PRIMARY TEACHERS' USE OF LEARNING MATERIALS

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LIST OF ABBREVIATIONS

DNE Department of National Education

FDE Further Diploma in Education

JPTC Junior Primary Teachers Certificate

NGO Non-Governmental Organisation

NQF National Qualifications Framework

OBE Outcomes-Based Education

PEI President's Education Initiative

PTC Primary Teachers Certificate

PTD Primary Teachers Diploma

1. INTRODUCTION

Major political changes of 1994 have given impetus to changes in all sectors of the South African society, particularly in education. The greatest challenge this sector of South African society faces is changing a previously fragmented, inequitable and culturally oppressive system of education into one which will satisfy the requirements of equity, equality, redress and social and cultural empowerment. As the White Paper on Education and Training (1995:1) states: "The challenge the government faces is to create a system that will fulfil the vision to open the doors of learning and culture for all".

The paramount task is to "build a just and equitable system which provides good quality education and training to learners young and old throughout the country' (White Paper on Education and Training, 1995:17).

The announcement of the South African Schools Act in September 1995 signified a major step forward in the development of the National Qualifications Framework (NQF), a structure established to serve as the vehicle for the establishment of a single Education and Training system.

An Outcomes-Based approach to Education and Training is proposed as the organising curriculum framework through which the NQF will be actualised. Outcomes-Based Education (OBE), implemented through Curriculum 2005 is one of the boldest attempts at curriculum renewal in recent South African history. It seeks, on the one hand to develop "citizens who are active and creative, inventors and problem solvers, rather than meek and unthinking followers" and on the other, to "inculcate an appreciation for diversity in the area of race, culture and gender" (Taylor, 1997).

The proposed curriculum shifts outcomes for learners from a content-driven focus to outcomes that are clearly defined in terms of what learners are expected to know and do after successfully completing a series of learning opportunities.

Traditional pedagogical practices have centred primarily around issues of time (calendar) and student promotion rather than guaranteeing student success

(Capper and Jamison, 1993). The year, in this approach, is normally divided into units of time during which specific information is taught in a prescribed way and thereafter assessed at the end of the period in a summative way. Curriculum selection in this system is viewed by Spady (1988) as an amorphously conceived process in which committees select packaged textbook series covering a variety of material which teachers most often use as ends in themselves. The consequence of such operating patterns of teaching is an ill-defined curriculum only loosely tied to the skills which are critical for students to master.

The constraints articulated have tended to force teachers to concentrate on input rather than an outcomes based or results oriented system of education. This has largely been the manner in which schools have operated in South Africa.

An Outcomes-Based system seeks to change this ineffective approach to one which will ensure success for all children irrespective of their environment, ethnicity, economic status, or disabling condition. The principles that underpin such a system are based on the assumption that "all students can learn and succeed, success breeds success and schools control the environments or conditions of success" (Spady & Marshall, 1991).

This shift in emphasis and understanding has enormous implications for teachers and learners. It requires that "teachers and learners focus their attention and efforts on the desired end results of education" (Killen, 1996). It implies the need for teachers to change their deeply entrenched practices and focus on what students should be able to do as a result of their learning and not on what they, the teachers, intend to teach.

It further assumes that teachers are in a position to rely less on packaged curriculum materials designed to ensure levels of complexity within a content-driven framework and that they are capable and willing to shift towards making choices about materials that emphasise outcomes.

The tension between, on the one hand, control (by the National Department of Education [DNE]) of the curriculum through the specification of critical and

specific outcomes and, on the other hand, autonomy (by the development of a less state driven curriculum and one that moves away from a teacher-driven to a learner-centred pedagogy) has implications for the way in which teachers perceive themselves and their roles within this new system. It presupposes that they have understood and embraced the mechanism (structure) of OBE and its pedagogical consequences. It assumes too that they have developed the confidence and the competences to make informed choices and that indeed, opportunities have been created for them to exercise this ability.

These broad changes impact not only in the way teachers' perceive their roles within the new system but also within the classroom and in the broader school community. Teachers, who have traditionally been the dominant presence in the classroom, are now finding that they have to redefine themselves as facilitators of the learning process rather than merely imparters of knowledge. They are also being called upon to evaluate and select from curriculum materials in terms of their appropriacy for particular outcomes and in terms of the needs of particular learners or groups of learners.

Teachers, accustomed to a system in which the curriculum is perceived as a set of textbooks to be used as ends in themselves, will not necessarily or easily make the shift to taking responsibility for structuring learning opportunities through the flexible use of learning materials. As Fullan (1993:23) observes, "... If there is one cardinal rule of change in human condition, it is that you cannot make people change ...". It is interesting to note that there is no clarity regarding a systematic plan that will facilitate this process of change amongst teachers. Even though seminars and some in-service provision is underway within provincial departments, this support is understandably proving grossly inadequate for the level of engagement required of teachers.

It is within this broad context that this research is located. It is motivated by a concern about the current abilities of primary teachers to make choices, establish their perceived needs, as well as optimally use the learning materials available. The study further seeks to examine the ways in which teachers use learning materials to mediate learning.

2. THE AIMS OF THE RESEARCH

It has been argued that a key feature of any education and training system is that adequate learning material is essential to the effective running of the system (Generic guidelines for the development of learning support materials for Outcomes Based Education (OBE) and Training, 1998:1). Research evidence by the World Bank supports the view that "... considerable contributions [are made by] textbooks and other instructional materials to effective teaching and improve the quality of education" (Verspoor in Farrel & Heyneman, 1989:52). The view in current national education documentation is that learning materials are an integral part of curriculum development and a means of promoting both good teaching and learning (Generic guidelines for the development of learning support materials for OBE, 1998).

As has already been stated, assumptions have been made about the capacity of teachers. It is assumed that they possess the critical awareness and knowledge to identify the relevant resources and that they are capable of designing, adapting or using available sources to produce effective learning materials.

More critical though, is the assumption that teachers understand the proposed curriculum apparatus, namely OBE, and are capable of making informed decisions based on knowledge and understanding. It is beyond the scope of this study to interrogate these assumptions. However, they certainly impinge on the study insofar as misconceptions and the lack of understanding regarding the nature of OBE may influence teachers' perceptions of the type of materials they consider critical and essential.

Our general goal is to investigate current practices with regard to learning materials and establish perceived needs among primary teachers in Grades One and Seven.

We aim to investigate, in relation to particular learning areas and the overall critical outcomes of the new curriculum:

- the amount and nature of learning resources (materials) currently available in primary schools;

- the process by which they are selected
- the ways in which they are used in schools; and
- teachers' perceptions of their specific needs for materials.

At Grade 1 level our focus is primarily on materials for Language and Literacy and Mathematics learning. At Grade 7 level we include the following three of the eight learning areas: Natural Science, Language and Literacy; and Human and Social Sciences. At both levels we also plan to investigate how teachers perceive that materials may be used to promote the critical cross field outcomes which the new curriculum makes explicit.

3. ANALYSIS OF DOCUMENTS

3.1 National policy regarding learning materials development in South Africa

3.1.1 Definition and sources of learning materials

The DNE distinguishes between learning support materials and resources. Learning support materials are defined as the means whereby resources are accessed for the purposes of learning. What is not clear is the distinction between learning materials and learning support materials. For the purpose of this study no distinction will be made as it is clear in the documentation, that it is merely a question of semantics.

Resources are defined as "an organisation, a person or groups of persons, a body of knowledge, skills or dispositions, a site, an instrument, a service or strategy or a means of potential utility for individual or group empowerment" (Generic guidelines for the development of learning support materials for Outcomes Based Education (OBE) and Training, 1998:1).

It is suggested that learning materials facilitate the learning process and encompass more than merely textbooks. They can be created or designed from a variety of sources which can be derived from print, combinative, electronic and physical sources. Print sources are said to include notes, documents, published textbooks, workbooks, reading schemes, supplementary readers, teacher guides, reference books. Combinative sources may include language books, readers, teacher's guides, wall charts, cassette tapes and games. Electronic sources include readermaster cards, commercially or privately produced transparency series, slide or sound presentations, film strips, video and audio tapes, multi-media packs and computer software. Physical sources include specimens, apparatus, models, experimental learning strategies, educational toys.

Why these arbitrary distinctions are made and specifically how the print-based and combinative sources differ is far from clear. For example, the electronic sources are clearly resources rather than learning materials especially since they would need to be used in combination with other sources.

The DNE has developed explicit guidelines that ought to inform the development of learning materials and has intimated that the development thereof is not the prime responsibility of commercial publishers. It is expected that this responsibility will fall within provincial administrations, Non-governmental Organisations (NGO's), and with teachers, parents and learners.

As is stated, "Educators previously separated by the need to cover discrete syllabus material, will now begin to work collaboratively in the preparation of materials and in the facilitation and assessment of learning" (Department of National Education, 1995). The hypothesis that any new education reform has, by its very nature, the capacity to change deeply entrenched beliefs and practices about what knowledge is privileged and how it is planned for, is both naive and ambitious.

What type of infrastructure (within or between schools or within provincial departments) is deemed necessary to facilitate this process and whether any structures have been established is unclear. Although financial and other constraints may militate against the establishment of such enabling structures especially in provinces experiencing retrenchments, this should be viewed as a necessary step if teachers themselves are to develop the critical outcomes they are expected to develop in learners.

3.1.2 Principles for the development of learning materials

The DNE, in the "Generic guidelines for the development of learning support materials for Outcomes Based Education (OBE) and Training (1998)", highlights the following principles as key for the development of "effective" materials. Any support material should:

- be sensitive to the diverse contexts from which learners come and in which they learn;
- promote a love for lifelong learning, critical thinking, logical reasoning and problem solving skills as essential life skills, emotional, intellectual, personal, physical, spiritual, moral and social development;
- be sensitive to any biases, encourage integration and promote active, hands on experiences;
- encourage an awareness of and respect for the environment and the diverse cultures represented within the South African society;

- provide a continuous progression of opportunities for development, allowing learners opportunities for gradual refinement of perception;
- be graded so as to accommodate individual differences and promote learner-paced learning;
- ensure the promotion of links between content, concepts, knowledge and understanding;
- ensure an integration of and links between knowledge, skills and values and attitudes;
- be cross-curricular in approach and allow for cross-disciplinary articulation;
- make provision for application in real life and demonstrate relevance;
- advance the use of technology in the learning environment;
- include assessment strategies that accommodate the need for formative, summative, formal as well as informal approaches. There should also be clear instructions about the relationship of assessment to the relevant outcomes and an indication of its form (test, assignment, portfolio, etc.). Examples of how the assessment would be recorded should be provided; and
- make provision for teachers to be evaluated by their learners.

What constitutes "effective", how "effective" learning materials are to be evaluated and by whom is not clear. Would learning materials be considered effective if developers comply with the "rules"? Is effectiveness linked with the assessment of outcomes and in effect, to what learners are able to do at the end of a series of learning experiences? How would this effectiveness be measured and against what? Are teachers, parents and learners considered as constituting the evaluation team?

It is clear that these questions have not been critically examined during the conception of the document. The analysis also highlights another aspect, namely, the tension between policy (what is ideal and intended) and practice (what actually is).

4. RESEARCH ON LEARNING MATERIALS

4.1 International trends in research of learning materials

International research regarding learning materials has focused primarily on three broad areas, namely, the role and use of textbooks in the improvement of quality of education; the design and implementation of textbook projects and the provision of textbooks in the developing world (Farrel & Heyneman, 1989).

Evidence suggests (Verspoor in Farrel & Heyneman, 1989) that textbook projects represent a flexible and effective way of improving the quality of education in developing countries.

However, improving educational quality is a comprehensive, developmental process that requires time. As Beedy (1966) postulates "it might take a decade or two to make the most of new buildings, new equipment and hardest of all, new freedom" (Verspoor in Farrel & Heyneman, 1989:53).

Conclusions reached by researchers (Altbach, Philip & Kelly, 1988 in Farrel & Heyneman, 1989; Farrel & Heyneman, 1989) suggest that textbook development and publishing is a complex and highly technical activity that requires levels of competence in many specialities. It requires ongoing support since the process is time-consuming. What is needed, too, is a good infrastructure to ensure development of quality material, a good distribution system, a workable procurement system and teacher training in the use of materials.

None of the international research examines the nature of learning materials and their use in facilitating or enhancing learning in the classroom. Equally important is the relationship between materials and pedagogical practices, an aspect that is crucial yet still under-researched.

Research is beginning to emerge in South Africa, as will be evidenced in the next section. It is to this debate that this project wishes to contribute.

4.2 Research on learning materials in South Africa

Little research has been conducted pertaining to the nature and use of learning materials in South Africa.

A study carried out by a special Task Team of the DNE concentrated on the procurement system currently operating within each province and the extent to which some level of consistency may be established so that most learners will have access to learning materials.

Another study by Wickham and Versveld (1998), investigated the extent to which learning materials impact upon teaching and learning practices. Although the findings have yet to be published, the researchers presented a paper at the World Congress of Comparative Education Societies (1998) where some of the preliminary findings were discussed.

These two studies will now be discussed and implications for the study under discussion will be highlighted.

4.2.1 Research on current procurement system of learning materials

The process of selection and submission differs from province to province. All the provinces, except the Western Cape, have an established selection committee to which manuscripts are submitted. These committees are comprised of departmental officials, professional associations, teacher unions and teachers. The accepted learning material (mostly books) is placed on an approved list from which schools can make choices.

The Western Cape has an open policy with regard to the selection and submission of learning material. Except for prescribed books, schools have control in selecting the material they deem necessary for their particular learners.

Although the above is true, the irregularities and discrepancies regarding the procurement system of learning materials led to research being conducted by the DNE (Interim report of the inter-provincial learning support material task team, 1998). At a ministerial meeting, a decision was made to address this issue

through the establishment of a Task Team comprising officials from the DNE and two representatives from each province. Their brief was to investigate and identify where problems existed within each province and address these by finalising and establishing effective procedures so that the President's requirement that "all learners should have textbooks within the first seven days of a school year," could be met (Department of National Education, 1998:1).

Although much of the contents of this report is directed at the procurement of learning materials, some of the findings have implications for the project under discussion. For example, the selection of learning materials in some provinces is the responsibility of a selection committee whereas in other provinces the responsibility lies with the school. A concomitant result is that the voices of teachers are inaudible in the selection of material they may believe to be valuable, appropriate and relevant.

Most provinces could not give an indication of the amount of learning materials they would need for a given year. The reasons for this were cited as a lack of rigour or irresponsibility on the part of the regional offices and, in some cases, the dishonesty by some schools who inflated their numbers so as to receive more stationery.

Many provinces indicated too that they had not purchased any new material for the current year. How Grade 1 teachers in these provinces especially, are coping with the challenges of a new curriculum when they do not at least have some learning material specifically developed to support them, is both alarming and disconcerting. This is especially disturbing given that the DNE has argued that "a key feature of any education and training system is that adequate learning material is essential to the effective running of the system" (Generic guidelines for the development of learning support materials for Outcomes-Based Education and Training, 1998:1).

The majority of the provinces also intimated the difficulties they experienced with recovering learning materials at the end of each year.

With budget cuts being experienced in most provinces, these problems have major implications as they will influence and limit the way in which funds are spent at school level. If schools are to continually replace material, especially in those grades where new material has not yet been developed, then the consequence is that less will be available for those grades most in need. In fact, if provinces are to continually meet irregularities of the type described then it seems unlikely that the President's requirement that all learners should have textbooks within the first seven days of a school year will be. met!

4.2.2 Research on the extent to which learning materials impact upon teaching and learning practices

This study by Wickham & Versveld (1998) investigated the ways in which classroom materials drive teachers' practices. It was based on the premise that access to good materials will improve teachers' practices and enrich learning environments. It is by far the most innovative project in its attempt to understand the relation between materials and the improvement of quality through examining what teachers do with materials.

The most significant tentative conclusion reached suggests that "it is individual teachers, rather than the materials themselves, that are the significant determinants in materials/practice relationships" (Wickham & Versveld, 1998:23).

A close examination of the use of materials in the classroom will require a close examination of the purpose for which the material is used, how it is used and how the learning is organised.

In other words does the nature of the material influence the way the teacher uses it? Does the teacher's understanding of how learning occurs impact on the material choice and its use and finally, is there a relation between the intended outcome of the learning experience and the choice of material?

5. RESEARCH METHODOLOGY

5.1 Overview of research design and methods

In view of the research aims we decided that our project required both a quantitative and a qualitative focus. Our decision was reinforced by the views of Firestone (1987) and Salomon (1991) that these are not rival, but inherently complementary research approaches which can inform and guide each other. The former emphasises precision and measurement, while the latter attempts to describe qualities, characteristics, and change within particular contexts. The quantitative dimension of our work is concerned with accessing measurable information about the nature and amount of learning materials currently in schools and the processes of their selection and acquisition. For this purpose a questionnaire was considered an appropriate research tool. The qualitative dimension looks at teachers' use of materials. Classroom observation and individual interviews appeared to be more appropriate means of gaining this type of information. The way in which materials are used cannot be independent of their nature and availability. Knowing the nature, condition and quantity of a larger population of teachers provided us with a meaningful context for the discussion and interpretation of the case studies.

The quantitative dimension has two phases, firstly, the development and piloting of the questionnaire (Phase 1: Pilot Study); and secondly, the administration and analysis of the final form (Phase 2: Main Study). The qualitative dimension constitutes the third phase, which consists of classroom observation and brief teacher interviews.

5.2 The researchers and fieldworkers

In qualitative research it is customary to include brief information about the researchers themselves, since the knowledge they construct cannot be independent of their own backgrounds and interests. Both researchers are senior lecturers on the staff of the School of Education, University of Cape Town, who teach and supervise prospective primary teachers. They are also qualified teachers with personal experience of primary teaching. Jean Baxen has a particular interest in curriculum, instruction and assessment and is currently also involved in research related to the teaching of science in primary schools. Lena

Green is interested in teachers' ability to promote cognitive development and has recently completed a study of some of the ways in which South African primary teachers' own life experiences impinge on their beliefs about appropriate teacher behaviour. They share a constructivist conception of human intellectual activity, informed primarily by the ideas of Vygotsky (1962, 1978), which frames their understanding of research and of the processes of learning and teaching.

The fieldworkers employed are either qualified and experienced teachers or experienced research workers in the field of education. They were appointed in such a way that it would be possible for each school to be visited by a fieldworker fluent in the medium of instruction used and at the same time capable of interpreting where necessary the English of the questionnaire.

5.3 The quantitative dimension of the research

5.3.1 Selection of participating schools

Permission was granted by the Curriculum Services Division of the Western Cape Education Department to request from area managers lists of the state schools in their areas, marked as either U (urban) or R (rural), and as plus (well-resourced) or minus (under-resourced). We relied on area managers' judgements in making these identifications.

For the pilot study (Phase I), our priority was to explore possible difficulties with the questionnaire in each of the settings we intended to research. We chose to use four under-resourced local schools at which access could easily be negotiated. We included schools which taught through the medium of Xhosa, Afrikaans and English, one of which was semi-rural.

In making our selection for the main study (Phase 2) we adopted the following procedure. From the area managers' lists a sample of 50 schools was drawn, using a table of random numbers. The criteria we adopted in selecting schools from this original sample were that the majority of schools should be under-resourced; that different local areas (urban/rural), languages (Xhosa, Afrikaans, English), and types of school (small/large) should be represented and that schools should be reasonably accessible and have agreed to participate.

Schools falling outside a 50 kilometre radius of Cape Town were excluded for practical reasons. From the remaining schools a selection was made consisting of approximately 30 schools known to be under-resourced, roughly divided between urban and rural locations. A further six schools were selected (three urban and three rural) which were judged to be well-resourced. In a few cases categories were completed by the addition of schools known to the researchers in order to balance representation of different local areas, types of school and languages. Schools principals were then approached for permission to conduct the research.

By mid August a short list of 20 schools (sixteen under-resourced and four well-resourced), selected to meet all our criteria, was completed. For various practical reasons, only nineteen schools were involved in the actual study. Background information about the schools is provided in Appendix A.

This expanded administration of the questionnaire is a minor departure from the original research design, which envisaged approaching only ten schools. Our reason for using a larger number of schools and a partially random selection procedure was that it would be valuable to use the questionnaire in a way which would allow us, albeit with caution, to generalise beyond the schools in the study. Moreover, this procedure would, we hoped, provide useful feedback about how it might be possible to modify the questionnaire for use as a postal survey. We calculated that the change would be possible within the original budget since some unanticipated savings had been made.

5.3.2 Development of the questionnaire

Questionnaires are known to be an efficient means of obtaining information about practical matters. Moreover, the process of their design generates careful analysis and reflection about which data can best contribute towards the research aims. They do have the disadvantage of limiting the scope of possible responses but this is balanced by the more open and flexible approach used in the third phase of the research.

In designing the questionnaire we followed the guidelines of Wilson and McClean (1994). We began by clarifying the research problem and identifying the broad concepts which we wished to measure. These were later translated into the

section headings of the questionnaire. For each section we brainstormed a number of possible questions, out of which we selected those which seemed most useful. We chose to ask about the most common basic learning materials which one would hope to find in any classroom and intentionally focused almost exclusively on non-technological learning materials. We asked about the reading scheme which the school had chosen to use and about the range, quantity and condition of materials. We considered it important to add sections on the selection, sources and storage of materials in the light of new expectations on teachers to choose and develop materials (expressed in recent policy documents) and referred to in the section on procurement procedures in the Document Analysis on previous pages. A sense of teachers' current understandings of the value and possible uses of materials, and their experience of wielding power with regard to selection and control, is an important prerequisite to any initiative for change.

The format of the questionnaire was constructed for simplicity of completion and ease of analysis. We also took into account the time it would take to complete, aiming for a maximum of 30 minutes. Its general appearance was made similar to questionnaires used in other studies in South Africa (Baxen, 1997) and found to be teacher-friendly. The language of the questionnaire is English, as this is the language in which the information it provides will eventually be disseminated. Since we were aware that many of the teachers contacted would not be mother tongue speakers of English we employed fieldworkers who were both fluent in English and in teachers' preferred languages. These fieldworkers assisted teachers to complete the questionnaire.

A draft questionnaire for Grade 1 teachers was devised, discussed and modified as described above. A similar approach was followed in the case of the questionnaire for Grade 7 teachers. The same general basic format was used for both Grade 1 and Grade 7 questionnaires, but the latter obviously required a wider range of items.

Should the questionnaires be used on a larger scale in a future study, further investigation will be made of their reliability.

The final questionnaires for Grade 1 and Grade 7 (modified in the light of feedback from the fieldworkers and our own experience of analysing pilot study data), are attached as Appendices B and C, respectively.

5.3.3 Training of fieldworkers for questionnaire administration

Three fieldworkers met with the researchers for a one-hour briefing and discussion prior to the pilot study. We explained the purpose of the research and asked each fieldworker to complete the questionnaire in order to identify any obvious difficulties. Fieldworkers were also asked to comment on any perceived omissions or inconsistencies.

Before the main study was undertaken all fieldworkers met with the researchers for a 2-hour session to clarify exact procedures and highlight any possible problems. Fieldworkers were provided with brief written guidelines for the administration of the questionnaire (see Appendix D). Throughout the data gathering process fieldworkers were in regular contact with the researchers.

5.3.4 Pilot study

The pilot study had two main purposes. The first was to investigate the questionnaire itself and the second was to gain a preliminary sense of what materials are being used in schools. During the pilot study administration fieldworkers visited schools and waited while teachers completed the questionnaire. Since the number of questionnaires involved in the pilot study of the Grade 1 questionnaire was relatively small (13), we decided to analyse them ourselves, as a way of beginning to understand the research domain and gaining a sense of any possible problems.

In the light of the results, it was apparent that fieldworkers needed to be alerted again to the importance of explaining the questionnaire and ensuring that all questions are completed in full. In general, no difficulties were reported with teachers' understanding of the questions.

With regard to the second aim of the pilot study, the following observations were made. We had surmised that teachers' use of materials would be influenced by

the extent to which they were familiar with, and understood, the principles of Outcomes Based Education. The pilot study results and informal feedback from fieldworkers seem to support this. The new paradigm has implications for how teachers understand both their own roles in and beyond the classroom and the possible ways in which materials may be created and used. What is at issue is the broad question of teachers' professionalism and their ability to make judgements about the relationship between materials and learning.

We also noted that care must be taken in generalising about schools since even information about the quantity and condition of materials can vary from teacher to teacher in the same school. Within the same school, different teachers have different perceptions, and possibly different realities, with regard to the sufficiency and condition of materials and report differently about the extent to which they make use of `home-made' materials.

5.3.5 Main study (Phase 2)

Participants and administration

After the pilot study had been completed in the various schools, a letter was sent to the principal of each school selected for Phase 2, outlining the research and its rationale, and requesting permission for a fieldworker to visit the school. The original intention was to mail the questionnaire to the selected schools but after the experience of the pilot study and discussion with other researchers we decided that it would be more effective to have fieldworkers remain at schools while all teachers who taught the relevant grade completed the questionnaire. Once principals had agreed, fieldworkers made independent arrangements with schools and returned the completed questionnaires to us at the University of Cape Town.

Forty-four Grade 1 teachers completed the questionnaire and twenty-six Grade 7 questionnaires were collected. The discrepancy in number was primarily because many teachers at Grade 7 level were subject specialists and did not have the responsibility of a single class. This meant that more than one teacher contributed to a single questionnaire.

Analysis of quantitative data

The form of presentation was modified slightly from our original plan in the interests of a clearer representation of the data. The final format is as follows:

Grade 1 data:
- Basic classroom statistics
- The range of learning materials
- Sufficiency of learning materials
- Condition of learning materials
- Use of home-made learning materials
- Most needed materials
- Selection, provision and storage
- Teacher resources available

Grade 7 data:
- Basic classroom statistics
- Language related materials (range, sufficiency and condition)
- History, geography and science materials (sufficiency and type)
- Most needed materials
- Selection, provision and storage

For both questionnaires, the information is provided in terms of the criteria of interest, namely, Well-resourced classrooms (urban and rural), Under-resourced classrooms (urban) and Under-resourced classrooms (rural).

5.4 The qualitative dimension of the research (Phase 3)

5.4.1 Selection of participating schools and teachers

The aim was to speak with and observe a range of teachers in under-resourced schools but we also thought it important to gain some sense of teachers' perceptions in well-resourced schools.

Our intention was to choose one well-resourced and four under-resourced schools in each of our two categories, urban and rural, making ten schools in all. After the questionnaire study our fieldworkers were able to confirm our categories and ensure consistency. Criteria for selection of schools and teachers were primarily influenced by the quality of relationships with teachers established during Phase 2 and their willingness to be observed.

The final data consisted of observations in nine Grade 1 and eight Grade 7 classrooms, composed in the following way.

Table 1: Distribution of classroom observations

	Well-resourced (urban)	Well-resourced (rural)	Under-resourced (urban)	Under-resourced (rural)	Total
Grade 1	1	1	5	2	9
Grade 7	1	1	4	2	8

The discrepancy in number was primarily owing to the greater complexity of the Grade 7 timetable and a greater reluctance to be observed among Grade 7 teachers.

5.4.2 Development of observation guidelines and interview format

A simple set of observation guidelines had been devised (see Appendix E). The fieldworker's task was to observe the teacher with a class for a specific period of time (45-60 minutes) and record her observations. In order to gain a rich and detailed descriptive account of the unique realities of individual classrooms we requested that this take a narrative form.

The teacher interview (see Appendix F) was designed to focus on our interest in materials, but to be sufficiently flexible and open-ended to accommodate diversity. In practice it was not possible to conduct the interviews as planned because of the time of the year (4th quarter). It was therefore decided that these would be combined with the observations in order to make fewer demands on teachers' time. Although fieldworkers were trained, they were often called upon to make decisions with little time to reflect on their observations or discuss them with the researchers in order to develop appropriate questions.

The theoretical orientation which underpins the observation and interview material we have devised is constructivist. We are in agreement with the constructivist views of both Piaget and Vygotsky, but prefer Vygotsky's notions of cognitive development and learning as socially constructed in terms of both form and process to Piagetian individualism. We are, therefore, interested in how teachers construct the meaning of materials in using them. Support for this focus is to be found in the work of Wickham and Versveld (1998), who tentatively suggest that teachers themselves are the most significant determinants of the

form of the materials/practice relationship. We also wish to know about how, or if, teachers perceive materials to be mediational tools for their students' learning and development.

5.4.3 Training of fieldworkers for observation

The same fieldworkers who had already visited the schools were further trained in observation techniques. This involved a 3-hour workshop in which fieldworkers tried out the observation guideline using a video of a Grade 1 classroom. Discussions centred around issues such as how to observe, respect for participants, dealing with participant distress, thoroughness, record keeping, and ethical behaviour.

5.4.4 Procedures for classroom observation and teacher interviews

Selected teachers were approached to agree to be interviewed and to allow observation in their classrooms. The initial approach was by letter from the researchers, setting out the purposes of this dimension of the research and the rights of participants. Fieldworkers then telephoned to arrange an appointment. All formal records, together with fieldworkers' notes, were returned to the researchers.

5.4.5 Analysis of qualitative data

As the theoretical framework that underpins the qualitative analysis is constructivist, it implies firstly, that we understand ourselves to be involved in constructing meaning when we interpret and represent the data. In addition, we are interested in the extent to which teachers construct meaning for themselves and for learners by using or constructing learning materials in adaptive and creative ways to suit particular learning contexts. The guidelines we have developed for classroom observation alert fieldworkers to the focus of our inquiry but at the same time leave space for their own interpretative judgements. Similarly, the interview framework emphasises our area of interest but allows scope for the constructive input of both fieldworker and teacher.

The classroom observation data are presented in narrative form, together with relevant information derived from the questionnaire, and analysed using the guidelines we have constructed as a broad framework.

5.5 The validity of the research findings

Validity is understood by traditional quantitative researchers as both the extent to which a research tool measures what it claims to measure and the extent to which the results it generates may be justifiably generalised to a wider population. It was for reasons of validity that we decided to choose a partially random sample. Were we to follow up this research, we should pay much more attention to establishing the reliability and validity of the questionnaire. Validity in qualitative research has a rather different meaning. Fraenkel and Wallen (1992:400), for example, maintain that "...validity refers to the appropriateness, meaningfulness and usefulness of the inferences researchers make based on the data they collect...". Qualitative researchers do, however, need to have well warranted grounds for the inferences they propose. Packer and Addison (1989) claim that judgements about qualitative inquiry are made using the same kind of reasoning as is used in our everyday understanding of the world and the actions of others. According to these authors, we look for coherence and sense, consensus and agreement and accuracy of prediction. With regard to this project we acknowledge that our research results are inevitably coloured by the persons we are, our own interests and contexts, and the language we employ. Within this framework we have endeavoured to use criteria for our judgements which will make our research meaningful to researchers, policy makers and teachers in the field. Validity is always enhanced by the use of two or more methods. The use of questionnaires and observations enabled us to have greater confidence in the accuracy of the results.

5.6 Ethical considerations

Any research project has a number of ethical dimensions. These include the choice of what is investigated, the care with which the work is carried out, the respect accorded to participants and fieldworkers, and the ways in which the results are disseminated.

We are sensitive to these issues and have attempted to address them. Denzin (1989:83) writes that "... our primary obligation is always to the people we study, not to our project or to a larger discipline..." We think it important that we, and our funders, acknowledge this responsibility.

It is for this reason that we do not provide the actual names of participating schools. Our fieldworkers found many teachers to be particularly sensitive to concerns of confidentiality. However the schools have been listed in such a way that they are easily identifiable by the researchers.

5.7 Limitations of the study

Although the observed differences in the quantitative study are intuitively persuasive, the numbers involved are not sufficient to permit inferences, nor was this the primary aim of the study. This is primarily a descriptive analysis, of which only the overall statistics may have some generalisability. It is intended as a summary against which to interpret the happenings in individual classrooms.

Another limitation was that, in the qualitative study, it was not possible to conduct the indepth teacher interviews as planned because the final part of the research had to be conducted in the fourth quarter. As a result, teachers' own voices were not always clearly reported.

6. RESEARCH RESULTS

6.1 Grade 1 classrooms

6.1.1 Quantitative analysis

Introduction

The analysis of 44 Grade 1 classes provides firstly, contextual information about the classrooms, including the average class size and age of learners, the average teacher age and type of qualification and the average teacher exposure to learning materials development courses.

It then provides a summary of the range, quantity and quality of learning materials available, after which some information is provided about the number of teachers who make their own materials and the kind of materials they make. This is followed by an analysis of the materials which teachers perceive as most needed in their classrooms and an indication of how learning materials are selected, acquired and stored.

Basic classroom statistics

Average class size tended to be larger by approximately ten learners in under-resourced rural classrooms but more or less equal in under-resourced urban and well-resourced schools. However, the age range in the latter was by no means as wide as in all under-resourced classrooms. Surprisingly, there was no difference between urban and rural teachers' attendance at materials workshops, but both were less likely to attend than teachers from well-resourced schools.

Table 2: Basic classroom statistics

	Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)	Overall
Average number of learners	37,1	37,7	48	40
Most common learner age	6-7	6-7	6-7 and 7-8	6-7
Age range of learners	6-9	5-15	6-13	5-15
Age range of teachers	21-60	21-60	21-60	21-60
Teachers with 3+ years of training	100%	80%	70%	86%
Teachers who had attended 3 day materials workshops	75%	61%	60%	63%

Range of learning materials

The general picture was that over half the classrooms sampled lacked a number of learning materials considered basic. Tables 3 and 4 give an indication of the frequency of negative responses to all range-related items on the questionnaire.. This limited range would be particularly problematic in classrooms in which there is a wide diversity of learner age.

Table 3: *Classrooms lacking ten or more of the basic learning materials listed in the questionnaire*

Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
0%	65%	80%	57%

Table 4 : Mean number of learning materials lacking

Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
4,5	10,9	12,6	9,1

Quantity, sufficiency and condition of learning materials

Where materials *were* present, they were perceived by a substantial number of teachers in all schools as insufficient in quantity and in poor condition. The fact that teachers in schools identified as well-resourced had concerns about sufficiency and condition probably reflects recent increases in class size.

While urban under-resourced classrooms were significantly short of reading materials, they were even more under-resourced in terms of blocks, plastic cubes, crayons, puzzles and games. Rural classrooms had nothing in sufficient quantity, which is consistent with the fact that that the average class size was approximately ten more learners than in any other setting.

Table 5: Percentage of classrooms where materials are sufficient in quantity

Type of material	Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
Reading scheme texts	62%	23%	0%	25%
Story books	62%	31%	0%	29%
Language games	12%	12%	0%	9%
Non-fiction texts	50%	19%	0%	20%
Numeracy games	12%	0%	0%	2%
Puzzles	62%	0%	0%	11%
Blocks	75%	4%	0%	16%
Plastic cubes/Unifix	75%	4%	0%	16%
Crayons	62%	19%	0%	23%

Table 6: Percentage of classrooms in which the materials present are in good condition

Type of material	Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
Reading scheme texts	63%	19%	50%	32%
Story books	75%	38%	0%	36%
Language games	25%	8%	0%	9%
Non-fiction texts	63%	23%	0%	25%
Numeracy games	25%	31%	20%	27%
Puzzles	38%	31%	10%	27%
Blocks	88%	35%	20%	41%
Plastic cubes/Unifix	75%	35%	20%	38%
Crayons	50%	27%	20%	29%
Activity sheets	63%	27%	20%	32%

Use of home-made learning materials

Teachers referred to a range of approximately 25 different home-made learning materials. Those which were mentioned most frequently are listed below in Table 7. It is puzzling however, that while 75% of teachers in well-resourced schools claimed to use home-made materials and to have attended materials workshops, only 12% claimed that language and numeracy games were sufficient in quantity. It may be assumed that at Grade 1 level, these games can easily be made by teachers, yet little opportunity was taken to do so. A similar situation, with a smaller proportion of teachers, was observable in the case of teachers from urban under-resourced schools. One explanation may be that there are varying definitions of what counts as a 'game'.

Table 7: Types of home-made learning material mentioned by nine or more teachers

Type	Order of importance
Language related games	1
Activity sheets and cards	2
Number related games	3
Puzzles	4
Charts	5

Table 8: Teachers who reported using home-made learning materials

Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
75%	69%	30%	61%

Most needed materials

Teachers were asked to list three most needed learning materials in order of priority. A wide range was mentioned, of which the most frequent are reported below. With regard to the most urgent lacks, learning games and toys featured prominently among teachers in under-resourced classrooms, Teachers in supposedly well-resourced schools were most aware of a need for reading materials. This may reflect the fact that they are better equipped with games and toys and/or that recently more reading materials are beginning to be available to under-resourced schools. On the other hand, it could signify that teachers have different priorities. Teachers who for years have not perceived games and play to be an intrinsic part of schooling may currently be particularly sensitive to their importance. Teachers in better-resourced schools, whose training has dealt with children's learning in a comprehensive way, may understand more clearly the importance of access to a rich and varied selection of reading materials and therefore demand to have this demonstrated in their classrooms.

Table 9: Most frequently *mentioned needs*

	Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)
Priority 1	Reading materials Whiteboards	Learning games and toys	Learning games and toys
Priority 2	Reading materials	Learning games and toys	Learning games and toys
Priority 3	Learning games	Calculators	Reading materials

Selection, provision and storage of materials

Teachers from all backgrounds often indicated that principals, HOD's grade groups, phase groups and individuals might all be involved in selection. The most frequently mentioned are listed below. In all types of school, materials tended to be selected mainly by the Foundation Phase teachers as a group. However, in many cases teachers marked all the options in this section, suggesting that the more powerful persons in the school (principals and heads of department) are likely to be involved. It would be interesting to pursue this further, and explore the criteria which teachers use in selecting material. The ability to select material in terms of appropriacy for particular contexts is a crucial responsibility for teachers in the new curriculum.

Teachers in well-resourced and in under-resourced urban schools cited the school as the major source of materials but it was not clear whether this referred indirectly to the Western Cape Education Department or to the use of funds raised by the school itself. Since the Department was an option on the questionnaire we might surmise either that teachers are not clear about the source of materials or that certain schools are well supported by their parent communities. The latter is a definite possibility in the case of communities in which there exists a culture of developing and supporting local schools, either through parent or teacher initiatives.

Table 10: Selection, provision and storage of materials

	Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)
Selection	Foundation Phase teachers as a group	Foundation Phase teachers as a group	Foundation Phase teachers as a group
Provision	The school	The school	Organisations
Storage	Classroom or resource room	Classroom, resource room, strongroom/safe	Classroom, safe

Teacher resources used for planning

In the case of resources for planning, the discrepancies between ex HOA, ex DEC and ex DET schools were so noticeable that this distinction is shown in the table which follows. With regard to resources available to teachers for

preparation, if there were resources, they included those of relatively recent publication. In the well-resourced schools, school libraries were well stocked with background materials to empower their teachers. In under-resourced urban schools, particularly those previously under the control of the DEC, there were some school library resources but also a number of resources which teachers had purchased for themselves. In under-resourced rural schools and, indeed, almost all schools previously under the control of the DET, the only resources available to teachers were departmental handouts about the new curriculum.

Table 11: Teacher resources for planning

	Well-resourced (urban and rural)		Under-resourced (urban)		Under-resourced (rural)	
	ex HOA	ex DEC	ex DEC	ex DET	ex DEC	ex DET
LITERACY	2, 3 or 'many' texts	1 text*	1-3 texts	Curr. 2005 doc**	1-4 texts	Curr. 2005 doc
NUMERACY	2, 4 or 'many' texts	1 text*	1-4 texts	Curr. 2005 doc**	1-2 texts	Curr. 2005 doc
LIFE SKILLS	1-2 texts	1-2 texts	1-2 texts	Curr. 2005 doc**	2 texts	Curr 2005 doc
PRIMARY SOURCE	School library	School library	School library Teachers' own copies	WCED	School library Teachers' own copies	WCED

* The one ex DEC school included as 'well-resourced' was not well-resourced in this respect.

** At the one ex DET school at which teachers had more than departmental handouts, the teachers had bought texts for themselves.

6.1.2 Qualitative analysis

Introduction

The nine portraits of Grade 1 classrooms presented below provide information about the teacher, the quantity and condition of material in each classroom, the general classroom environment and describe a specific lesson. Each concludes with the teacher's weekly summary of aims and proposed materials for literacy and numeracy. The portraits are grouped as Under-resourced (urban), Under-resourced (rural) and Well-resourced (urban and rural). This section ends with a discussion which includes comment on types of use; purposes; appropriacy; mediation of learning; and, course attendance and development of learning materials.

Under-resourced (urban)

School 2

Teacher profile

The teacher has a JPTC III qualification and between 6 and 10 years of experience. She has attended at least one three-day materials development course. This teacher explicitly stated that she did not have the training or confidence to "incorporate OBE". She felt that her learners had progressed more slowly this year than previously because the "new method" does not allow for sufficient rote learning and practice, which, she thought, were important for Grade 1 learners.

Materials profile

The teacher has access to almost all the materials listed but approximately half are reported to be insufficient in quantity. Reading scheme texts are not sufficient and were the only materials reported to be in poor condition. Story books and non-fiction texts are sufficient and in good condition. (There was no mention of home-made materials.) The most frequently used materials are: counting cards, blocks and expanding cards. The most significant needs are perceived to be for educational games, phonic activity cards and a television set and tape recorder. Learners take home readers, activity sheets and phonic cards.

Classroom profile

The teacher's table is at the back of the room and the classroom is arranged in groups of six learners seated at four desks put together. Groups are of mixed ability with one `advanced learner' per group. When working on the mat, however, learners are grouped by the teacher according to ability. Learning materials are stored on open shelves and there are many posters on boards around the classroom.

The lesson

The teacher gave most of the class a join-the-dot and colouring task and seated ten learners in a circle on the mat. Each was given Unifix cubes, shapes, Flard cards and a worksheet on fractions. The teacher began by asking the date,

writing it on the board and asking for comments on the numbers, revising the concept of ten. She then put a small pile of Unifix cubes in the centre of the circle and asked for estimates. Learners wrote their own estimates on the back of their worksheets, taking a while to do so. Some did not complete this task. The teacher picked up the cubes and asked one learner to put them back in the centre while each member of the group counted them. At this stage the teacher checked learners' answers and praised those who had the correct answer.

Then learners had to write their names and the date on their worksheets. While they were doing this, each was handed two cardboard circles and six felt dots. Concurrently the teacher was checking the rest of the class and repeatedly telling them to be quiet. The learners on the mat now had to place their two circles on a flat blue board and share two felt dots between the two circles. The teacher then took two blocks and asked how many each learner would receive if they were shared equally. After an oral answer, learners had to share their six dots between the two circles. A worksheet task involving the colouring-in of half the number of dots in various shapes was attempted but a number of learners coloured in half of each dot instead of half the total number. The teacher responded by drawing the task on the board and demonstrating the correct way to do it. She also mentioned that the children were to `share' the circles on the worksheet in an attempt to connect the task to the concrete activity which preceded it. After some similar activities, the teacher introduced the word `fractions' and told the learners that halves are the same as fractions. The teacher noted that one learner still did not understand the concept and called her to the front for another demonstration. Thereafter the teacher checked again on the rest of the class before telling the group to pack away their equipment and return to their desks to complete the worksheet.

Weekly summary of aims and materials

Materials for the teaching of numeracy included worksheets, Flard cards, shapes, counting chart, Unifixes, blue boards, felt dots and cardboard circles. Language and literacy materials mentioned were activity cards, posters, worksheets, workbooks, magazines, crayons and costumes.

School 7

Teacher profile

The teacher is between 31 and 40 years old and has completed a PTD III. She has between 6 to 10 years of teaching experience and has attended materials development courses for longer than three days.

Materials profile

The teacher intimated that she had formal reading texts. Although they are in a good condition, they are insufficient. Except for puzzles, non-fiction books and picture encyclopaedia, this teacher had all the informal texts listed. With regards to other learning material, this teacher only has bottle-tops and crayons. The crayons were said to be insufficient.

The teacher made her own phonic charts, whole word flashcards, single and double-letter flashcards, number related flashcards and mathematics charts. Although this may be true, none of it was displayed when the researcher visited the class. Information about the amount and condition of the learning materials available in the class was not given.

Bottle-tops, flashcards and sticks were said to be most frequently used, with phonics and mathematics charts and Unifixes said to be most lacking. Reading books were taken home by learners once a week.

Classroom profile

There are 46 learners whose ages range between six and ten. The average class age is between six and seven.

The classroom was well ventilated and had a chalkboard, a teacher's table and a cupboard. It had, however, not been swept. Old scrap paper, books and old boxes laid on the table and floor giving the impression that the teacher did not care much about the immediate environment in which she worked. The walls were conspicuously bare. There were vowel cards, untidily written, at the top of the chalkboard.

The lesson

According to the observer the teacher "insisted" that she does not have learning materials. She always asks learners to bring things from home (which they did for the lesson observed). Her rationale for asking learners is that "this brings a better understanding of what she is going to teach;"

The aim for the observed lesson was to consolidate subtraction. The teacher used bottle-tops and stones that learners had brought.

She commenced with a whole class activity, by asking learners to take out five bottle-tops or stones. Some learners did not have either to which the teacher responded with indifference. She asked the learners to count the five objects aloud. She then wrote the addition and subtraction signs on the board and asked for their meaning. The learners responded correctly. She proceeded to relate a story about a boy and his mother who went shopping. The boy cried for sweets. The mother had 5c and the sweets cost 2c each. Learners were asked how many sweets the boy could get.

One of the learners answered that the boy would get two sweets. The teacher responded by writing 5 - 2 = on the chalkboard. She asked for the answer but none of the learners responded. She did not have any counters so she used one of the learner's bottle-tops to illustrate the point. The class gave 3 as the answer. She then asked what the answer would be if you added 3 + 2. The learners used their counters and gave the correct answer. She asked them to find the answer to 5 - 4. One learner was called upon to demonstrate how he had derived at the answer. The teacher then wrote 5 - 1, 5 - 4, 5 - 2, 5 - 3 on the board and asked for volunteers to come to the front to complete the sums, demonstrating with their counters.

Weekly summary of aims and materials

The mathematics aims for the week included experimenting with measurement; identifying shapes with regard to position and space; identifying and comparison regarding mass; and problem solving. She used fruit and vegetables.

There was no indication of the aims of the lessons for the week in literacy. The teacher merely used phrases such as "classification", "seriation" and "estimation" in this section. Sand paper and wool were listed as materials to be used.

School 8

Teacher profile

Two teachers, between 20 and 40 years of age, both with PTD III and between 5 and 10 years of experience, were observed. Neither had attended any materials development courses.

Materials profile

Both teachers said they have access to all the informal texts (including story books and puzzles) listed, with the exception of non-fiction books and picture encyclopaedias. It is puzzling that in the next section, where they were asked to provide greater detail, both made a point of saying that story books and puzzles were not available in their classrooms. They did have home-made language and numeracy games which were in poor condition. Of the other learning materials listed, only bottle-tops, ice-cream sticks and ice-cream containers were reported to be sufficient in quantity. Plastic cubes, crayons, paint and paintbrushes were specifically mentioned as insufficient. The most frequently used learning materials in both classrooms are number charts, phonic charts and counters. Teachers' most significant needs are for scissors, paint and stationery, including such things as newsprint, cartridge paper and glue. No mention was made of materials which learners took home.

Classroom profile

There are approximately 48 learners in each class, ranging in age from five to eleven. The majority, however, are between six and seven. Generally, the classrooms are neat and well organised. They are in good condition, well ventilated, with burglar bars on the windows and sufficient furniture, consisting of cupboards, a teacher's table and sufficient tables and chairs for the learners, who are seated in groups. There are mathematics and phonics charts, examples of children's work and drawings, pictures on topics such as sport and transport and

pictures for storytelling on the walls. In one classroom there is a book corner with a few books.

The lessons

The one teacher described the aim of the lesson as to reinforce the number concept 10. The materials used were number charts, plastic counters and worksheets.

The teacher distributed worksheets (addition sums which added up to 15) to three groups sitting at tables and instructed them to complete them on their own. They were told that they should keep quiet and should not copy from one another, but make use of the number charts in front of them. A fourth group of eight learners was taken to the mat where the teacher told them to listen carefully. She said that she had five birds in a nest and three flew away, and asked how many were left. Learners answered correctly and were referred to the number chart to see how they had arrived at the correct answer. The teacher then took some counters and asked them to estimate how many. These estimates were written on the chalkboard next to each learner's name. One learner was asked to count up to nine, after which another continued to 15. Taking turns, learners counted up to 55, which was the total number. Learners were then asked to use the number chart to determine how much less or more their own estimates had been. Some learners had difficulty in using the number chart and when the task took too long the teacher helped them. Each learner was then given ten counters. The teacher divided her own ten counters between her two closed hands and asked learners to estimate the number of counters in each of her hands, which they did orally. She then opened one hand and learners counted those counters. They were then again asked to guess how many were in the other hand. When learners struggled to do this, the teacher told them to use their own counters to work it out. One learner was asked to help those who still struggled but most managed the task. This was repeated with a learner taking the role of the teacher. Then each learner was supposed to write a sum adding up to ten on a large sheet of newsprint, but some learners did not have a chance to do so because others dominated the task. The teacher displayed the newsprint and then called another group to the mat. This group

worked on the number 15, while the original group had a worksheet based on ten.

Throughout, the teacher was observed to be warm, patient and helpful to the learners.

The second teacher gave a language lesson, the aim of which was to introduce the sound 'q'. The materials she planned to use were concrete objects and pictures of things with this sound, pictures for the story and sentence cards. She began by reminding the learners of what they did the previous day in phonics. She then told them a story, showing pictures as she spoke. The observer noted that the pictures were either carefully drawn or neatly cut out and stuck on to cards. Each picture in some way represented the sound `q' which featured frequently in the story. Learners were asked to say the sound they heard most. The teacher then wrote the letter 'q' on the board. She then asked them to name the concrete objects she had brought. She then showed them how to write 'q', which they did in the air, on each other's backs and on their hands, before writing it in their books. The teacher checked that this was correct (which took quite a time) and then gave each group one workcard (different for each group) to share. The task on it consisted of short sentences with words where the missing letter 'q' had to be filled in. Each learner had to copy the task and complete it. The observer noted the neat writing on the workcards.

Weekly summary of aims and materials

Materials listed to be used for the teaching of mathematics were: counters, number charts, pencils, number cards, number workcards, tape measures, rulers, wool, boxes, toilet rolls, empty tins and cotton reels. For language work, the following were mentioned: pictures, sentence strips, magazines, flash cards, reading books, wall charts, crayons, pencils and scissors.

School 10

Teacher profile

The teacher is between 41 and 50 years old and has a PTC II. She has also completed a FIDE, and B.A. and B.Ed degrees. She has more than twenty years

of teaching experience and has attended materials development courses that have lasted longer than three days.

Materials profile:

The formal reading text that is being used is in the home language of the learners. It was said to be insufficient and in a poor condition. Only half of the learning materials indicated on the questionnaire are available. Although story books, language related games and number related.games and non-fiction information books are insufficient, those available are in a good condition. The teacher indicated that she made her own language related games. What was interesting was that although most of the learning materials were kept in the classroom, some of them were stored in the safe.

The learning materials most frequently used were counters, exercise books, pencils, crayons and flashcards. The teacher indicated, in order of importance, the following as what she mostly lacks: an overhead projector and transparencies; a tape-recorder and tapes and library books. She suggested that learners take numeracy and literacy learning material home but no clarity was given on its exact form.

Classroom profile

There are 47 learners in the classroom whose ages range from 6 to 12. The average age in the classroom is between six and seven. The learners were seated in away that encouraged them to work co-operatively. As there was no mat available, the learners sat at their tables while engaging in the lesson which was taught to the whole class. The furniture in the classroom was labelled in Xhosa. There was little evidence of any other learning materials in the classroom.

The lesson

The aim of this lesson was to encourage learners to recognise 9 and break it up into its various components. An added aim was to bridge prior and new knowledge. The materials used included Unifixes, a worksheet, chalkboard and a number frieze, items not mentioned in the weekly schedule.

The teacher lifted the number frieze indicating numbers from one to eight. For each number there was an illustrated picture and the word. Learners were requested to count in unison. The teacher then wrote number 8 on the board. She asked learners which number comes before and after 8. The class responded in unison. One learner was asked to write the number 9 on the board while the rest of the class wrote the number in the air. Thereafter the teacher instructed the learners to count nine learners seated closest to themselves. She asked any nine learners to line up in front of the class and number themselves sequentially from one to nine. She instructed them to "call out [their] number in order from one to nine.

The teacher progressed from this activity to one where learners individually packed out nine ice-cream sticks and counted them in Xhosa and English. A small group activity then followed where learners were expected to make bundles of nine using straws. Learners verified the number in each others' bundles. The final activity involved learners breaking up nine into different components. They were requested to arrange nine bottle-tops in different ways. Learners placed bottle-tops in the following way: 3 and 6; 5 and 4; 8 and 1; etc. Pairs counted and checked each others work. Some learners were asked to write the corresponding number sentence for each arrangement on the chalkboard.

Two activities were used to consolidate the new work. Firstly, learners were requested to use nine Unifixes to make patterns. Secondly, they completed a worksheet provided by the Western Cape Education Department.

Weekly summary of aims and materials

The aims for the mathematics lessons for the week included enabling learners to count from 1-20 and to know all the components of 7 and 8. The materials used were counters, bottle-tops, ice-cream sticks, straws and tubes.

For literacy the aims were enabling learners to write words using the consonants n, c, p and y. The materials used for the week included a phonic chart (although the teacher referred to it as the "vowel" chart, ironic since she was teaching consonants during this week!).

School 19

Teacher profile

The teacher has a PTD III qualification and between 11 and 15 years of experience. She has not attended workshops on materials development.

Materials profile

The teacher has available most of the materials listed, with the exception on non-fiction texts, Cuisenaire rods, Unifixes and construction toys. Most of what she has is in good condition, but only certain materials are sufficient in quantity. No reference was made to home-made materials. Important lacks were listed as puzzles, phonic charts and number and language related games.

Classroom profile

The general impression of the classroom is of care and organisation on a limited budget. The classroom is large and airy, and noticeably clean and tidy. The paint work is fresh and clean but some of the work surfaces are in need of repair. There is a sink in one corner and a storage area with shelves and a cupboard in another. There are four blackboards, a teacher's desk, a mat, and small tables and chairs for all learners, who sit in six groups of seven. Comprehensive alphabet and phonic charts (made by a previous teacher are along one wall, and other charts (calendar, weather, shapes, colours, quantities to ten) elsewhere. There are also posters and a few plants in pots. In the storage area there is waste material useful for creating learning materials and a large box of what looked like blocks made of wood offcuts. All the learners appear to have their own pencils - a number of pencil boxes lay on the tables. According to the list of names on the wall, the majority of learners are Muslim. Each child's name is on a large label on her or his table. One girl has a mild to moderate hearing problem, but care was taken to ensure that she knew what to do.

The lesson

The teacher began by having all the learners on the mat to decide on adjustments to the date and weather charts, which she then made. This was followed by oral counting in twos and tens by the entire group and by some individual learners. The teacher used an abacus to demonstrate what the

learners were doing. The whole group then repeated some rhymes together before the teacher told a `story sum' and asked learners for oral answers. Most hands went up, and some learners were asked to answer. The teacher then showed the learners a worksheet with some sums and gave a very explicit demonstration of how the first part was to be completed, adding that they should "do the rest for yourselves". Colouring in parts of the worksheet was an option for those who finished quickly. Learners went back to their tables to work. The demonstration remained on the blackboard and there were a number of abacuses in the classroom which some learners fetched to their tables to consult. There was a generally pleasant, busy atmosphere, with learners talking to each other within a manageable noise level.

At this point the teacher took one group alone on the mat. They were reminded of the model of the date on the blackboard. The teacher then read them a word sum and discussed it with them and demonstrated on the board how it would be written. The learners had books and pencils with them and wrote the sum in their books under her guidance. They also made use of small cards (laminated?) with numbers on them to represent sums. Learners were frequently encouraged and the teacher used gold stars to `reward' correct answers. The teacher maintained a watchful eye on the whole class, calling on various learners by name when necessary. One or two learners in one group tended to wander from their places and did not appear to be able to complete the worksheet, a fact of which the teacher was well aware.

The teacher was very sensitive to changes of attention level and restlessness in the class, and called the whole class to the mat for a game of 'Simon Says". Thereafter, she began a language lesson consolidating the oral use of present and past tense. The materials involved were a home-made chart with the task in large letters and the children themselves as `demonstrators'. For example, one child was asked to stand on the chair while the class said, "She is standing on the chair". When she got down, the class said, "She was standing on the chair". Various learners were asked to perform actions, and others to describe these actions in words.. After some practice in doing this, the teacher showed the learners the chart with the task (to complete short sentences in which the words

"is", "are", "was" and "were" had been omitted). All learners went back to their tables to complete this task individually. Some, however, needed extra explanations about what they should do, which were provided patiently by the teacher.

Weekly summary of aims and materials

The aims for numeracy included enabling children to reason mathematically, to teach the concept of doubling and to revise story sums. The materials to be used included the chalkboard, number lines, worksheets, sticks, blocks, abacus, rulers, apples and cards with dots. In literacy, the aims specified for different groups included: to develop the natural flow of reading, to improve listening skills, to revise single sounds and build three letter words, and to teach learners new words and introduce a new story. Materials included flashcards, books, files with stories, basal readers, single sounds on cards, pictures, charts, chalkboard and pencils.

Under-resourced (rural)

School 11

Teacher profile

The teacher has a PTD III and between six and ten years of teaching experience. She has never attended any materials development courses.

Materials profile

The classroom is equipped with approximately half the materials listed on the questionnaire. Reading scheme texts, story books, language and numeracy related games, puzzles, non-fiction books and paintbrushes are reported to be insufficient. Home-made learning materials in the form of activity cards for numeracy and sounds were mentioned but said to be in poor condition. The most frequently used learning material was said to be bottle-tops but no significant lacks were listed. Children were reported to take home reading books, activity sheets and writing.

Classroom profile

There are 60 children in the class. Classroom furniture consists of a cupboard, a bookshelf, four magnetic chalkboards and very colourful tables and chairs. There is also a mat for children to sit on. The teacher had improvised classroom displays. Although each learner has a place to sit, the classroom is overcrowded and movement is difficult. The atmosphere, however, was observed to be friendly and co-operative.

The lesson

The stated aim of the lesson was to consolidate the number 10 and to introduce the sharing of items up to the number 10. The materials used were bottle-tops, peach pips, Unifix cubes, pegs, acorns, corks, coloured sticks, number cards and thread, sorting boxes, cigarette boxes, blank pages and worksheets.

The purpose of the first part of the lesson was consolidation of number concept and number sequence. The process was for the teacher to heap the different materials on the mat and instruct all learners to collect up to ten of each. Each learner had a sorting box into which they sorted their materials. Thereafter some individuals were called by name to demonstrate particular activities on the mat, for example, counting out a particular number. The whole class was given various verbal instructions by the teacher and carried out activities using their materials, for example, threading Unifix cubes and matching number cards on a string. Learners were then instructed to work in pairs, telling each other how many they had of particular items, for example, how many red cubes, and to check each other. Each child also had a simple teacher-made numberline card on which they were all instructed to point to and identify the number just before 10.

The purpose of the second part of the lesson was to introduce a new concept, that of sharing or dividing, although the latter term was not used. The process was for the teacher to give each learner a blank sheet to fold in half in order to experience and name the concept of half. Then learners were instructed to place two bottle-tops or peach pips or pegs into each half of their open cigarette boxes. The teacher then produced a worksheet on which two similar `boxes' were drawn

and four dots represented objects. She demonstrated to the whole class with this worksheet and then gave each learner one to complete.

Weekly summary of aims and materials

The materials listed for the teaching of mathematics were worksheets, bottle-tops, boxes, material for counting (unspecified), writing books, sticks and number chart. For teaching language and literacy the teacher planned to use magazines, scissors, pictures, cleaning materials used in the home, cardboard, koki pens, pencils and writing sheets. She also mentioned under materials the physical surroundings of the village as observed during a class outing.

School 12

Teacher profile

The teacher has JPTC III and more than 20 years of teaching experience. She has attended materials development courses of more than 3 days duration.

Materials profile

The classroom is equipped with approximately half of the learning materials listed. Reading scheme texts, story books, language related games, numeracy related games, puzzles and sorting trays are all reported to be insufficient in quantity and only approximately half of the existing learning materials are in good condition. There was no mention of home-made learning materials.

The most frequently used learning materials were said to be worksheets, tape recorder (borrowed), crayons and story books. In the opinion of the teacher, the most significant lacks in her classroom, in order of importance, were: educational games, a tape recorder and non-fiction books. The learning materials taken home by the children were described as 'learning charts'.

Classroom profile

There are 43 children in the class, all between the ages of six and eight. The classroom is neat but fairly bare. Tables are arranged in a U shape with learners seated opposite each other, their bags hung behind their chairs. Books and equipment are stacked at the back of the room and there is a mat in front of the

blackboard with a tape recorder on one side. A second classroom is warmer in atmosphere, possibly because there are curtains, and has literacy and numeracy charts and Biblical pictures on the wall. Learners are again seated opposite each other, this time in rows. The classroom follows the same pattern of storage at the back but in this case there are pigeonholes. Learners share pencil crayons stored in jars on their tables (four per jar).

The lesson

The observed lesson was in fact not given by the teacher, but consisted of a demonstration given by a consultant from the Western Cape Education Department. This was one of a series of twelve weekly visits. The teacher provided the aim of the lesson, which was to work on visual memory, number concept and visual analysis and synthesis. For this it was planned to use a matrix board, the blackboard, a 'visual stimulation' chart and worksheets. During the demonstration lesson the consultant/teacher used much encouraging and motivating language, for example, "julle is goed" and "baie slim" and the children appeared well behaved, respectful and eager.

Pupils were all seated on the mat at the front of the classroom and the consultant/teacher placed a number chart on the board with certain numbers from 1-9 in certain positions. This material was used firstly to elicit learners' knowledge of the number names, which was demonstrated by their calling out as a group. The next step was to cover the chart and ask for individual volunteers to reproduce the position of the numbers on a blank chart. The task was gradually increased in difficulty by the addition of more numbers and each learner had a turn to attempt the task, while the others sat quietly and watched. The consultant/teacher encouraged the learners to notice which number was in the middle, on the right, on top, etc. The learners were invited to discuss the answers among themselves. Learners were, according to the observer, highly motivated and "dying to go up and answer".

Then the consultant/teacher introduced something else - a chart with ten houses, each with a door and two windows. This was used to teach counting in multiples of three. She held the chart and the learners responded as a group. At this

stage the original task was reintroduced and one learner was selected to complete it. The others watched as she was assisted to complete the task successfully.

Learners then returned quietly to their seats. A third task was introduced. Each learner was given a worksheet and the teacher placed one on the board to demonstrate what was required (copying of shapes). The model for the task was on the worksheets but the learners appeared unaware of this and watched each other or looked at the board if they were unsure what to do. Two tasks of this type were worked on in this way and the teacher drew learners' attention to the model on their own worksheets. Nevertheless, learners continued to look at the board or watch each other. The consultant/teacher walked around the class providing assistance where needed. Those who had completed the task successfully chatted to each other and compared their work. Finally the teacher returned to the first activity of the lesson and again asked individual learners to complete the chart from memory while the others watched. The observer noted that some of the learners were unable to cope with these school readiness type activities.

Weekly summary of aims and materials

The materials listed to be used for the teaching of mathematics were counters, Unifix blocks, the chairs in the classroom, the children's own bodies, pictures and worksheets. The materials for language and literacy teaching consisted of flashcards, books and worksheets, with books featuring on three out of the five days.

Well-resourced (urban and rural)

School 15 (rural)

Teacher profile

The teacher is between 20 and 30 years old and has an HIDE IV. She has been teaching for less than five years during which time she attended learning materials courses that were longer than three days.

Materials profile

The teacher indicated that she had most of the learning materials on the list. Interestingly, she did not have clay, play dough, Unifixes, Cuisenaire rods and ice-cream sticks, items one would almost expect in any well-resourced classroom. She stated that she brought her own construction toys, crayons and activity books. All the material is sufficient and in a good condition. She stated that the activity sheets, weather chart, phonic chart, 100-block grid, dictionaries and word "hospital" were home-made. Of these items, the dictionaries are in a poor condition. She used the 100-block grid, the phonic chart, word hospital, dictionaries and numberline most frequently. According to her, what was most lacking was a time line. The learners took phonic and reading books as well as flip-files with practice sheets home daily. They also took library books home.

Classroom profile

There are only fourteen learners in this class. The classroom was well equipped with many charts displayed. The room was well ventilated. It had two ceiling fans, curtains, pigeon holes, a tape recorder, shoe boxes with the learners' names on and large magnetic boards at the back of the classroom. The observer noted that although some learners were playful, "there was a good learning atmosphere". It was assumed that since there were only fourteen learners it was "relatively easy" for the teacher to maintain discipline.

The lesson

The aim of the observed lesson was to develop number patterns on the 100-block grid and to add and subtract using the abacus. The teacher also used flashcards, wooden dice, fun books, penflex markers, sponges, a chalkboard, blank paper, pencils and crayons.

The entire class sat on a mat in the front of the class. The lesson commenced with the class counting in threes and fours. This was done without any learning materials. Learners were required to only call out the multiple of three and four respectively. The learners were then asked to find partners to whom a pack of flashcards (with 0-100) was given. Learners arranged the cards from the least amount to the largest number.

The teacher then used the large abacus to elicit learners' knowledge of number value. She, for example, showed 10 beads on the abacus and asked learners what the number was. She added two more and asked them to show her the representation of the number using their cards. She followed the same pattern with a variety of numbers. She further asked learners to make sums once they had packed out their number, for example, the sum for 14 would be 10 + 4. After a number of similar examples the learners packed the numbers into a shoebox.

While still working in pairs, each learner was given a wooden dice. They were asked to toss it simultaneously and add the numbers that land face up. It was noted that some learners counted on their fingers while some looked at the dice and counted mentally.

The teacher then proceeded to call out sums and asked learners "to give her the quickest answer". What seemed to have been meant was who could give the answer in the shortest space of time. Those learners who answered well and at a rapid pace were sent to their seats to write their own sums in their fun book.

The remainder of the learners were given penflex markers and the 100-block grid (covered with contact). Still in pairs, the learners were instructed to circle every second number and count aloud as they circle it. It was noted that learners helped each other. Learners are asked whether the number is odd or even and learners respond with successful answers.

More activities were completed using the 100-block grid and the abacus. For example, 30 was shown on the abacus and learners were asked to add 9 to it. They circled this number on their grid. They were asked "What is 30 - 1? This was then illustrated by the teacher on the abacus with the remark "Lets see this on the abacus". Whether learners could actually "see" this subtraction process as a reflection of what they had answered is unclear.

Finally learners were required to do the following sum, related orally by the teacher, in their "fun books".

"I wrote 12 letters to my friend. I write her another 5 letters. How many letter did she receive from me altogether?". Learners respond by drawing 10 circles and 7 circles. She asks them to "show your partner the method you used to get the answer 17". All the learners had used the same method to derive an answer, namely, the method demonstrated by the teacher using the abacus!

Weekly summary of aims and materials

In mathematics the aims of the lessons included the development counting in tens to 120 (forward and backward) and in threes and fours to 50, enabling learners to carry out instructions by completing problems, engaging learners in identifying the cost of different forms of communication and work out ways in which costs can be reduced and involving learners in the choice of a product to sell, working out the difference between its cost and selling price and the profit made. Materials used for the week included an abacus, 100-block, counters, magazines, cardboard, coloured paper

School 17 (urban)

Teacher profile

The teacher is between 31 and 40 years old and qualified with an HIDE IV. She has been teaching between 16 and 20 years and has attended materials development courses for longer than three days.

Materials profile

Except for materials such as Cuisenaire rods and Unifixes, this teacher reports that she has all the learning materials listed. The literacy-related materials are said to be sufficient in number and in a good condition. None of the learning materials are home-made. In addition to what was listed, this teacher also has flashcards, a white board and a chalkboard which is in a poor condition. The most frequently used materials are worksheets, exercise books, reading books and flashcards. Learners take their reading books home daily. This teacher asserts that the most lacking learning material in her class are whiteboards.

Classroom profile

There are 36 learners whose ages range from six to nine. The average age is between six and seven. The classroom is "well-resourced" with "predominantly literacy and numeracy charts". The equipment is neatly stored in containers on the floor and books are neatly packed on shelves. The tables are grouped in fours where learners are seated in groups of six . One learner who suffers from Attention Deficit Disorder sits alone (apparently his choice) near the piano.

The atmosphere in the class is warm and it is apparent that the learners love and trust the teacher and that they are comfortable and happy. Learners have a "good and loving relationship with their teacher" but are aware of the class code of conduct and are reprimanded when they "cross the line". The teacher seems very positive, evidenced in the way she gives praise. The teachers "uses useful learning cliches to make learning incidental and fun". The teacher has assistance in the form of a volunteer parent.

The learners are divided into three groups according to their academic and learning abilities. During the lesson observed, each group had an opportunity to be taught by the teacher. While the teacher was busy with a group on the mat, the volunteer parent took a group of learners to the staff-room where she engaged them in reading activities. The rest of the class was busily, and sometimes, noisily occupied in colouring worksheets from a previous Biblical studies lesson.

The lesson

A literacy lesson was observed. It comprised of various wordbuilding activities. (It must be noted that the "Breakthough to Literacy reading programme is being used. This programme has special equipment and a sequential, sometimes rigid, wordbuilding programme).

The "weakest" group of learners was seated in a semi-circle with the teacher seated on a chair elevated above the learners. The learning materials she was to use for the lesson was placed next to her seat.

The aim of the lesson was twofold. Firstly get learners to recognise sight vocabulary and secondly, to encourage word building through syllabification. The teacher used flashcards to elicit learners knowledge of the words they had already "learnt". Learners responded by "shouting out the answers". There was no evidence of learners being corrected or being asked to contextualise the words in any way.

The teacher then handed out the Breakthrough word-maker to each learner. Learners "immediately sorted out the letters so that they were arranged alphabetically on the folder'. Learners were asked to find the "e" sound and to state whether it was a long or short sound. The teacher constructed the following sentence "in the swimming pool, the water is deep". She spelt the word "deep" and asked the learners to build the word. She asked them to change the initial consonant to "weep" and then the last consonant to "weed". What is apparent is that learners are comfortable working with the material and that they have a good knowledge of the phonetic sounds illustrated by the way they "all find and change the letters quickly and successfully". Another double sound, "oo", was introduced by using a word with this sound in a sentence. Learners responded by building the word. Another word with the same sound was asked for. Interestingly, the teacher constructed a sentence using the word the learner had volunteered.

The lesson was concluded with learners choosing their own word and thereafter clapping it to illustrate the number of syllables. Most learners seemed to choose mono-syllabic words.

This group returned to their desks to complete a worksheet based on the double sounds they had learnt during the lesson.

The second group taught by this teacher was supposedly the "best" group. "More advanced" words, written on flashcards were used to introduce this lesson. The teacher flashed the words while the entire group called out the words simultaneously.

A similar lesson structure as the one described for the previous group was followed. The teacher used the same learning materials. It was obvious in this lesson that the learners were familiar with the words as the researcher notes "the group move[d] swiftly" and the teacher "barely checked their answers".

Additional to this exercise, learners were handed whiteboards. Learners were instructed to unjumble the letters the teacher had written on her whiteboard. This they did individually on their whiteboards. Although they worked individually, some learners "merely copied from their mates".

The teacher moved from this exercise to one where learners were expected to build any word that ends with "sh". Thereafter, learners were required to build any three-letter word with "e" in the middle. She then asked them to write the last sound of the word, for example, ch as in chick.

The lesson procedure followed and the learning materials used for the third group were similar to that of the first two groups.

Weekly summary of aims and materials

The aims for the week for the literacy programme included encouraging learners to recognise words on sight, to build words and to syllabify. Materials used for the week included the Breakthrough to literacy word-maker, whiteboards (teacher and learner), flashcards and worksheets. For mathematics, the aims included encouraging learners to arrange numbers sequentially, chunk numbers in certain ways, halve and double numbers and solve problems using the basic operations. Materials used for the week included whiteboards, workcards, counting frames and worksheets.

6.1.3 Discussion

Introduction

The discussion is presented under the following headings: types of use; purposes; appropriacy; mediation of learning; and, course attendance and the development of learning materials.

However this discussion would not be complete without some reference to the weekly summary that Grade 1 teachers were asked to complete. The researchers assumed that having some indication of teachers' weekly lesson plans would provide deeper insight into the process of learning material choice and how this choice relates to the lesson outcome. It would seem that teachers merely filled these in as an exercise for the fieldworker with little consideration of its relation to what they actually did in the classroom. For example, in some of the weekly plans, the aims and proposed material to be used on a particular day did not correspond with what the fieldworker observed on that same day.

What was apparent though in these weekly plans was the variety of suggested learning materials for use in numeracy lessons. The language lessons seemed to be limited to material which included flashcards, phonic charts and the writing board.

Although examining this aspect was not within the brief of this study, it has highlighted aspects that have implications for planning and its importance.

Types of use

The four most common ways were either that the teacher herself handled the materials and the learners. watched while she led a structured activity or discussion about them, or that the learners were each given materials and instructed by the teacher in how to manipulate them, or that certain materials were made available and the learners were instructed to consult them for assistance, or that the learning materials constituted a task the learners had to complete,

An example of the first situation is to be found in the language lesson in School 8, where the teacher told a story and showed pictures and invited the learners to engage with the material by listening for a particular sound. In this case the whole class was involved. Teachers also demonstrated to groups of learners, for example in the numeracy lesson in School 19 and in the literacy lesson in School 17. In the former class the teacher demonstrated on the board how a particular word sum should be written. In the latter, the teacher held flash cards and

learners were expected to respond. The same procedure was evident in School 15 when the teacher used an abacus while the learners watched and responded. Demonstration in this way can be very effective as it can focus attention and emphasise appropriately by the combination of visual input and the teacher's voice. Its disadvantage with young children is the fact that they may not have developed habits of listening to adults and can easily 'switch off'. A sensitive teacher, such as the one in School 19, notices and responds to such issues, but when they are not addressed learners do not know what to do, as was the case in School 12. This was despite the fact that, at an earlier stage in the lesson, learners were reported to be "dying to go up and answer".

In classes where there were sufficient materials, it was common for each learner to be given their own for a particular purpose. Examples are the use, in School 2, of cardboard circles and felt dots to teach division, and Unifix cubes and Flard cards to teach fractions; the use in School 17 of 'Breakthrough' material to teach phonics; and, the use in School 11 of Unifix cubes, numberline cards and peach pips etc to consolidate the number ten. At times when materials were limited, one or more learners would be selected to demonstrate as the teacher instructed, while the others watched.

The third way of using materials was for them to be offered as a resource. The materials in this case were frequently charts, either on the walls or available on a table or desk. This was the case in School 8 where learners were referred to the number charts if they needed assistance in completing worksheets correctly rather than asking each other. In School 19 it was obviously the norm for learners to fetch and consult an abacus if they felt this to be necessary. This aspect of the use of material appeared to be under-utilised as an opportunity for learners to make their own decisions.

Learning materials in the form of worksheets, cards or books, were commonly used. In most cases learners were given materials individually, as in School 2 (join the dot and colouring), School 8 (addition sums), School 19 (numeracy and literacy tasks), School 10 (numeracy worksheet from WCED), School 12 (copying of shapes), and School 11 (numeracy tasks). The one exception was the one

class in School 8, an urban under-resourced school, where groups were each given a different workcard to share. However, the full potential of this situation was not utilised, as each learner had to copy the task and complete it. In some classes learners worked in pairs at tasks, but subsequently completed workcards on their own. In some classes learners were encouraged to discuss their work (Schools 10 and 11), in others consultation happened informally when learners were puzzled (Schools 12 and 19), in one case they were actively discouraged from doing so (School 8). It would seem that the common practice was for learners at times to work in a group structure but not interdependently as a group.

Discovery learning in the Piagetian sense was not encouraged on the whole. Considering learning as a social constructivist activity, as Vygotsky suggests, was absent in most of the classes observed. Observers noticed that during lessons teachers kept a watchful eye on the learners, frequently instructing them to sit down, work alone and be quiet. Even the lack of learning materials in the class did not seem to 'force' teachers to let learners work together differently and for different purposes.

In each of the above cases, learners' interaction with the materials was directed by the teacher, who remained in control of the process. This is not necessarily undesirable as teachers have a responsibility to select and mediate appropriate knowledge. It is not sufficient that children `learn something' at school. We wish them to learn culturally valued and useful knowledge.

It would be inappropriate to permit Grade 1 learners to decide everything about their learning, but the new curriculum stresses the development of self-regulated learners and this could and should begin in Grade 1. Young children are, contrary to the Piagetian developmental notions which have tended to dominate teacher education, quite capable of beginning to reflect on their own cognitive and learning processes.

The extent of teacher control, however, does suggest that teachers tend to convey the message to learners that the learning process is one over which they themselves have little control. The area in which learners were given the

greatest responsibility was in the packing away of materials (explicitly mentioned in School 2).

This sense of learners as the less powerful partners in an authority situation may parallel teachers' own sense of themselves within schools and in relation to education departments. As long as teachers perceive themselves in this way, it will be difficult for them to relate to learners differently.

What was striking (yet not surprising) in many Grade 1 classrooms was the extent to which learners themselves were used as a resource. Learners would demonstrate an aspect of the concept being taught or revised. For example, in School 19 one child was asked to stand on the chair and then climb down in order to demonstrate the use of present and past tense. At another school (12) the teacher asked the learners to line up to demonstrate the sequence from 1-9. These learners were required to call out their respective number positions as they lined up. This effective use of learners to demonstrate not only involves them in the lesson but engages them in learning concepts through participation in the construction of that knowledge.

The extent to which Grade 1 teachers used themselves as learning resources was equally noticeable. Their expressions of interest and enthusiasm, their voices and gestures, were central in creating and maintaining an atmosphere in which learning was likely to take place.

Purposes

One of the assumptions made by the researchers was that teachers would use learning materials to elicit learners' prior knowledge. One of the common trends that emerged was the use of learning materials to elicit what learners could remember from being taught rather than what they already knew of the concept being introduced. Teachers often introduced lessons by revising what they had already taught even when it was remotely or not at all related to the main focus of the lesson. For example in School 17, the teacher used flashcards to "elicit learner's knowledge of the words. They responded by shouting out the answers. There was no evidence of learners being corrected or being asked to

contextualise the words in any way". At another school (14) the lesson was introduced with learners being instructed to thread Unifix cubes and find the matching numbers. The main focus of the lesson however, was division. Although knowledge of counting is important and relevant to understanding division, this exercise did not in any way give teachers an indication of "learners' prior knowledge" and experience of division or sharing and in fact, the teacher did little to show the relationship between counting and sharing.

The exception was one teacher from an urban under-resourced school (10), who indicated as an aim, the need to "bridge prior and new knowledge". She demonstrated this through the careful sequencing of her lesson. She related the introduction of the lesson directly to the main focus and seemed to have a sense of its purpose, unlike many of the teachers who seemed to treat it as a general introduction to mathematics or something one mechanically did everyday with learners! It would seem that the choice and use of material is integrally linked to care taken in planning. Although this is not new, this study illuminated this relationship.

Learning materials were also often used to consolidate previous knowledge, done primarily at the beginning of lessons. Teachers were aware of the need to "introduce" lessons and to do so in particular ways. What they did not take seriously was the relationship between this previous knowledge and the new knowledge. An example of this is evident in School 2 where the teacher "put a small pile of Unifix cubes in the centre of the circle and asked for estimates". Her purpose here was to find out the extent of learners' number sense. Instead she "praised those who had the correct answer" rather than asking, like the teacher at School 8, "how much more or less their estimates were to the target number'.

Interestingly, not many teachers used learning materials merely to keep learners busy. Many of the worksheets given were to revise aspects either taught on that day or on previous occasions. For example at School 19 the teacher gave the learners a worksheet with sums. Colouring in parts of the worksheet was an option for those who "finished quickly".

Some of the worksheets, however, were clearly given to keep learners quiet. An example of this is School 2, where learners were given an exercise to "join the dots and colour in". Ensuring that learners were quiet was high on many teachers' agendas resulting in them constantly telling learners to be "seated at their tables and ... complete".

Teachers made assumptions about the way materials can mediate learning. When introducing a new concept, it was often the teacher who handled the learning material through demonstrating to the learners. Although the learners in School 2 had circles and dots, the teacher first demonstrated the concept by taking two dots and asking them how many each learner would receive if they were shared equally. Teachers assumed that after their demonstration, learners understood HOW to use the material to develop new knowledge. At this same school it was apparent that learners did not understand as the observer noted that a "number of learners coloured in half of each dot instead of half of the total number".

The need to "get things right" seemed to influence the purposes and use of materials. For example, teachers often demonstrated what they wanted done through completing sections of a worksheet and then getting the learners to complete the rest. For example in School 4, each learner was given a worksheet and the teacher placed one on the board "to demonstrate what was required". After one demonstration, the teacher at School 2 gave learners a worksheet involving colouring in of half of the number of dots in various shapes. The teacher drew the task on the board and demonstrated the "correct way to do it".

Teachers used material to allow learners to observe, and sometimes to touch, concrete materials which represented symbolic knowledge they wished to convey. This was most obvious in the case of numeracy knowledge, where teachers seemed comfortable with a fairly wide repertoire of resources and well aware of their purpose. Teachers were conscious of the mediational role they play and seldom left learners entirely free to experiment with materials. Often materials were used to verify and justify solutions as in the case of Schools 8, 19 and 13.

Appropriacy

In many cases teachers did not seem to have a good sense of the relations hi between learning goals (outcomes) and learning materials and their responsibilit to make informed judgements about the material most suitable in their own contexts. Certain standard materials, if present, tended to be used in predictable ways. This was evident in School 15 where the teacher had most of the learning material on the list yet chose to use the abacus not only in a predictable way but, more disconcertingly, to convey misconceptions about number patterns. The only way she could consider 14 was as a 10 + 4. It is possible that had she given the learners the opportunity to USE the abacus they might have offered solutions other than the ones she encouraged and seemed to support. At School 7, the teacher's lack of conceptual understanding seem to overshadow the purpose of the material even when it was most appropriate! This inappropriate use of learning material was exacerbated by the teachers seeming lack of preparation illustrated by her indifference to the fact that some learners did not have any of the material (stones or bottle-tops) she had asked them to bring.

Some exceptions though were evident, especially in some urban under-resourced schools. In School 8, in the language lesson, the observer noted that "the pictures were either carefully drawn or neatly cut out and stuck on cards. Each picture in some way represented the sound "q" which featured frequently in the story' and was the focus of the lesson. The other teacher at the same school used the plastic counters in innovative and appropriate ways. She turned what may have been a mundane lesson of reinforcing ten, using very simple material, into one that was fun, engaging and problem oriented. In other words, she challenged learners to develop in what Vygotsky calls their "zone of proximal development". The teacher at School 10 also evidenced this flexibility in the use of material and seemed to have some understanding of this relation between material and learning outcome.

Mediation of learning

It seemed that teachers assumed that the usefulness of learning materials would be self-evident to learners. Our fieldworkers did not record any instances of teachers talking with learners about the ways in which a particular chart or other

material would be helpful, or discussing with learners the general guidelines (principles) they might use, and the choices they might have, in situations where they felt puzzled or unsure. For example, learners were told in School 8 to make use of the number charts but not told explicitly how to use them. Similarly, in School 12, learners were given the model for the task they had to complete on their worksheets, but failed to recognise it. Again, the issue is the development of self-regulating learners who are used to assessing learning situations and making judgements for themselves. For some learners, materials may indeed be mediational in themselves, but there are many for whom their value has to be made explicit.

Course attendance and the development of learning materials

Of the nine teachers observed, six had attended materials development course of three days or longer. In many of these classrooms though, there was little evidence of home-made learning materials. On the contrary some classrooms were conspicuously bare as in Schools 7 and 10. Although the former teacher had indicated (in the questionnaire) that she made her own phonic charts, there was no evidence of this in her classroom. The contents of the courses teachers attended is unknown. What this does highlight is the need for serious consideration to be given to the nature and contents of these courses if teachers are to be empowered to make informed decisions as well as be developers of relevant and appropriate material.

6.2 Grade 7 classrooms

6.2.1 Quantitative analysis

Introduction

These results from 26 classes provide firstly, contextual information about learners and teachers. This is followed by details about language learning materials in terms of range, sufficiency and condition. Thereafter the position with regard to learning materials for history, geography and natural science is reported. This section ends with some information about the selection, provision and storage of learning materials in Grade 7 classrooms.

Basic classroom statistics

At Grade 7 level the difference in numbers between rural and other classes was still noticeable, despite the fact that older learners tend to drop out of school. Learners tended to be older in under-resourced classrooms and the age range in all classes suggested the challenges teachers currently face. Grade 7 teachers generally, did not consistently attend materials development workshops.

Table 12: Basic classroom statistics

	Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)	Overall
Average number of learners	37	44	51	43*
Most common learner age	12-13	13-14	13-14	13-14
Age range of learners	11-17	11-19	11-20	11-20
Age range of teachers	30-60	20-60	20-40	20-60
Teachers with 3+ years of training	100%	100%	75%	96%
Teachers who had attended materials workshops (3 days or more)	55%	46%	25%	46%

* Maximum 80 : Minimum 20

Language related materials

All under-resourced classrooms were under equipped with language learning materials and even well-resourced classrooms were not perceived by teachers to be adequately equipped. Teachers in well-resourced classrooms may, as suggested previously, set very high standards in terms of quantity, but they may also be required to accommodate more learners than previously. They were less concerned about the condition of such materials as were available.

Range

Table 13: Classrooms with a range of five or more of the eleven listed language learning materials*

Well-resourced urban & rural (9)	Under-resourced urban (13)	Under-resourced rural (4)	Overall
77%	61%	25%	61%

* Information regarding grammar textbooks was not included because a significant number of teachers did not complete this item.

Sufficiency

Table 14: Classrooms in which the existing language learning materials are sufficient in quantity

Type of material	Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
Reading scheme texts	22%	23%	0%	19%
Fiction texts	22%	15%	0%	15%
Non-fiction texts	22%	7%	0%	11%
Poetry	22%	7%	0%	15%
Plays	33%	0%	0%	11%
Magazines	55%	15%	25%	30%
Newspapers	33%	15%	25%	27%
Games	0%	0%	0%	0%
Encyclopaedias	0%	0%	0%	0%
Dictionaries	22%	0%	0%	7%
Reference texts	11%	7%	0%	7%

Condition

Table 15: Classrooms in which existing language learning materials are in good condition

Type of material	Well-resourced urban & rural	Under-resourced urban	Under-resourced rural	Overall
Reading scheme texts	44%	69%	25%	53%
Fiction texts	66%	30%	0%	38%
Non-fiction texts	55%	23%	0%	30%
Poetry	77%	30%	50%	50%
Plays	55%	0%	50%	27%
Magazines	33%	30%	0%	27%
Newspapers	33%	38%	0%	38%
Games	22%	15%	0%	15%
Encyclopaedias	0%	7%	0%	3%
Dictionaries	77%	15%	0%	34%
Reference texts	44%	7%	0%	19%

Resources for History, Geography and Natural Science

Several teachers in well-resourced schools made the point that they did not consider it desirable to work in a way which required one text per learner. Some referred to having well-equipped libraries with a range of textual and other resources from which they planned lessons and to which they directed learners. At one rural under-resourced school, teachers use 'modules' rather than texts so teachers found the question irrelevant. Most teachers, except in rural under-

resourced schools, had at least one other reference text available, over and above the standard textbook. This was particularly noticeable for history.

Table 16: History, Geography and Natural Science materials

	Well-resourced urban & rural	Under-resourced urban	Under-resourced rural**
History			
Text for each learner	0%	7%	0%
Shared texts	11%	30%	25%
One text for class	77%*	61%	25%
Use of at least 1 other reference text	100%	92%	25%
Geography			
Text for each learner	11%	15%	0%
Shared texts	11%	23%	25%
One text for class	77%	61%	25%
Shared atlases	44%	30%	50%
One atlas for class	37%	38%	
Globe available	100%	76%	25%
Use of at least 1 other reference text	100%	69%	25%
Natural Science			
Text for each learner	55%	23%	0%
Shared texts	0%	30%	50%
One text for class	33%	23%	0%
Bunsen burner available	100%	53%	25%
Microscope available	55%	15%	25%
Use of at least 1 other reference text	100%	61%	25%

* A number of teachers used a range, rather than one set text.
** Two of the four teacher involved used 'modules' not texts for all subjects.

Most needed materials

Teachers in well-resourced classrooms highlighted a need for more science equipment. For those in under-resourced classrooms, texts of various kinds were a priority, with science equipment next in importance.

One teacher in a well-resourced school commented however, that "parents ensure that the school is well equipped".

Table 17: Most frequently mentioned needs

Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)
Science equipment	Textbooks Science equipment	Dictionaries

Selection, provision and storage of materials

Teachers in well-resourced and in urban under-resourced classrooms mentioned a range of role-players, including principals, heads of department, subject groups, grade groups and individual teachers. Subject and grade groups tended however, to be the most common.

Table 18: Selection, provision and storage of materials

	Well-resourced (Urban and Rural)	Under-resourced (Urban)	Under-resourced (Rural)
Selection	Subject group	Subject group	Grade group
Provision	School*	WCED	School and WCED
Storage	Classroom	Classroom	Strongroom

* Teachers at one school made a point of saying 'never WCED'.

6.2.2 Qualitative analysis

Introduction

The eight portraits of Grade 7 classrooms presented below provide information about the teacher, the quantity and condition of material in each classroom, the general classroom environment and describe a specific lesson. These teachers were not requested to provide weekly summaries because of the complexity of their scheduling and planning. The portraits are grouped as Under-resourced (urban), Under-resourced (rural) and Well-resourced (urban and rural). This section ends with a discussion which includes comment on types of use, purposes and appropriacy, mediation of learning and course attendance and development of learning materials.

Under-resourced (urban)

S chool 7

Teacher profileThe teacher has a PTD III as well as a FIDE. She is between forty and fifty years old and has, ironically only taught for less than ten years. She has not attended any materials development course.

Materials profile

This class has more than half of the language-related material listed. Except the fiction text, all of it is insufficient and in a poor condition. The learners share a formal reading text as well as grammar books. They also share history, geography and science textbooks. Each learner has an atlas but the class only has one globe and map. There are Bunsen burners but no other science equipment.

Classroom profile

There are 43 learners. The classroom is neat and well ventilated. It has a large table and a cupboard in which the textbooks are kept. Two posters on aids, four different calendars and artwork completed by learners are displayed.

The lesson

The English lesson observed was aimed at getting learners to understand the use of the "index". Textbooks were used. All except four learners, shared books.

The teacher asked the learners to turn to a particular page, look at the picture and read what the lady in the picture is saying. It read "Where can I read about satellites in this book?". The teacher asked the class how the lady (in the picture) could find the answer. After a few minutes of silence she encouraged them to discuss in pairs to try to find the answer. The discussion still did not yield any response. The teacher finally offered the answer after it was clear that even through asking individuals, she was not having any success in eliciting a response.

She continued by asking them what an index was. After no response she explained what its purpose was. She then instructed learners to turn to an exercise which assessed learners' understanding of the purpose and need for an index in books. Learners were given about ten minutes to work in pairs to complete the exercise. During the feedback, learners were reluctant to read what they had written resulting in the teacher "answering the questions herself'.

In a follow-on exercise learners were required find each page on which the names on the list, issued by the teacher, appeared. Using the index, this exercise was completed "without any problem".

A final exercise was given for learners to complete in their exercise book. This was unfortunately not completed in class due to time constraints.

School 9

Teacher profile

This teacher taught Grade 1 for twenty-two years. This was her first year in the Grade 7 class as a mathematics teacher.

This teacher has a JPTC III and is between thirty and forty years old. She has been teaching for more than twenty years and has not attended any materials development courses.

Materials profile

The class has a formal reading series that is said to be insufficient and in a poor condition. Only the teacher has a grammar book. This class has less than half of the language-related material on the list. The fiction and non-fiction books are not sufficient and are in a poor condition.

The teacher uses three reference books in history, two in geography and one in science. There are no textbooks for learners' use. The class shares an atlas and a globe. They have no science equipment.

Classroom profile

There are 80 learners in this neat and very spacious classroom. The variety of charts on the wall included mathematics charts with the vocabulary written in Xhosa and English and language related charts.

The lesson

This lesson was aimed at enabling learners to calculate percentages. A problem, taken from the textbook the teacher used, was written on a small chart. The

observer stated that "the chart was a little bigger than an A4" and that it was written such that "one could not see what was written from a distance". The illegibility was not only related to the size of the chart but to the handwriting used. As the observer stated, it was like "normal handwriting on paper".

The teacher asked the learners to assemble in a semi-circle at the front of the class. They read the problem on the chart after which the teacher proceeded to solve the problem. She explained each step as she went along. Thereafter, she pasted the chart upside down on the cupboard "so that the learners [could] not see what was written on it.

After returning to their seats, the learners were required to complete an exercise the teacher had written on the board. They were not allowed to refer to the chart as they were expected to remember what they had been "taught".

School 10

Teacher profile

This female teacher has an FIDE IV and is between fifty and sixty years of age. Ironically she only has between six and ten years of teaching experience. In this time she has attended materials development courses for longer than three days.

Materials profile

The formal reading series is said to be insufficient and in a poor condition. This class does not have a specific text for grammar use, but it does have most of the language-related material on the list. Although these are said to be insufficient, they are in a good condition.

This class has no other textbooks for learners. The teacher has one textbook each for history, geography and science from which she teaches. The teacher also has a geography dictionary, an atlas and a globe. She also uses materials developed by the Primary Science Project.

Classroom profile

This classroom has 39 learners. There were no cupboards and the windows are broken. The classroom is very under-resourced with no display of any charts.

The lesson

The purpose of the science lesson observed was to enable learners to distinguish between insects, arachnids and crustaceans and to bridge prior knowledge with new knowledge. It was clear from the outset, however, that the learners had already had some input in this regard. The teacher used a praying mantis preserved in a solution, the chalkboard and a textbook to teach the lesson.

For this lesson learners sat in five groups. The teacher introduced the lesson by asking learners to give her the "characteristics of anthropods". After some class discussion she wrote the following on the board, "jointed legs, exo-skeleton, outer covering, body divided into segments".

She then asked learners to name three anthropods to which the learners responded insects, arachnids and crustaceans. She divided the board into three sections and proceeded to engage learners in a discussion about the different features of each type. The main emphasis was on their physical differences. Each time she posed a question and learners responded, she wrote the response in the appropriate column on the board.

She walked from group to group showing them the praying mantis. She said, "please observe and discuss what you see". She posed questions which were not particularly related to the specimen but rather to the topic under discussion.

The final activity included learners turning to a particular page in their textbooks and copying the crab into their science note books.

School 14

Teacher profile

This teacher is between 20 and 30 years of age and has a PTD III. She has been teaching for less than 5 years and has not attended any materials development courses.

Materials profile

The class uses a formal reading text which is insufficient but in a good condition. The teacher uses a separate text for grammar purposes. Of the language related material, this class only has poetry and plays and they are said to be in a good condition. Groups of learners share history, geography and science textbooks. Learners share atlases as well. There is no science equipment.

Classroom profile

This class has 80 learners. It is very neat in appearance. There are a few charts on the wall. According to the observer, "the class seemed very motivated and the teacher [was] confident and clear about what she [was] doing". It was evident to the observer that she (the teacher) was very concerned about the learners and was eager to get them "to communicate well in English".

The lesson

The lesson was aimed at enabling learners to differentiate between the use of "or" and "and". Each pair of learners in the class shared a language textbook.

The teacher instructed the learners to turn to a particular page. After pausing for learners to locate the page, she read the first sentence and wrote it on the board. The whole class read the sentence.

Thereafter the teacher wrote the word "OR" on the board. She explained that when this word was used, it denoted choice. Examples to illustrate this were given by the teacher. These examples included familiar things like the choice between different types of foods.

The teacher then asked a pupil to read a given sentence in her book using the word "and". She wrote this sentence on the board. After the sentence was read by the class, they were asked what the difference was between the two sentences on the board. More examples including "and" were given by the teacher to illustrate the difference.

The exercise from the book was completed with the teacher asking individuals to complete each sentence. Each correct sentence was written on the board.

To conclude, the teacher wrote five sentences on the board. Three of the sentences were directly from the group of sentences the learners had just completed. The rest were slightly adapted. Learners were requested to complete these in their exercise books.

Under-resourced (rural)

School 11

Teacher profile

This female teacher is between twenty and thirty years of age and has been teaching for less than ten years. She has a PTD III and has not attended any materials development courses.

Materials profile

The class does not have a formal reading text. Only one book is available for grammar and the teacher uses it as a reference. Of the language-related material listed, this class only has magazines and newspapers. These are said to be insufficient and in a poor condition. The teacher intimated that they did not use textbooks for any of the other subjects listed. To alleviate this problem, the teacher develops theme-related modules. The material for this is gathered from the one main text that the teacher uses as a reference, newspapers and worksheets. These are compiled in booklet form for learners to work in.

Classroom profile

This prefabricated building houses forty-two learners. The ventilation is poor. There are at least twelve science charts on the wall.

At the time of the observation, the learners were seated in groups of seven. During the lesson it was noted that "learners worked well together and there was a friendly, unthreatening atmosphere in the classroom."

The lesson

The aim of the lesson was to enable learners, through practical work and experiments, to determine the difference between acid and alkaline. To achieve this, the teacher used beakers, test tubes, vinegar, sugar, coke, Jik, fruit juice, milk, cooking oil, bicarbonate of soda, Handy Andy, tea, toothpaste, tomato, shampoo, litmus paper and baking powder.

The teacher used a table in front of the classroom to conduct the experiments. Learners gathered around the table while the teacher demonstrated. They participated by asking and answering questions and tasting where appropriate.

The following is an example of the experiments the teacher engaged in. She put washing powder and Handy Andy in separate beakers and mixed both with water. After shaking the two beakers she invited the learners to feel the solutions. She then asked them how each of these solutions felt. The responses were smooth (Handy Andy) and soapy (washing powder) respectively. She then said "Let us discuss the properties of an acid and an alkaline".

Three more experiments were done following the same pattern of the teacher demonstrating and learners responding through questions. These experiments clearly illustrated the different properties of acid and alkaline and their different effects.

The next activity involved learners working in groups to experiment using milk, Jik, bicarbonate of soda, etc following the process the teacher had demonstrated. The observer noted that the learners were given different tasks because "the materials were limited". Questions were posed for each group to complete.

The final activity included a worksheet that learners had to complete. It is not clear whether they did this in groups or individually.

School 12

Teacher profile

This male teacher is between is between thirty and forty years of age. He is in possession of an HIDE IV and has attended materials development courses for longer than three days.

Materials profile

This class uses a formal reading text but it is insufficient and in a poor condition. There are some grammar texts that learners share in groups. Except for games, this class has all the language-related materials listed. More than half were said to be insufficient and in a poor condition. The teacher has single copy of history and geography texts. He uses two other references for each of the subjects. In addition, he uses newspapers, maps, photos, television and educational tours. The class has a globe and learners share atlases. Learners share science textbooks. The teacher notes that they have "all the necessary equipment in the science laboratory'.

Classroom profile

There are 40 learners in the class. The desks are arranged in a way that six learners work together. There are a few posters on the board and at the back of the classroom. The teacher's desk stands in front of the classroom. There is one cupboard in which the books and other materials are kept.

The observer indicated that the teacher "exercised strong discipline with the learners" and that the learners were "very obedient and quiet". This did not however, deter them from responding willingly.

The lesson

A second language English lesson was observed. It was aimed at getting learners to identify adjectives. The teacher used the overhead projector, flashcards and worksheets.

The lesson was introduced by the teacher standing in front and asking learners what a noun was. One learner responded by saying that it is "something that tells

you more about the word". The teacher then defined nouns as "words that name things". Learners were asked what type of nouns are found and they responded by saying "proper, collective, abstract and common". The teacher and learners gave examples of nouns in each category. The words were written on the overhead projector each time.

The teacher then asked the learners to identify the nouns in a sentence verbally posed. When learners responded incorrectly, the teacher gave the correct answer.

A few sentences were written on a transparency and learners were required to identify the nouns.

The teacher then placed adjectives, written on flashcards on the board. Using sentences on the OHP, learners were expected to choose and fill in the appropriate adjective (from the flashcards) to complete the sentences.

After the exercise the teacher asked learners what the words on the flashcards do. To this they responded that these words "described the noun". Learners were told what these words were called.

In the final part of the lesson the teacher wrote a sentence on the board and asked the learners to identify the noun and the adjectives. The definitions of both were reiterated since it was clear that not all the learners had grasped the concept. Learners were then given a worksheet to complete in their groups. The teacher walked around to check the learners work.

Well-resourced (urban and rural)

School 15 (rural)

Teacher profile

The teacher has a HIDE IV and a FIDE. She has more than twenty years teaching experience and is between forty and fifty years old. She has not attended any materials development workshops.

Materials profile

This class does not use a particular formal reading text but a variety of texts. These are sufficient and in a good condition. There are sufficient grammar books for each learner and they are in a good condition,

Most of the language-related material is present in this class and it is said to be sufficient and in a good condition.

The learners share history books. They use them as sources of reference rather than textbooks. They also have access to books from the library. Each learner has a geography book and an atlas. There is a globe in the class. The teacher also uses newspapers and magazines during geography lessons.

The class has sufficient science texts and the teacher uses Archimedes, magazine articles, newspapers and encyclopaedia in lessons. The class has Bunsen burners but no microscopes.

Classroom profile

This Grade 7 class has forty-nine learners. It is very spacious and well ventilated. It has two ceiling fans, a large magnetic board, two sets of cupboards, a wall mirror, sink, curtains.

The observer noted that the classroom is "very conducive to learning" with the tables arranged in triangles. Not many charts are on display. During the lesson observed it was noted that the teacher used various grouping strategies. Peer relations seemed friendly and co-operative. There was "a feeling of warmth and acceptance in the room".

The lesson

The observer witnessed an Afrikaans lesson. The aim of the lesson was to encourage "discovery learning" and to engage learners in finding information from a variety of sources, with special emphasis on newspapers. The teacher used the overhead projector, transparencies and newspapers.

The teacher handed out newspapers (Die Burger) to each learner. The lesson was introduced with a transparency showing a picture of the golf player "Ernie Els". Learners were asked to find this picture in their newspaper. Other famous rugby and cricket personalities were flashed on transparencies and learners were required to find them in the newspaper.

They were then asked to examine the first page and consider why the story on that page made the headlines. Questions such as the following were posed. "Why do you believe the story?", "Do you think it is the truth?"

The next activity required learners examine a particular article and in groups, find out what the writer's main focus was. Still in groups, learners examined a cartoon and were requested to pay special attention to the gestures, expressions and words used. They were asked to discuss the lessons learnt from the cartoon.

Spontaneity was encouraged. During the feedback all answers were accepted with nobody being right or wrong. The teacher emphasised that what was important was their own interpretation of the cartoon and not whether they were right or wrong.

Finally, the teacher asked them to turn their attention to the crossword puzzle and attempt a few solutions.

School 17 (urban)

Teacher profile

The teacher is between 40 and 50 years old. He has between sixteen and twenty years of teaching experience. He has completed a HIDE IV and a FIDE. This teacher has attended both one- and three-day materials development courses.

Materials profile

The class uses a reading laboratory which is said to be in a good condition and sufficient in number.

The text for grammar is sufficient for groups of learners to share. Of the materials listed, this class has fiction, plays, dictionaries, reference and poetry books and none of the others.

The learners do not use a history or science textbooks. For history, the teacher uses two texts and material related to "struggle history" as reference material. In science a single reference text is used. This class uses Bunsen burners and microscopes during science lessons. A geography textbook which groups of learners share is used. The teacher uses two references in this regard. Learners in the class each have an atlas and there is a globe for use in the class.

Classroom profile

There are 30 learners in this Grade 7 class. They sit in groups of three. The classroom has two cupboards and a display board with posters. A few assignments and artworks are displayed at the back of the classroom.

There is a quadriplegic student who has a computer and the full time assistance of her mother guiding her through the lessons. It is said that she does all the lessons except Afrikaans and extra-mural activities.

The observer noted that although the teacher is "very approachable patient and friendly", he is sometimes inclined to be "too accommodating". She observed too that learners are very relaxed and tend to copy answers from each other rather than try to work things out for themselves.

The lesson

A geography lesson was observed. The class had been working on the existing project from the beginning of the term. The project was aimed at enabling learners to graphically represent the area of the Great Lakes and False Bay. Computers, rulers, atlases, calculators and worksheets were used.

Half of the learners worked on computers situated in the computer room directly opposite the classroom while the other half sat at their desks completing work

and being assisted by the teacher when necessary. There was "free flow" from the classroom to the computer room.

Learners could choose to work in groups or individually. They were free to consult peers or the teacher when there were concepts they did not understand.

The teacher explained to one of the learners how to go about doing the project. He explained how this was done by demonstrating the tracing and measuring procedure. The learner was then left to complete the rest of the activity independently.

The teacher proceeded to explain how to plan graphical representations. The learners were given the choice of either displaying their findings graphically on the computer or they could be hand drawn. All the learners opted to use the computer as, according to them, "it was fun and neater".

There was no "formal" teaching. Most times the teacher walked around to individual learners monitoring their progress. Questions like "How can you be accurate when it is all skew?" were posed. In this case, they (the learners) had to recalculate and correct their inaccuracies.

In the computer room, learners were left unsupervised. On occasion, the teacher would "pop in". The "more experienced" learners assisted and guided those who were not too familiar in working with computers. The completed representation was printed and shown to the teacher.

Those learners who had completed the task merely continued on the next task of the project. No limits were placed on how much they needed to cover in one session.

The "lesson" was concluded with the teacher comparing the Great Lakes region and False Bay in relation their sizes and volume of water.

6.2.3 *Discussion*

Introduction

This section is presented under the following headings: types of use; purposes and appropriacy; the mediation of learning; and, course attendance and the development of learning materials.

Types of use

As with Grade 1 teachers, Grade 7 teachers used learning materials primarily by handling or manipulating themselves while learners watched. For example, in School 7, the teacher walked round showing the class a specimen of a praying mantis and asking them to discuss what they saw. In School 11 the teacher conducted experiments with learners grouped around her. Teachers engaged in discussion with learners as they demonstrated. A similar pattern of teacher control of materials might be used for different purposes, such as to enlarge what might be found in worksheets or texts so that it could be discussed by the whole class at once. The blackboard and charts were often used for this purpose. Teaching by showing and discussing is a valuable pedagogic strategy and teachers were comfortable with it. However, teachers did not appear to consider learners' history knowledge or to locate learning in the contexts of particular learners or to individualise their instruction in any way. The observation reports indicated that there were, at times, learners who did not fully understand (Schools 7 and 12). It was not clear either how understanding would be evaluated or how any failures to understand would be addressed.

Secondly, materials were sometimes used such that each individual learner was provided with materials and general instructions were given about how to interact with these. In some schools a similar approach was adopted but materials had to be shared. In School 10 learners, in pairs or groups, had to share textbooks from which each individual had to copy specified drawings into his or her own book. In School 7 learners in pairs or groups shared a textbook in which their task about the use of an index was to be found. In School 14, despite the fact that learners in pairs shared a textbook on which they had to locate a particular page, the teacher chose to use the blackboard not only to magnify and discuss material in the text, but also to provide learners with tasks to complete in their exercise

books. This particular lesson could have been given just as well if the learners had had no texts. It is possible that in under-resourced schools teachers have become accustomed to teaching using only one source copy of a text and find it difficult to adapt to the presence of more textbooks. This would imply that learners do not develop the skills necessary for independent reading a suggestion supported by the inability of learners in School 7 to say anything about the purpose of an index.

In School 15 learners were each provided with a newspaper and given a range of tasks to complete. In School 17 learners had access to computers and a variety of drawing and measuring equipment. Each learner did not have every resource, but there was sufficient for each learner to be active with some form of learning material. The teacher's use of the material was to make it available to the learners and to demonstrate its use when necessary. He then gave learners a task and they used the materials to complete it. In School 11 learners in groups were given tasks to complete for which experimentation with materials was required. These were the only schools one well- and one under-resourced) in

ers were given guidance in the use of

which learn

7 level learners were generally not

encouraged to use materials as a source for independent learning. In School 9 the teacher expressly forbade the use of

materials as a resource, and placed the chart upside down to emphasise the point. She stressed the importance of memory of what had been told to the learners. It would be unwise to overlook the importance of memory in the learning process, since there is little value in understanding which cannot be recalled when required but while concepts are being developed it is inappropriate to deny learners the use of material aids.

Purpose and appropriacy

In this grade a variety of lessons were observed. The teachers observed were clear on the focus of their lessons and seemed to have a sophisticated understanding of the relationship between the lesson outcomes and the learning materials used. This clarity of focus may be partly due to the fact that many teachers in the intermediate phase are subject specialists who have a better

conceptual understanding of their subject. It may also be partly due to the singular focus in planning which is different in the case of Grade 1 teachers, who have to focus on every aspect of teaching and learning in their classrooms. The second point should, however, not be misinterpreted as justification for subject teaching.

In many of the observed classes, the materials were appropriate and directly related to the lesson outcome. On closer examination though it was apparent that teacher used materials o access what learners already knew regarding the topic, relative though only to what they (the teachers) had taught and what they deemed as appropriate knowledge. This control of appropriate knowledge was maintained through the type of questions teachers posed. For example, at School 10 while moving from group to group showing learners the specimen of the praying mantis, the teacher posed questions "not particularly related to the specimen but rather to the topic under discussion". The teacher at School 7 instructed learners to turn to a particular page and asked how the lady in the picture could find the answer. What is obvious from the teacher's own response is that she would not have accepted a response other than the word "index". Learners in this class were particularly unresponsive which may be attributed to a fear of "not getting it right' and not wanting to risk any embarrassment in front of peers. Evidence for this lies in that when asked to complete an exercise in their books, the learners completed it "without any problem".

In some cases teachers used the material to bridge prior and new knowledge as in the case of the teacher at School 12. He first engaged learners in clarifying their understanding of nouns and then proceeded to demonstrate the relation between nouns and adjectives.

School 14 is also a case in point where the teacher used what learners already know to lead them to develop new knowledge.

In the case of School 11, the teacher used materials to consolidate new knowledge and encourage learners to "find out for themselves". What is

particularly interesting in this class is that the lack of sufficient material served as an advantage, enabling learners to work interdependently to reach solutions.

The teachers at both well-resourced schools worked very differently (from the rest of the teachers in the sample) with materials and used them more as a resource for learning rather than a source of learning. They seemed to be aware of the mediatory role of materials. More importantly, they acknowledged that learners, through engagement with the material and the teacher, were ultimately in control of what they learnt. They seemed to understand that the learning was not solely dependent on the material and what it could do but rather in how they (teachers and learners) used the material to better understand and not only to accumulate information.

They were both much more confident in allowing learners to explore and "discover" for themselves. This confidence to "let go" might be due to the factors already mentioned above, but they may also be due to teachers' understanding and experience of best learning environments, what counts as appropriate knowledge, whose knowledge is privileged and how it is constructed, produced and assimilated. Although there was a level at which teachers demanded appropriate responses, for example, at School 17 when the teacher said "How can you be accurate when it is all skew?", these teachers were much more amenable to mistakes and "wrong answers". The teacher at School 15, for example, encouraged spontaneity and emphasised that "what is important [is] their interpretation of the cartoon and not whether they [are] right or wrong". Although this approach is generally desirable, we do not wish to imply that it is always appropriate. For example, it does not seem entirely accurate to state that there was no correct answer, since cartoons are devised with a specific purpose in mind.

The understanding highlighted above stands in stark contrast to the practices of most teachers in both samples who generally used materials to support their teaching rather than student learning! This seems to be related to many teachers' conceptual understanding of knowledge as something external, fixed and beyond their control. How knowledge is constructed and what and whose

knowledge is privileged are not issues they reflect upon. The understanding of knowledge as a dynamic social construct does not seem part of their frame of reference.

Mediation of learning

Materials as mediational tools for learning are important. Demonstration is one valuable use of materials but perhaps a more important one is their availability as resources. Learners need access to texts, science equipment and other learning materials. In the two well-resourced schools this was the case. But many learners, and especially those not accustomed to the availability of learning materials as resources, require more than just access. They need explicit instruction in how to make optimal use of resources and a clear understanding of how these resources can be useful to them. In the lesson on the use of an index (School 7) the teacher appeared to assume that this would be self evident.

Only one teacher from a well-resourced school offered learners choices about process (School 17: between hand-drawn and computer graphics). This teacher "explained how to go about doing the project" but the fieldworker does not note any reference to discussion around this topic or learner input about different ways of approaching the problem and possible difficulties. Where learner opinions were taken into account this was in terms of product rather than process, for example in School 15 learners were encouraged to generate their own interpretations of a cartoon, but not to discuss the ways in which a cartoon promotes (or fails to promote) understanding.

At school, learners need to acquire knowledge about how to think and learn as well as about the various subject areas. This includes an awareness of the ways in which they can use materials to enhance their own learning. There was little evidence of the direct mediation of this knowledge in Grade 7 classrooms. It is perhaps understandable that teachers do not think it appropriate in Grade 1, but it is alarming that even in Grade 7 it is seldom present.

Course attendance and the development of learning materials

Most of the Grade 7 teachers had not attended materials development courses. This supports the general trend of the quantitative findings. It may be that fewer courses are offered in this grade or that teachers do not perceive a need for professional development in this field.

7. IMPLICATIONS AND RECOMMENDATIONS OF THE STUDY

This study has implications for the new curriculum in terms of the provision and use of materials, teacher education and training and future research.

The proposed curriculum shifts outcomes for learners from a content driven process to one that is clearly defined in terms of what they are expected to know and do after successfully completing a series of learning outcomes. It also requires that teachers change their deeply entrenched practices and focus on what students should be able to do as a result of their learning and not on what they, the teachers, intend to teach. In the Grade 1 classes, where teachers were supposedly in their eighth month of implementing the new curriculum, it was apparent just HOW deep these practices ran. Teachers seemed not only unwilling to "let go' and allow learners to make their own mistakes, they were even afraid to let learners respond, on their own, to what they (the teachers) had taught them. This is evident in their need to demonstrate how to complete worksheets and tasks. Demonstration is not necessarily unfavourable but when it is used as the primary model, it does encourage a pattern of dependency which is difficult to break. Although the study did not investigate the implementation of the new curriculum, it was evident from the way teachers used materials that it will take considerable time and much intervention to establish the proposed curriculum as the norm.

Provision and use of materials

The document analysis highlighted that eight of the nine provinces still operate through materials selection committees who construct lists of approved materials. This approach worked well under a system with an inflexible syllabus. As explained in the first section of this report, the new curriculum expects teachers to evaluate and select curriculum materials appropriate to contexts and outcomes. The study shows that teachers in many schools are not currently involved in this process in a meaningful way.

Decision making about materials at both Grade 1 and Grade 7 levels is largely in the hands of subject or grade groups but it was not clear whether any logical process or set of criteria were used when teachers as a group selected materials.

It seems possible that they are largely guided by either what is easily available and accessible, familiar in style, and attractive in appearance rather than by informed judgements about the appropriacy of materials. Although National Education sets stringent criteria and very specific guidelines for selection committees, most teachers are probably not aware of these.

In addition, the range from which teachers in many provinces may make choices has already been limited by the process explained above. This is problematic because there seem to exist discrepancies in the interpretation and key focus of criteria between provinces, and probably within selection committees. Having to work within approved lists only, tends to discourage teachers from knowing about and using possible valuable material that might not have been included in these lists. Moreover, the existence of lists encourages dependency rather than the development of independent judgement, which is directly in contrast to the main thrust of the new curriculum. Although teachers are represented on selection committees, this does not mean that teachers voices are necessarily audible, nor does it empower individual teachers.

We recommend, therefore, that the notion of materials selection committees be reviewed and that ways be found to devolve responsibility for materials selection directly to teachers.

The education and training of teachers

Integrally linked to the above is teacher confidence and competence. It was evident in the classrooms observed that confidence, either in the use of material or in the presentation of the content, was directly linked to the level of control in the classroom. If teachers are to change deeply entrenched practices and begin to explore more learner-centred forms of teaching and learning, then attention needs to be given to their levels of confidence and competence. This implies focusing on ways in which their confidence and competence can be developed. This might mean the development of in-service training courses that engage

teachers in developing competence in the subjects they teach thereby indirectly building their confidence. While developing better and deeper understandings of subjects matter, care should be taken to break down misconceptions . What was

insightful within the Grade 1 sample was the lack of conceptual understanding and the degree to which this made them either use the material inappropriately or give learners wrong information. A case in point was at School 2 where the teacher introduced the term "fractions" and told learners that "halves are the same as fractions".

Most of the teachers in the study had attended materials development courses of three days and longer. Although the content , process and presentation of these courses is not known, it would seem critical that future courses pay special attention to developing a broad conceptual understanding of the role of materials as resources rather than sole sources of learning. S

pecific attention should be given to assisting teachers to reflect on the relationship between lesson

outcomes and the choice of material.

Focusing teachers' attention on the relevancy of materials for particular contexts, and on flexibility to accommodate diversity of learning styles is important. The teachers in this study did not seem aware of their own power, ability and responsibility to match materials to their aims and classroom contexts. Therefore it is crucial to develop to teachers confidence in selecting, adapting and creating learning materials.

We therefore recommend in-service training courses that focus on the development of teacher judgement and confidence. In our opinion this involves , building conceptual understanding of subject knowledge in order to enhance confidence and competence and a strong emphasis on the ability and responsibility to match materials to learning outcomes and contexts.

Possible areas of further research

Future research could fruitfully explore how teachers make choices about materials to match their aims and the extent to which they take the above concerns into consideration. This research might illuminate the extent to which their choices are driven by what is available and easy to use.

This study also suggests that naive assumptions about teachers' capabilities in rural schools may need to be revisited. This calls for an in-depth investigation of the conditions under which teachers in rural schools use materials effectively. This might include a comparison between rural and urban contexts. The questionnaire developed in this study would be an appropriate tool to begin this investigation.

Closing comments

This research has been a valuable learning experience for the researchers and field workers. All but one of the fieldworkers had not previously undertaken research. This learning experience has opened doors for them and built confidence and competence. Two of them are already engaged in other research projects.

Researchers learned important lessons about the timing of research projects and the importance of relationships in gaining access and acceptance. Our training programme for fieldworkers had stressed the need to foster good relationships. Although observations were undertaken late in the year, teachers were amenable as a result of these good relationships established from Phase 1. As materials developers ourselves, we became more aware of how easily materials may be subverted and became more analytic about their use. In collaborating, we were conscious of how working together improved the coherence of the research and the depth of our understanding of the research process.

This research would not have been possible without generous funding from DANIDA through the Joint Education Trust, the willing co-operation of teachers and schools and the permission of the Western Cape Education Department. We are grateful for the opportunity afforded us to contribute to the body of research which will ultimately impact on the quality of education in South Africa.

REFERENCES

Baxen, J, Biersteker, L. & Smith, C. 1998. Thousand schools reception year pilot project: final research report. Unpublished report, July 1998.

Capper, C.A. & Jamison, M.T. 1993. Outcomes-based education re-examined: from structural functionalism to poststructuralism, in Educational Policy, 7 (4), 427-446.

Cresswell, J.W. 1994. Research design: qualitative and quantitative approaches. Thousand Oaks, Ca.: Sage.

Department of National Education. 1995. White paper on education and training.

Department of National Education. 1998. Interim report of the inter-provincial learning support material task team.

Farrel, J.P. & Heyneman, S.P. 1989. Textbooks in the developing world: economic and educational choices. Washington: EDI Seminar Series.

Firestone, W.A. 1987. Meaning in method: the rhetoric of quantitative and qualitative research, in Educational Researcher, 16(7), 16-21.

Fraenkel, J. R. & Wallen, N. E. 1992. How to design and evaluate research in education. 2nd ed. USA: McGraw-Hill.

Fullan, M. 1993. Change forces: probing the depths of educational reform. London: The Falmer Press.

Generic guidelines for the development of learning support materials for Outcomes Based Education (OBE) and Training, 1998.

Glaser, B.G. & Strauss, A.L. 1967. The discovery of grounded theory. strategies for qualitative research. Chicago: Aldine Publishing Co.

Killen, R. 1996. Outcomes-based education: rethinking teaching. Unpublished paper presented at the University of South Africa.

Maykut, P. & Morehouse, R.C. 1994. Beginning qualitative research: a philosophic and practical guide. London: The Falmer Press

National Department of Education. 1997. Outcome based education in South Africa: background information for educators.

Packer, M.J. &Addison, R.B. 1989. Evaluating an interpretive account, in M. J. Packer & R. B. Addison eds. Entering the circle: Hermeneutic investigation.

Patton, M.Q. 1990. Qualitative Evaluation Methods. 2nd ed.. Beverly Hills, CA: Sage.

Salomon, G. 1991. Transcending the quantitative-qualitative debate: the analytic and systemic approaches to educational research. Educational Researcher, 26(6), 10-18.

Spady, W.G. 1988. Organizing for results: the basis of authentic restructuring and reform. Educational Leadership, 46(2), 4-8.

Spady, W. & Marshall, K.J. 1991. Beyond traditional outcomes-based education. Educational Leadership, 49(2), 67-72.

Taylor, N. 1997.. JET Bulletin: Focus on the Education Debate- Curriculum 2005, No. 7, Johannesburg: JET.

Vygotsky, L. S. 1962. Thought and language. Cambridge, Ma.: MIT Press.

Vygotsky, L.S. 1978. Mind in society. Cambridge, Ma.: Harvard University Press.

Wickham, S. & Versveld, R. 1998.. To what extent do learning materials impact upon teaching and learning practices? Paper presented at the World Congress of Comparative Education Societies held at the University of Cape Town, July 1998.

Wilson, N. and McClean, S 1994. Questionnaire design. Newtownabbey: University of Ulster.

APPENDIX A

The researchers had hoped to use the same schools for both the Grade 1 and 7 observations. However this proved difficult for a variety of reasons. One of the major obstacles was the reluctance in general, of the Grade 7 teachers to be observed. At some schools, the fieldworkers developed better relationships with the Grade 1 teachers than with their senior counterparts. Another determining factor was subject teaching and the way in which this affects how teachers operate and when they are available. Even though the fieldworkers were flexible, often periods and circumstances changed that influenced the time scheduled for the observation.

School 2

This particular school is physically separated into a junior and a senior primary section, the total role in the former being about 420 learners. The school serves a lower income group community and about 40% of parents are unemployed. A state aided feeding scheme provides bread and milkshakes at the school. The language of instruction is English which is the mother tongue of most of the learners, although many are equally fluent in Afrikaans.

School 7

The school is situated in one of the oldest informal settlements (Old Crossroads) in the Cape Metropolitan area. The school has an enrolment of 1236 and has 36 teachers. There are four Grade 1 classes and a reception year class (5-6 year olds). Most of the learners are from lower working class families where most of the time, both parents are unemployed.

This school was part of the Thousand Schools Project, a large-scale national intervention aimed at making a direct and positive impact on the quality of education in those parts of South Africa deemed to be most needy, using the experience and expertise of NGOs.

School 8

This is a large urban school with over 1500 learners. The school has existed for approximately 5 years, before that learners platooned at another school. There are currently eight Grade 1 classes, one of which is in fact an open learning mixed grade class ranging from Grade 1 to Grade 3. The language of instruction is Xhosa which is the mother tongue of nearly all of the learners and understood by all. Approximately one third of the parents are employed. Many of the families whose children are at the school come from the Eastern Cape, and it is a problem for teachers that learners may be unpredictably absent for as much as a month as caregivers move from one location to another.

School 9

This school is situated in Guguletu. It has 842 learners and 21 teachers. About 405 of the population is employed. Many of the learners live with grandparents who live in brick houses. There are very few who live in shacks.

School 10

The school was built in 1974 and was renovated in 1989. The school is situated in one of the poorest townships in the Western Cape Metropolitan area and was one of the schools involved in the Thousand Schools project, an intervention programme aimed at improving the quality of education within the schools.

School 11

This is a large school with approximately 800 learners. The language of instruction is Afrikaans, which is the mother tongue of most of the school population. The school consists of prefabricated classrooms connected by passages and walkways. The toilets are a separate outside building. Generally the buildings are old and run down, with paint peeling from walls and ceilings and some of the fluorescent lights not working.

School 12

The over 800 learners at the school come from disadvantaged backgrounds, most of their parents being either unemployed (approximately 60%) or working as labourers or domestics. The language of the school is Afrikaans, which is the mother tongue of almost all the learners. The school has a feeding scheme which provides peanut butter sandwiches and milk every day, funded by an NGO. This school was one of the pilot schools for the introduction of Curriculum 2005 in 1997. In 1998 it is receiving support from the Western Cape Education Department in the form of visits from a consultant based at the nearest school clinic. This educator models lessons and generally provides guidance to the school about the new curriculum.

School 14

This school is situated in an informal settlement in the south of Cape Town (about twenty-five kilometres away from the city centre). It was started in 1990 during which time it operated in a church. In 1994 the school moved into a new building. There are 1080 learners and 27 teachers.

The community is still developing. Most families are living in shacks and there is an unemployment rate of about 65%. Most of the employed members of the community are unskilled labourers.

School 15

The school is situated in the south of Paarl, about fifty-five kilometres from Cape Town. It has 380 learners in the school and has a dual medium stream (English and Afrikaans). The administration block is furnished with air conditioners and the staffroom boasts a comfortable lounge suite matched with beautiful curtains. The school has a hall and impeccable playgrounds. There are six Foundation Phase teachers at the school.

School 17

The school is hosted in two separate buildings with the Foundation Phase occupying one building and the Intermediate Phase the other. The school is very small with about 300 learners in total. The socio-economic backgrounds of the learners vary. Some come from families whose parents are unemployed while others are children of members of parliament! Most of the parents are employed

(only about 5% unemployed). Many of the learners do not live in the area in which the school is situated.

School 19

This is a school historically under the control of the House of Delegates, at which most of the learners are Muslim, although there are also Hindu and Christian learners. It combines primary and secondary, with numbers of over 1000. It is situated in a lower middle class area and the range of socio-economic status in the parent community is wide. Many are engaged in business of various sorts. Parents are very supportive of the school and of teachers, not only in donating money and organizing fundraising, but in the keen interest they take in their children's educational welfare.

APPENDIX B

LEARNING MATERIALS PROJECT

1. BACKGROUND INFORMATION

1.1 *Name of school* .....

1.2 Address of school.....

1.3 Class ..... Grade One

1.4 Number of classes in the same grade at the school ..

1.5 Number of children (learners) in class .....

1.6 Age of the youngest learner .....

1.7 *Age of the oldest learner* .....

1.8 Most learners in the class are between the ages of: *(Please tick appropriate box)*

6 – 7	7 – 8	8 – 9	9 - 10

1.9 Age of the teacher: *(Please tick appropriate box)*

20 – 30	31 – 40	41 – 50	51 – 60	61 - 65

1.10 Gender of the teacher: *(Please tick appropriate box)*

Male	Female

1.11 Qualifications of the teacher:

JPTC II	JPTC III	PTC II	PTD III	HDE IV

Other qualifications:

FDE	B.A.	B.Prim Ed	B.Ed	M.Ed

1.12 *Teacher's years of experience: (Please tick appropriate box)*

0 – 5	6 – 10	11 - 15	16 – 20	More than 20

1.13 Materials development courses attended by the teacher:

none	1 day	3 day	longer than 3 day

2. RANGE OF MATERIALS

2.1 FORMAL TEXTS

Which reading scheme do you use to teach learners to read (e.g. Kathy and Mark)?

.....

	sufficient in number	not sufficient	good condition	poor condition
Are they				

2.2 INFORMAL TEXTS

Do you use any of the following in your class? *(Please indicate by ticking in the appropriate box.)*

	Yes		No	
Story books	Yes		No	
Language related games	Yes		No	
Puzzles	Yes		No	
Non-fiction books that give learners information	Yes		No	
Magazines	Yes		No	
Newspapers	Yes		No	
Picture encyclopaedia	Yes		No	
Phonic charts	Yes		No	
Whole word flashcards	Yes		No	
Single and double letter flashcards	Yes		No	
Number-related flashcards	Yes		No	
Number-related games	Yes		No	
Mathematics charts	Yes		No	

2.3 Please provide the following further information about the materials you use. *(Please tick the appropriate box)*

	sufficient in number	not sufficient	home made	manu-factured	good condition	poor condition
Story books						
Language related games ..						
Numeracy related games ..						
Puzzles						
Non-fiction books that give learners information ...						

2.4 **OTHER LEARNING MATERIAL**

Do you have any of the following in your class? Please indicate by ticking in the appropriate box.

	yes	no	suff-icient	not suff-icient	home made	manu-factured	good condition	poor condition
Blocks								
Plastic cubes								
Bottle tops								
Ice-cream sticks ...								
Ice-cream containers								
Cuisenaire rods								
Unifixes								
Construction toys .								
Clay.....								
Play dough								
Crayons								
Activity sheets								
Activity books								
Paint								
Paint brushes								

Please describe any other learning materials which you have and use in your classroom:

Type of material:	sufficient	not sufficient	home made	manu-factured	good condition	poor condition

3. SELECTION OF MATERIAL

Who makes decisions about the selection and purchase of learning materials? *(Please tick the appropriate box.)*

	mostly	sometimes	rarely	never
The Principal				
The Foundation Phase Head of Department				
The Foundation Phase teachers as a group				
Each grade group				
Individual teachers				

In some other way. Please explain .....

.....

.....

4. SOURCE OF MATERIAL

Who provides learning materials to the school? *(Please tick the appropriate box.)*

	mostly	sometimes	rarely	never
WCED				
Bought by the school				
Bought by parents				
Donated by parents				
Donated by business				
Donated by organisations – please list:				
.....				
.....				

5. STORAGE OF MATERIALS

Most learning materials are stored: *(Please tick the appropriate box)*

In the classroom	
In a special resource room	
In a safe	
In the strongroom	

Any other place. Specify: .....

.....

6. USE OF MATERIALS

6.1 *Which five of the existing learning materials are* ***most frequently*** *used? List in order of frequency*, giving the most frequent first.

1. .....
2. .....
3. .....
4. .....
5. .....

6.2 Which are the three most important learning materials that your classroom lacks. List them in order of importance, giving the most important first.

1. .....
2. .....
3. .....

6.3 Do children take books or other learning material home? Yes ☐ No ☐

Name the type of material children take home. Indicate how often they do.

Type of learning material	every day	once a week	seldom	never
.....				
.....				
.....				
.....				
.....				

7. SPECIAL MATERIALS

Do you have/use any special materials for Learners with Special Educational Needs?..... Yes ☐ No ☐

Please specify: .....

.....

.....

.....

8. RESOURCE MATERIAL AVAILABLE TO YOU AS A TEACHER

What material is available to you when you plan your teaching? Please specify for each category.

8.1 **Literacy**: Give title, publisher and year of publication:	Own	School Library	Public Library	Other
a)				
b)				
c)				
d)				

8.2 **Numeracy**: Give title, publisher and year of publication:	Own	School Library	Public Library	Other
a)				
b)				
c)				
d)				

8.3 **Life Skills**: Give title, publisher and year of publication:	Own	School Library	Public Library	Other
a)				
b)				
c)				
d)				

APPENDIX C

LEARNING MATERIALS PROJECT

1. BACKGROUND INFORMATION

1.1 Name of school .....

1.2 Address of school.....

1.3 Class ..... Grade Seven

1.4 Number of classes in the same grade at the school ..

1.5 Number of learners in class .....

1.6 Age of the youngest learner .....

1.7 Age of the oldest learner .....

1.8 Most learners in the class are between the ages of: *(Please tick appropriate box)*

12 - 13	13 - 14	14 - 15	15 and above

1.9 Age of the teacher: *(Please tick appropriate box)*

20 – 30	30 – 40	40 – 50	50 – 60	60 - 65

1.10 Gender of the teacher: *(Please tick appropriate box)*

Male	Female

1.11 *Qualifications of the teacher:*

JPTC II	JPTC III	PTC II	PTD III	HDE IV

Other qualifications:

FDE	B.A.	B.Prim Ed	B.Ed	M.Ed

1.12 Teacher's years of experience: *(Please tick appropriate box)*

0 – 5	6 – 10	11 - 15	16 – 20	More than 20

1.13 Materials development courses attended by the teacher:

none	1 day	3 day	longer than 3 day

2. RANGE OF MATERIALS

2.1 LANGUAGE

2.1.1 What formal reading series do you use in class?

.....

Are the texts ..... | Sufficient | | Insufficient | | In good condition | | In poor condition | |

2.1.2 Do you use a textbook to teach grammar? Yes | | No | |

Name of book, publisher and year of publication::

One per learner	One per group of learners	Single text

2.1.3 Do you have any of the following in your classroom?

	Yes	No	Sufficient	Insufficient	Good condition	Poor condition
Fiction						
Non-fiction						
Poetry						
Plays						
Magazines						
Newspapers						
Games						
Encyclopaedia (s)						

	Yes	No	Sufficient	Insufficient	Good condition	Poor condition
Dictionaries						
Reference Books						
Other:						

2.2 HUMAN AND SOCIAL SCIENCE

2.2.1 a) Name of the **HISTORY** *text book most frequently used in class and* year of publication:

One per learner	One per group of learners	Single text

b) Name of any other the **HISTORY** *text book* that the learners use. Give the year of publication:

One per learner	One per group of learners	Single text

c) Other the **HISTORY** *text books* that you use as a reference. Give name and publisher:

Year of publication:

Year of publication:

d) Do you use any **HISTORY** *reference* books? Yes ☐ No ☐

If yes, name the most frequently used:

e) Please specify any other **HISTORY** learning materials you use:

2.2.2 a) Name of the **GEOGRAPHY** *text book* most frequently used in class and year of publication:

One per learner	One per group of learners	Single text

b) Name of any other **GEOGRAPHY** *text book* that the learners use. Give the year of publication:

One per learner	One per group of learners	Single text

c) Other **GEOGRAPHY** *text books* that you use as a reference. Give name and publisher:

Year of publication:

Year of publication:

2.2.3 Do you use an atlas? Yes ☐ No ☐

If yes, give the name and year of publication:

One per learner	One per group of learners	Single text

2.2.4 Do you use globes? Yes ☐ No ☐

If yes, do you have . . . . . .

One per learner	One per group of learners	Single text

2.2.5 Do you use any **GEOGRAPHY** *reference* books? Yes ☐ No ☐

If yes, name the most frequently used:

2.2.6 Please specify any other **GEOGRAPHY** learning materials you use:

.....

.....

.....

2.3 NATURAL SCIENCES

2.3.1 Name of the **SCIENCE** *text book most frequently used in class* and year of publication:

One per learner	One per group of learners	Single text

2.3.2 Materials for use in **SCIENCE** classes:

Bunsen burner	Yes		No	
Microscope	Yes		No	

2.3.3 Do you use any **SCIENCE** *reference* books? Yes / No

If yes, name the most frequently used :

Name	Publisher	Year of Publication

2.3.4 Please specify any other **SCIENCE** learning materials you use:

.....

.....

.....

3. SELECTION OF MATERIAL

Who makes decisions about the *selection and purchase of learning materials? Please tick the appropriate box.*

	mostly	sometimes	rarely	never
The Principal				
The Intermediate Phase Head of Department				
The Intermediate Phase teachers as a subject group ...				
Each grade group				
Individual teachers				

In some other way. Please explain .....

.....

.....

4. SOURCE OF MATERIAL

Who provides learning materials to the school? Please tick the appropriate box.

	mostly	sometimes	rarely	never
WCED				
Bought by the school				
Bought by individual teachers				
Bought by parents				
Donated by parents				
Donated by business				
Donated by organisations – please list				
.....				
.....				

5. STORAGE OF MATERIALS

5.1 **MOST** learning materials are stored: (Please tick the appropriate box):

In the classroom ..... ☐

In a special resource room ..... ☐

In a safe ..... ☐

In the strongroom ..... ☐

Any other place. Specify: .....

6. REQUIRMENTS

Which are the most important Learning Materials that your classroom LACKS? List them in order of importance, giving the most important first.

.....

.....

.....

.....

APPENDIX D

GUIDELINES FOR QUESTIONNAIRE ADMINISTRATION

N.B. Write School No and teacher's number on each questionnaire. Assign numbers in the alphabetical order of teacher surnames.

Explain to the teachers:

1. Why the questionnaire is being used (to find out what materials are currently available in schools) and that it is research requested by the President's Education Initiative;

2. That the Department and the Principal have agreed to co-operate in the research;

3. That it will take about 20 minutes;

4. That you will wait while teachers complete the questionnaire and answer any questions;

5. That feedback will be provided to the school about the results of the research.

Hand out the questionnaires, one to each teacher.

Point out to teachers:

It is important to answer every question;

If they have questions, they should feel free to ask;

If they are uncertain, they should put what seems to them the most likely answer;

If they have particular comments, they should write them at the end of the questionnaire.

Collect all questionnaires, and check that they are complete.

Thank the teachers and principal for their time and co-operation.

INSTRUCTIONS TO OBSERVER

BEFORE OBSERVATION

1. Complete details at top of Record Sheet.

2. Ensure that you have information from the teacher about the aim of the lesson and the materials to be used.

DURING OBSERVATION

3. Write a **descriptive** account of what you observe during the lesson, using the Observation Guide and the information from the teacher to give focus to your observations.

4. Include in your account the actual words of the teacher and of learners which refer particularly to the use of materials.

5. Pay particular attention to the way in which the teacher uses materials. Note the purposes for which materials are used. (See Observation Guide). Note the social arrangements for the use of materials (See Observation Guide).

AFTER OBSERVATION

6. Make brief notes on the classroom environment. (See Observation Guide).

7. Write down your own comments on the use of materials in this lesson. Be very honest.

8. Transcribe information regarding .... and materials used to Record Sheet.

Use extra sheets of paper if necessary.

OBSERVATION GUIDE

PURPOSES FOR WHICH MATERIALS ARE USED

e.g. ...
To access prior knowledge
To introduce new knowledge
To bridge prior and new knowledge
To encourage discovery learning
To remind learners of information
To consolidate new knowledge
To keep learners quiet
To keep learners busy
ANY OTHER WHICH YOU MAY OBSERVE

SOCIAL ARRANGEMENTS FOR THE USE OF MATERIALS

e.g. ...
Teacher only (teacher demonstrates with learning materials)
Teacher and learners (teacher and all learners have materials)
Learners only (each individual learner)
Learners in pairs share materials
Learners in groups share materials
ANY OTHER WHICH YOU MAY OBSERVE

CLASSROOM ENVIRONMENT

e.g. ...
Physical condition of building (windows, roof, etc.)
Classroom furniture (mat, tables, cupboard, etc.)
Materials on walls and on display
Psychological climate (acceptance, warmth, etc.)
Peer relationships (friendly, co-operative, aggressive, etc.)
General attitudes to learning
ANY OTHER WHICH YOU MAY OBSERVE

CLASSROOM OBSERVATION
RECORD SHEET

School No. ..... Date .....

Teacher No. ..... Observation from ..... to ..... hours

Grade ..... Aim of lesson: .....

.....

Materials to be used: .....

.....

Description:.....

.....

.....

.....

.....

.....

APPENDIX F

TEACHER INTERVIEW GUIDELINES

The aim of the interview is to gain more insight into the teacher's perspective on the use of materials. The focus of the interview should be on the three areas listed below. The process of the interview is flexible. Some suggestions for accessing information are included.

1. **The teacher's beliefs about which learning materials are useful.**

   You used X in the lesson and/or You marked in the questionnaire that Y was important ...
   Tell me about other learning materials that you consider important ...

2. **The teacher's beliefs about how such learning materials can be used.**

   In what ways do you use X, Y, Z, etc ...?
   Are there other ways in which a teacher could use X, Y, Z ...?
   What might prevent you from using X, Y, Z, etc. differently?
   What might encourage you to use X, Y, Z, etc. differently?

3. **The teacher's beliefs about why learning materials are important.**

   How do you see materials influencing your student's learning?
   How do you see materials influencing your own teaching?

Useful phrases

Tell me about your experiences with using learning materials.
Tell me about the ways in which you find learning materials really useful.
Tell me about how you think learning materials can be used inappropriately.
How do you think that learning materials help students to learn?
What kind of learning materials help YOU to learn?
What kind of learning materials work best for teaching Literacy, Numeracy etc. (specific learning areas) in your classroom?
Can you tell me more about that?
Can you please explain in more detail?
I am not sure if I understood correctly, is this what you mean?
I need to write down some of this. Can you please wait a moment?

RECORD THE INTERVIEW IN WRITING AS FULLY AS POSSIBLE.