: Experience problems with using a scoring guide

Year			Frequency	Percent
2002	Valid	Never	720	39.8
		Rarely	267	14.7
		Sometimes	460	25.4
		Always	253	14.0
		Total	1700	93.9
	Missing	System	111	6.1
	Total		1811	100.0
2003	Valid	Never	133	35.8
		Rarely	51	13.7
		Sometimes	99	26.7
		Always	55	14.8
		Total	338	91.1
	Missing	System	33	8.9
	Total		371	100.0

Question 7.1g: Experience problems with recording of learners scores

Year			Frequency	Percent
2002	Valid	Never	788	43.5
		Rarely	234	12.9
		Sometimes	430	23.7
		Always	261	14.4
		Total	1713	94.6
	Missing	System	98	5.4
	Total		1811	100.0
2003	Valid	Never	158	42.6
		Rarely	52	14.0
		Sometimes	83	22.4
		Always	49	13.2
		Total	342	92.2
	Missing	System	29	7.8
	Total		371	100.0

Question 7.1h: Experience problems with adapting assessment tasks to your needs

Year			Frequency	Percent
2002	Valid	Never	476	26.3
		Rarely	394	21.8
		Sometimes	683	37.7
		Always	145	8.0
		Total	1698	93.8
	Missing	System	113	6.2
	Total		1811	100.0
2003	Valid	Never	86	23.2
		Rarely	85	22.9
		Sometimes	129	34.8
		Always	43	11.6
		Total	343	92.5
	Missing	System	28	7.5
	Total		371	100.0

In slight contrast to Question 6, about 50% of educators experienced problems with aspects of ARBs. This may be a complex observation to interpret. Considering the actual % levels in question 6 one would expect the prevalence of problems experienced by educators to be about 20%. This raises some

questions in respect to the teachers' understanding of the questionnaire, or the effort put into completing it.

Question 9.1: How far do you have to travel to the school where you teach every day from the place where you stay?

Year			Frequency	Percent
2002	Missing	System	1811	100.0
2003	Valid	0 to 5 km	196	52.8
		6 to 20 km	97	26.1
		21 to 50 km	47	12.7
		51 to 100 km	13	3.5
		more than 100 km	11	3.0
		Total	364	98.1
	Missing	System	7	1.9
	Total		371	100.0

Question 9.2: How far is it from your home to the school where you teach?

Year			Frequency	Percent
2002	Missing	System	1811	100.0
2003	Valid	0 to 5 km	153	41.2
		6 to 20 km	91	24.5
		21 to 50 km	49	13.2
		51 to 100 km	19	5.1
		more than 100 km	50	13.5
		Total	362	97.6
	Missing	System	9	2.4
	Total		371	100.0

Question 9.3b: How frequently do you spend some time at home?

Year			Frequency	Percent
2002	Missing	System	1811	100.0
2003	Valid	Almost every night or every night	256	69.0
		Weekends and holidays only	52	14.0
		Some weekends and holidays only	40	10.8
		Total	348	93.8
	Missing	System	23	6.2
	Total		371	100.0

From question 9 it appears that about a quarter of the educators are effectively migrant workers as they do not go home every night because of the distance from school. This would also imply that they are not really part of the community served by the school. It is not at this stage clear whether this is a matter that needs attention. It is also not clear what an optimal figure would be.