P.E.I. Research into Initial Reading Programmes

Final Report
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P.E.I. INITIAL READING RESEARCH PROJECT

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1. BACKGROUND, AIMS & OBJECTIVES

The overall aim of this research was to examine the effectiveness and transferability of the initial reading programme currently being implemented by Zama ECD centre, an independent,-community-based ECD and foundation phase centre in Daveyton in eastern Gauteng.

It is widely accepted that a major cause of the high failure rate amongst pupils in the foundation and intermediate phases is their low level of proficiency in English, the principal medium of instruction. This is a strong theme in educational research in South African schools, exemplified by the research of, amongst others, Rodseth (1978), Lanham (1982, 1986 &1990), Kroes & Walker (988), Van Rooyen (1990) and MacDonald (1990).

Zama Centre in Daveyton tackled the problem by adopting the basic tenets of the Montessori system, somewhat modified to accommodate the context of disadvantaged South African communities. The resulting approach emphasises learning by discovery and the development of learners' problem-solving skills, elements that are particularly compatible with the declared aims of Curriculum 2005. The language component of the Zama curriculum introduces learners directly to literacy in an unfamiliar language, English, rather than concentrating first on the development of mother-tongue literacy skills. To an extent this flies in the face of conventional wisdom. However, the school justifies its approach on the grounds that its learners are drawn from a multilingual community which places a higher value on English than on any other single language. Anecdotal evidence - such as the performance of Zama pupils in inter-school eistedfods and reading competitions, and impressions of visitors - indicated that the school achieved remarkable success with its approach. Informal observation further suggested that the confidence and competence of the Zama pupils was not the result of any privilege in their home or school environments but of the actual instructional programme being implemented in the school.

In 1997 the principal of Zama, Mrs Bukelwe Salema, undertook informal, school-based, in-service training of teachers from nearby public schools who had spontaneously expressed interest in the Zama programme.

This research examined the Zama approach to initial reading instruction and tested the hypothesis that it might serve as a model for an effective Foundation Phase reading programme in ordinary public schools.

Specific objectives of the research were:

i. To establish through a combination of quantitative and qualitative research:

- The nature and content of the Zama initial reading programme
- the effectiveness of that programme
- the key factors in its effectiveness
- whether and to what extent it can be transferred to ordinary public schools

ii. To build research capacity by training two intern-researchers in the techniques of qualitative and quantitative research.

2. RESEARCH DESIGN & RATIONALE

2.1 Basic Design

The research incorporated two strands:

i. A quantitative strand, consisting of communicative reading tests and an analysis of learners' discourse.

ii. A qualitative strand, comprising classroom observation and structured interviews with teachers.

Since the research was essentially a comparative study of different approaches to teaching initial reading, it was clear from the outset that it would have to be as objective as possible. Specific, empirical, classroom-derived information would be required. In recent years the trend in educational evaluation has generally been away from quantitative and towards qualitative methods because it is recognised that teaching and learning, like all human behaviour, cannot be objectively measured. On the other hand, exclusive reliance on qualitative methods - such as teacher interviews, opinion polls of experts, materials' critique and classroom observation - may produce a body of information rich in detail but somewhat undefined. It may be all flesh and no bone. It is also prone to subjective judgement. And it may leave unanswered that central question: *To what extent* do learners' competencies improve as a result of a particular methodology?

Quantitative techniques reduce problems of interpretation which bedevil qualitative methods. Brown (1988:5) points out that statistical research - such as tests, surveys and experimental studies - offers the advantages of being:

i) systematically structured with definite procedural rules.

ii) based on a logical, step-by-step pattern.

iii) based on tangible, quantifiable data.

iv) easily replicable, in that it should be easy to repeat the procedures.

v) reductive, in that it organises a plethora of data into recognisable patterns.

In much the same vein, Rea-Dickins (1994:78) acknowledges both the pedigree of testing and its continued place in educational evaluation:

> *Historically, testing has been used as a primary tool in evaluations which has given rise to a view in some quarters of evaluation as synonymous with testing... Tests continue to play a relevant role in evaluation, (and] in baseline studies , with much work favouring the use of tests as one of a wide variety of available evaluation procedures.*

With these considerations in mind, the researcher chose to combine the quantitative techniques of standardised reading tests and discourse analysis with the qualitative methods of classroom observation and structured interviews. In this way, a fair basis for comparison between experimental and control groups could be established.

The research instruments in the Zama project were:

- a communicative reading test
- discourse analysis of learner-talk
- a school data schedule
- a classroom observation schedule
- a teacher-interview schedule
- an observation schedule for teacher-training workshops

Initial quantitative research was conducted in February and March 1998, to establish baseline data on the pre-reading skills and reading proficiency of Grade 0, Grade 1 and Grade 2 learners in the target schools.

Qualitative research was carried out in July and August, using the schedules reproduced in *Appendices A, B and C,* followed by a second round of quantitative research in late August and September.

2.2 Dealing with Variables

The variables between experimental and control groups can never be fully identified, much less controlled. This is a perennial problem in educational - indeed, all social - research. In the words of Chu & Schramm (1967:98; original emphasis),

> *Complex behaviour has baffled learning theorists for years. A number of variables are clearly at work.. !n many cases these variables interact, and the total must be a great deal more complex than can be represented by*

> *the one-variable experiments that typically make up the research literature, no matter how clean and skilful they are.*
>
> *A good experiment of this kind that varies one characteristic against one or two others is highly useful, but its results must always be stated other things being equal. As we know from bitter experience, other things are not always equal.*

On the other hand, Chall (1970:52) points out that, when one is dealing with fairly large samples, the variables may cancel out:

> *In interpreting the test results of a class or school, the "best" and "worst" performances may balance out, and the average scores may represent the group's actual performance. (Original emphasis)*

This research involved relatively large samples - a total of 180 learners from 7 schools. So testing under these conditions could still serve:

i. to reduce the statistical significance of the variables amongst the testees, thus providing a basis for comparison between groups of pupils on various courses;
ii, to establish benchmarks of average proficiencies against which individual performances could be measured;
iii. to provide comparative data on cohorts of pupils for use by local education authorities in their management information systems.

2.3 The Instruments

As outlined in Section 7 below, the language and literacy component of Curriculum 2005 is based upon the communicative language teaching paradigm. For this reason, the two quantitative research instruments were designed to assess the learners' communicative language competence. These instruments were:

i. the communicative reading test

ii. the discourse analysis of transcripts of learner-talk

Very few standardised tests exist anywhere for measuring communicative EFL reading proficiency at the level of the foundation phase. Most of those currently available in South Africa were reviewed by the principal researcher in a previous publication (Duncan; 1994) and found wanting. A new option subsequently appeared in the form of the tests devised in 996 by Prof. Warwick Elley on behalf of READ, which wished to conduct research into the effectiveness of one of its reading programmes in Grade 2 and 3 classes in local schools. Although these tests have produced some interesting results, their content-validity is problematic in that they appear to consist entirely of

items in which the testee must match one of four simple words to a given picture or one of four pictures to a given word. The words are all common nouns or verbs, usually monosyllabic and phonetically regular. The reading skills required by such items fall far short of curriculum requirements for the foundation phase.

Given the absence of suitable standardised tests, the researcher resorted to instruments devised for an earlier research project which likewise looked at young black pupils in township and rural schools. From a large bank of test items, he assembled an instrument appropriate for the purposes of this research. Working from the hypothesis that reading is a holistic process, the researcher aimed to present each testee with a range of tasks which, in Alderson's (1990) words, would involve "the simultaneous and variable use of differing and overlapping skills". The tasks included:

- pairing words with minimal differences
- matching sentences with minimal differences
- matching words and pictures
- matching sentences and pictures
- comparing and contrasting sentences and pictures;
- organising jumbled sentences and paragraphs in the correct order
- matching words and defining phrases
- completing unfinished sentences with defining phrases or clauses

Since the concentration-span of young children is very limited (about seven minutes on a single item and forty minutes in total) it was necessary for the test to comprise several short items involving dissimilar tasks.

In order to enhance the communicative value of a test, Widdowson (1978:91) recommends the simultaneous use of two sources of information to the testee: a linguistic source, in the form of a set of sentences, and a non-linguistic source, in the form of a diagrammatic representation. This technique was repeatedly used in constructing the Zama tests

2.4 Trialling

Most of the test-items had already been used in a large-scale research project which involved some 6000 pupils in grades 1-4 (Duncan; 1995). Given this background, extensive re-trialling of individual items for this research was not considered necessary. Nevertheless, the first draft of the test, including a few new items, was trialled on twenty Grade 2 learners from one of the experimental schools (E2) in February 1998, before the commencement of the research proper. As a result, one item was rejected in toto and three others were somewhat modified. The full and final set of test items is reproduced as *Appendix D.*

2.5 Validity of the Tests

Heaton's simple definition of validity is perhaps also the clearest:

> *The validity of a test is the extent to which it measures what it is supposed to measure and nothing else (1988:159; original emphasis)*

Validity exists in various forms, none of which can be statistically measured, and testers therefore rely upon expert opinion for assessments of validity The validity of the test used in this research is posited on the following grounds:

i. The construct and content validities of items used were judged satisfactory by Len Lanham (Emeritus Professor of Linguistics at Rhodes University) and Dr Carol Macdonald (Senior Researcher, HSRC) at the time of their development in June 1992. In 1994 having reviewed the results produced by the tests constructed from these items after their extensive use, Lanham reiterated his view that they could serve as valid measures of reading attainment. At that time also, the validity of the tests was endorsed by Dr Pauline Rea-Dickins of Thames Valley University. Dr Rea-Dickins recommended that the tests be used more widely (1994:78-79) The opinions of Lanham, Macdonald and Rea-Dickins were solicited by the researcher as they are acknowledged experts in the field of ESL reading pedagogy and have had extensive experience of testing young learners in black schools.

ii. The face and washback validities - of vital importance within the communicative language teaching paradigm - are established by the fact that educators in research schools frequently requested permission to use the tests as teaching exercises for their classes.

iii. A comparison of the learner's discourse and their performance in the tests provides evidence of concurrent validity.

2.6 Reliability of the Tests

Another important criterion for test evaluation, reliability essentially means the extent to which the data produced by the instrument are consistent (Seliger & Shohamy; 1989;185). Quite how this principle can be applied to reading tests for young learners is still a subject for debate. Strang (1970:46) complains that

> *Evaluations of reading programs are still seriously lacking in reliability and in valid appraisal of reading, broadly conceived.*

In line with conventional wisdom, the construction of the tests used in this research emphasized validity over reliability.

It should be noted that the reliability of test scores can be estimated on the basis of a single test administration only if certain assumptions about the characteristics of the parts of the test are satisfied (Bachman;1990:177). Any split-half method, such as the Spearman-Brown or Guttman co-efficients, assumes that the two halves are equivalent and independent of each other. The Kuder-Richardson formulae assume that all the items of the test are equivalent and independent of each other. The test used in the Zama research does not match any of these criteria, inasmuch as its ten items are of increasing difficulty. Therefore, its reliability can only be established through a test-retest procedure. The problem then immediately arises as to whether the groups of testees used in each testing episode are comparable. This problem was overcome by dividing all fifty learners in a particular Grade 2 class into five random groups and testing them on the same day. The results were as follows:

Group	*Number of Learners*	*Total Score*	*Mean Score*
1	11	86	7.8
2	11	91	8.2
3	8	62	7.8
4	10	88	8.8

Since the groups may be considered to be comparable, the closeness of the mean scores suggests an acceptable degree of reliability on the part of the test.

2.7 Discourse Analysis

Developed since the mid-1970s, discourse analysis is a relative newcomer to the language researcher's toolbox. It currently enjoys considerable popularity in the research literature. Standard practice for ESL researchers using discourse analysis techniques is to limit themselves to specific areas of discourse, such as teacher feedback or learner responses (Chaudron; 1988:44). A variety of analytical units have been adopted, usually based upon linguistic structure (such as a main clause and any associated subordinate clauses) or communicative function (such as requests for clarification, comprehension checks, prompts and so on). The most favoured unit for oral communication is the *communication unit,* or *C-unit,* which comprises any independent grammatical predication or meaningful utterance. In oral, as opposed to written, language this would include elliptical answers to questions and expansion statements. Thus, in the following hypothetical conversation, all the learner's responses are C-units although none is syntactically complete:

Teacher: Who has seen an elephant?
Learner: Me.
Teacher: Where?
Learner: At the zoo.
Teacher: What was it doing?

Learner: Eating peanuts... From our hands.

The Zama research included an analysis of the verbal interaction between small groups of pupils and a researcher. Picture cards were used (reproduced as Appendix E) as stimulus material. A group of five or six learners was given picture-story cards, and given a few minutes to discuss the story amongst themselves in whatever language they choose. Then each learner in turn was asked to describe to the researcher what was happening in his/her picture. The researcher usually had to prompt the learner with simple questions. Working like this in groups mitigated the anxiety which young children may feel when being questioned by an adult stranger. It also allows less-competent English speakers to "borrow" language from their peers.

The learners' language was recorded for analysis in terms of four criteria:

i. Number of C-units: This included any relevant and situationally-correct communicative utterance. Incorrect responses to questions were discounted, even when they were grammatically or syntactically correct, as were repetition, irrelevant interjections and garbled utterances.

ii. Noun count: Each noun used in a learner's discourse was counted once. Pronouns and proper nouns (such as friends' names) were not counted.

iii. Verb count: Each verb was counted once. No credit was given for repetition of a verb.

iv. Number of different tenses used: The number of different tenses correctly used was counted.

The figures cited in Section 10 show the average number of C-units, nouns, verbs and different tenses used by learners during a typical speech-episode lasting two minutes. Viewed together, they present a quantifiable profile of the group's oral English competence. Since oral/aural competence is generally thought to precede reading competence, this provides a useful backdrop against which to view the results of the reading test.

2.8 The Experimental and Control Groups

The research is essentially a comparison of schools using the Zama approach to initial ESL reading with ordinary public schools of a similar socio-economic profile. Zama school itself is inevitably the purest exponent of its own methodology and therefore stands at the centre of the research. In the tabulations of data, Zama is designated E1. Two other schools in which the Zama approach is being piloted were also found: E2, a typical public primary school in Daveyton, and E3 a community-based ECD centre in neighbouring Mthwathwa.

Four control schools were used:

- Two typical Daveyton primary schools, fairly close to El, designated C1 and C2
- Another community ECD centre in Daveyton, designated C3
- A multiracial ECD centre in suburban Benoni, staffed entirely by white, first-language English speakers, which was chosen as a means of comparing learners in the other schools with their counterparts in a more privileged environment. This school is designated C4.

Basic descriptive information about these schools, their physical environments and socio-economic contexts are provided in *Appendix A.* On the basis of this information, the researchers posit that the schools are comparable as follows:

- E1 and E2 with C1 and C2
- E3 with C3.

C4 differs from the others in almost every respect. Its enrollment is multiracial (but predominantly white) where theirs are all black. It is situated in a formerly-white, middle-class suburb and caters mainly to that market where they are all in townships, usually towards the lower end of the socio-economic spectrum. It is entirely staffed by white, mother-tongue speakers of English while their staff are entirely black, second-language speakers of English. The researchers hoped that, precisely because of these differences, it might provide a useful benchmark against which to measure both the experimental and the control schools. In 1997, educators at C4 had been in contact with some of the schools involved in the research, with a view to an exchange of professional experience. For this reason, C4 was included in the research project. However, that initial interest was not sustained and, in the event, the educators at C4 were less co-operative than those in the other research schools. However, data obtained from C4 still has some comparative value.

The following groups were identified for testing:

i. In E1, 4 groups: 5 year-olds (in the equivalent of a reception year class)
6 year-olds
7 year-olds
8 year-olds

In keeping with Montessori principles, these learners are not divided into classes by age or academic achievement. Each learner is allowed to progress at his/her own pace. A rough division exists between "older", "younger" and "very young" groups, which is as much the result of the learners' own pattern of association as an organised class system.

ii. In E2, 3 groups, all in Gr2: 6 year-olds 7 year-olds 8 year-olds

Grade 1 learners in this school could not be tested as their teachers had withdrawn from the Zama in-service programme in order to focus on the training being provided by GDE Curriculum Implementers in support of Curriculum 2000.

iii. In E3, 1 reception-year group of 5 year-olds

iv. In C1, 2 groups: 6 year-olds in Gr 1

7-8 year-olds in Gr 2

v. In C2, 4 groups: 6 year-olds in Gr 1

7 year-olds in Gr 2

vi. In C3, 1 reception-year group of 5 year-olds

vii. In C4, 1 reception-year group of 5 year-olds

2.9 Selecting Representative Samples of Pupils

Learners to be tested were selected by the researchers themselves. In some cases, it was possible to test all the learners in a given target group - all the learners in the reception-year classes at E3, C3 and C4, for example, or all the six year olds in the Grade 1 class. Where samples had to be selected, the researchers simply chose children at random from the larger group. Although teachers were informed in advance of the dates of the researchers' arrival, perusal of class registers suggested that no attempts were made to "stack the deck" by dismissing weak learners.

2.10 Administering the Tests and Collecting Samples of Discourse

The tests were administered to the learners in groups of seven children to ten at a time. At least two of the researchers were present at every testing episode, so that close supervision could be maintained. Teachers were not usually present during the testing and, when they were, were not permitted to take any active part in administering the test. All testing was conducted on the school premises in quiet rooms made available by the principals.

In order to minimize the effect of fatigue on the learners' performance (bearing in mind that most of the testees were very young), all the tests were administered between 09h00 and 13h00.

Instructions for the tests were given almost entirely in English, though a few departures from this were allowed when learners appeared confused. The learners tackled one item at a time, with breaks in between for further instruction and guidance. Each item consists of seven questions. The first two questions were done by the tester with the learners, as examples. This done, the learners attempted to complete the item by themselves.

Once the tests had been administered, the learners were redivided into groups of five or six and given the picture-story cards. They were given a few minutes to discuss the story amongst themselves and then, seated in a circle with the researcher, asked to explain their pictures one after the other. Their speech was recorded verbatim on audio tape for later transcription and analysis.

2.11 Marking

All the tests were marked by a single research assistant under the guidance of the chief researcher, who also moderated the papers. All the transcripts of the learners' discourse were analysed by the principal researcher.

2.12 What Was Being Evaluated?

It is worth reiterating that the research was intended to compare the effectiveness of ESL reading programmes, not in terms of their theoretical content but as they were actually *being* implemented in schools. Implementation comprises many elements, which cannot be isolated and assessed independently. Chall (1970:63) points out that this is a common problem in educational research:

> *Quite often innovation means more than the use of a new book or approach to instructing children. It mean a long series of new things, any one of which may contribute to improved learning... Multiplicity of new elements is only one of the problems of evaluating innovative programs.*

In this research, the comparison was between programmes in action, not the contents of books. No attempt was made to distinguish between the effects of sub-elements such as teacher activities or the materials themselves. The focus was on the outcomes of the instructional method as a whole.

3. THE RESEARCH TEAM

The principal researcher was Mr Ken Duncan, a former ESL teacher with ten years of experience in educational research. He was assisted by:

• Ms Thuli Nene, a former primary maths teacher with several years of experience in township and rural schools. Ms Nene now works as an educational advisor to the SABC, with particular responsibility for radio and TV programmes aimed at foundation phase learners.

• Mrs Rita Tandy, an experienced ECD practitioner who also works with SABC educational TV.

Mesdames Nene and Tandy had a keen interest in classroom-based research and hoped to extend their skills and experience in this field through the Zama project. Under the guidance of the principal researcher, they participated in the trialling of all the research instruments and have since conducted the bulk of the field work. After each field episode, they have met with the principal researcher to discuss their experiences and findings. They also contributed towards and participated in the workshop at which educators in the research schools were kept informed of progress.

4. SOME ETHICAL CONSIDERATIONS

All research must be governed by a code of ethics. This is especially true of research involving children. The guiding principle, first and foremost, is that the research must do no harm.

From this master principle, Seliger & Shohamy (1989:196) extrapolate the following guidelines:

i. The researcher must protect the dignity and welfare of the participants.
ii. The individual's freedom to decline participation must be respected.
iii. Confidentiality of research data must be maintained.
iv. The researcher must guard against violation or invasion of privacy.
v. The responsibility for maintaining ethical standards remains with the researcher, who is also responsible for the actions of assistants.
vi. Individuals should not be specifically identified with their data, unless it is necessary and they have given their consent.
vii. The researcher should make every effort to minimize potential risk to subjects.

Every effort was made to observe these proper rules of conduct. The large numbers of learners involved made it impractical to try to obtain permission to participate from each and every parent. However, the principal researcher felt that the Initial Reading Project research was sufficiently akin to normal school activities for the principals to grant permission on the parents' behalf - which they did. To spare the children anxiety, the word "test" was never used in the their presence. The whole exercise was presented as a fun activity in which songs were sung, games were played, tests were written and sweets were distributed. The researchers are not aware of any particular stress being caused to any learner. Indeed, when the researchers returned to schools in the second

and subsequent visits, they were invariably besieged by children who wished to participate in the next round of activities.

5. THE MONTESSORI METHOD

Zama describes itself as a Montessori school - that is, its curriculum is based upon the precepts and practices of Dr Maria Montessori (1870-1953), Italy's first woman doctor of medicine and a social and educational reformer. Montessori's clinical work with retarded children stimulated in her a profound scientific and humanistic interest in how children learn, and led her to establish the first Montessori school in Rome in 1907 at which she developed her theories of education. From there, the "Montessori method" has spread internationally and exercised a significant influence on the theory and practice of early childhood education. As a biographer has pointed out, Montessori passes with distinction the test for the real reformer - many of her ideas have become common currency in early childhood education the world over (Kramer; 1976:373). An incomplete selection of Montessori ideas that have found their way into the mainstream of educational practice includes:

- a view of the child as being different from, and not just a smaller edition of, the adult
- the notion that children learn through play and therefore require access to appropriate educational toys and games that stimulate early learning
- the "open classroom" (long resisted but now much favoured in foundation-phase classes in many countries) in which children are grouped by interest and ability rather than by age or gender
- the judgment that real learning involves the ability to do things for oneself rather than passively absorb a corpus of knowledge
- an endorsement of the right of every child to develop at his/her own pace
- the recognition of the child's natural desire to learn, which is best served by making available a graded series of challenging but soluble tasks and problems
- the realisation that imposing immobility and silence on young children inhibits learning and stifles initiative

Few today would challenge these tenets but before Montessori they would have been considered revolutionary. Montessori's certainly inspired and informed many other educational luminaries - most notably Piaget, who was for years the president of the Montessori Association in Switzerland.

In her later life, Montessori became very prescriptive about what she considered to be the ideal implementation of her approach. This led to a series of schisms amongst her followers and the isolation of the organised Montessori movement from later developments in the wider world of educational research. Nevertheless, the basic principles which Montessori articulated have retained their value and innumerable schools in South Africa and elsewhere claim to practise to the Montessori approach to

varying degrees. For the purposes of this research, it is useful to review the main characteristics of the Montessori method.

Central to Montessori's whole approach were her beliefs that:

1. Whereas the adult has reached a plateau in his/her physical and mental development, the child is continuously in the process of transformation and metamorphosis. No two children are completely alike and no single child is the same today as yesterday or tomorrow. This state of flux cannot be accommodated by rigid, programmed instruction. "Class teaching" can at best address the needs of one child at a time and is therefore more an obstacle than an aid to learning. The only solution is to equip children with the means to educate themselves at their own pace and give them the freedom to do it.

2. Learning is a process performed only by the learner. No human can be educated by anybody else. One learns by oneself or not at all. Montessori was emphatic about this, and it is a cardinal principle in the Montessori method.

3. Children are so made that, given the right conditions, they prefer educating themselves to almost any other occupation (Fisher; 1966:21). By activating this desire and giving it scope to operate, the teacher does away with the need for coercion to work and even for punishment. The actively learning child achieves a degree of self-discipline superior to anything imposed from outside. The competitive spirit also becomes redundant, to be replaced with a desire for co-operation, since the free child quickly realises that he benefits himself by collaborating with his fellows.

4. Education should address the whole person. It properly develops the full complement of the child's intellectual, emotional, creative and social faculties.

5. The teacher should intervene as little as possible in the child's work. The best results are achieved when the teacher works indirectly through a prepared environment. Montessori actually preferred the term "directress" to "teacher", since she felt the former better expressed the facilitating role a good teacher should play.

6. Children pass through "sensitive periods" during which they are especially open to learning by new experiences. For example, language development takes place in a series of punctuated bursts of learning as the child becomes spontaneously aware of phonemes, then of words, of syntax and finally of adult grammar. Part of the art of teaching lies in being able to identify these sensitive periods - evidence of the child's inner need for new knowledge - and provide the appropriate stimulus material that will lead to learning.

Building upon these insights, Montessori developed techniques and materials which, if presented in the prescribed order, would stimulate the child's natural physiological and psychological development. According to Montessori, this development had three parts: motor education, sensory education and language. The care and management of the environment itself would afford the child the principal means of motor education, while sensory education and language development would be taken care of by the materials (Montessori; 1920:18).

The ideal Montessori environment consists of a "children's house" - preferably real but simulated if necessary - consisting of a few rooms and a garden. The central room is the children's working area in which should be found a cupboard containing the didactic materials and a chest of drawers in which the children's work is individually stowed. There are also tables, chairs, mats, workboards and so on. Another room is set aside as a "club room" in which the children amuse themselves by means of conversation, games, music, etc. The "dressing room" is a combination of washroom and wardrobe. Everything in these rooms should be adapted for use by children, not adults, and the children are themselves responsible for the care of the "house".

The materials - innovative enough when Montessori first devised them but now stock-in-trade for almost any elementary classroom - include:

- frames for lacing, zipping and buttoning
- boards with insets of various shapes and patterns
- "Hanoi towers", Le. solid discs of varying diameter that can be set upon one another to make a tall cone.
- cubes, prisms and rods of assorted sizes and colours
- sets of geometric solids: prisms, pyramids, spheres, cylinders, cones, etc
- bells, boards and castanets for making percussion music
- alphabet cards on which are pasted sandpaper letters
- sandpaper and cardboard-cutout figures
- sets of movable numerals, usually made of sandpaper or cardboard

From this list it should be evident that Montessori's main focus was on the very young child, typically 3-5 years old. This age-group remains the favourite of traditional Montessori schools, but there is a growing interest in the application of Montessori methods to 6-9 and even 9-12 year-olds.

Montessori's own writings deal only briefly with the teaching of the child's first language, and not at all with second or foreign language teaching. This is because she advocated (as do many experts today) education through the medium of the child's mother tongue. The adaptation of the Montessori approach to a situation in which learning takes place through the medium of an unfamiliar language is a significant innovation on the part of Zama school. Insofar as Montessori does describe an approach to language teaching and learning, it is essentially training in aural discrimination, combined with vocabulary building through the application of labels to

new objects, feelings and experiences. Given the current rejection of formal grammar lessons by many language teachers, it is perhaps rather surprising to note that Montessori believed that children over the age of about 5 years have an innate interest in the grammar of their language and she encouraged teachers to draw attention to grammar at every natural opportunity (Standing; 1962:39). Beyond that, reading and writing are taught by the time-honoured method of putting sounds to letters and then building them into syllables, words and, eventually, sentences.

To the modern reader, Montessori's writings are a curious mix of the innovative and the old-fashioned. She might be described as a primitive constructivist, but it must be emphasised that later, more rigorous research in education and psychology has repeatedly vindicated many of her ideas (Kramer; 1976: 376). Hopefully, the Zama research project will add a little to our understanding of how some tried and tested Montessori's ideas may be applied in the context of South African public schools.

6. THE MONTESSORI METHOD AS APPLIED IN THE EXPERIMENTAL SCHOOLS

One of the experimental schools, E1, an independent school, has attempted to apply the Montessori approach in its entirety and it is to there that one must look for the best examples of the approach in practice. The other experimental schools - being bound by the restraints placed on ordinary public schools - have adopted a much more watered down approach, in which only a few Montessori principles and practices are evident to any degree. They can therefore be described as "Montessori-influenced schools".

As applied in all the experimental schools, the Montessori approach to the teaching of literacy is heavily based on phonics. The learner is first introduced to a set of large sandpaper letters, a few at a time, and taught their sounds. As soon as a few sound-letter correspondences have been mastered, the learner is encouraged to form simple words of her own, without too much regard for correct spelling at this stage. In this way, writing (in the sense of word-composition) and reading (in the sense of decoding) are taught in parallel. The learner's sense of accomplishment in creating and reading her own one-or two-word texts is believed to have a powerful motivating effect upon her, and sets a pattern of self-confident, semi-autonomous learning that is continued in all that follows.

As soon as the learner has mastered all the single letters and sounds of this "movable alphabet", she is introduced to digraphs and trigraphs (i.e. two- and three-letter combinations making a single sound, such as "th" and "tch" in English) and to homophones (i.e. different spellings of the same sound, such as "oi" and "oy" in English). At about the same time, the learner is shown how to construct short sentences by using colour-coded flashcards featuring different parts of speech, such as nouns, verbs and adjectives. Thus, some sense of the underlying structure of the target language is inculcated into the learner. For instance, the child learns that, in English, a doing-word (verb: red card) is always preceded by the person or thing that does the

action (subject noun or pronoun: blue card) and may be followed by a describing word (adverb: orange card) that tells you more about how it was done. In all of this, the learner is continually encouraged to experiment on her own with various combinations and permutations of words and letters, reading them back to herself or to the teacher to ascertain whether they make sense. A host of home-made language drills and games accompany this process, ensuring extensive practice for the learner.

"Command cards" make their appearance at this stage and continue in use thereafter. These are flashcards on which are written instructions for the learner to carry out, ranging from simple to complex sequences. An elementary-level card might simply say: "Sit down". An intermediate-level card might contain the following sequence:

"Go to your table with your eyes shut. Touch it as though you recognise it. Open your eyes and rub your table with the tips of your fingers, bearing down as hard as you can."

An advanced-level card might contain directions for a simple science experiment in which the learner puts different substances into tumblers of water in order to compare their solubility. Such a card would typically feature subject-specific language - in this case the comparative scientific terms "dissolved", "saturated" and "suspended". Thus, the learners are given early and continuous exposure to increasingly complex instructional text.

Although the learners are allowed considerable latitude in choosing their daily activities, most texts and tasks relate one or more of five recurring themes - or "Great Stories" as they are called - namely:

- the formation of the earth
- the origins of life
- the coming of Man
- the story of maths
- the story of writing

In this way, literacy and numeracy are integrated with history, geography and general world-knowledge. Learners quickly acquire a remarkable vocabulary for these subjects: the visitor to the school hears six- and seven-year olds talking amongst themselves about "isosceles triangles", "tsunamis" and "invertebrates". Their acquisition of this sort of cognitive-academic language actually seems at times to run ahead of their basic communicative language for everyday things, in that a child who can correctly define and identify on a map geographic formations like islands, isthmuses and inland deltas may not be able to distinguish between legs and feet, or arms and hands, as labels for a diagram of the human body.

The educators use only English with the learners, except for the occasional clarification through the mother tongue of an unfamiliar term. All classroom texts are in English and

their volume and range are impressive, even daunting. In terms of language teaching theory, therefore, immersion and saturation are evidently key principles of this adapted Montessori approach.

In the other two experimental schools, E2 and E3, these same basic principles could be discerned, though in a much diluted form. In 1997, the educators of these schools had, of their own initiative, begun attending afternoon INSET workshops run by the principal of El for her own staff, in search of useful ideas for classroom practice. Persuaded that the Montessori approach as practised at El had something to offer, they adopted some of its principles and practices in their own classes. Their application of the approach has been somewhat idiosyncratic, with each educator acting according to her own lights. Periodic workshops at El, usually held over weekends or over a number of afternoons, have served to extend the educators' interest in and knowledge of the new approach. the research team attended one of the weekend workshops and a report on its content is presented as *Appendix F.*

7. LANGUAGE COMPETENCES REQUIRED BY CURRICULUM 2005

According to the Department of Education's 1997 discussion document, *Curriculum 2005: Specific Outcomes, Assessment Criteria & Range Statements (Grades 1-9),* some of the key principles guiding curriculum development for the Foundation Phase are (2.1.1):

i. integration
ii. holistic development
iii. a child-orientated approach
iv. critical and creative thinking
v. progression
vi. an anti-bias approach

Maria Montessori would have applauded.

The specific outcomes in the area of Language, Literacy and Communication are:

i. Learners make and negotiate meaning and understanding
ii. Learners show critical awareness of language usage
iii. Learners respond to the aesthetic, affective, cultural and social values in texts
iv. Learners access, possess and use information from a variety of sources and situations
v. Learners understand, know and apply language structures and conventions in context
vi. Learners use appropriate language for learning
vii. Learners use appropriate communication strategies for specific purposes and situations

Each of these outcomes is further defined and elucidated by range statements and assessment criteria, reproduced as *Appendix G.*

8. ANALYSIS OF INTERVIEWS WITH EDUCATORS

A total of 14 teachers were interviewed, spread across the project schools as follows:

i. Experimental Schools:

- **E1** - 3 educators
- **E2** - 4 educators
- **E3** - 1 ECD practitioner

ii. Control Schools:

- **C1** - I educator
- **C2** - 4 educators
- **C3** - 1 ECD practitioner

A summary of their responses is presented as *Appendix B.* These interviews highlighted some significant differences between the methodology and underlying philosophy of educators at the experimental schools, and those of the educators at the control schools. The similarities and differences between the two groups are discussed below under the headings of the questions themselves.

A. Personal Information

i. What are your professional qualifications?

With the exception of Ell, there were no major differences between the qualifications of educators in the experimental and control schools. All but one of the educators in the public schools had a PTD - the other a PTC. The practitioners in the ECD centres had all had educare training of some sort, mostly from NGOs, but only one practitioner, in E3, had a recognised qualification in the ECD field.

The educators at El were unusual in that only two of the five teaching staff - the principal and one other - had professional training as educators, though not in the foundation phase. One member of staff did not have a matric. Technically, this made the staff at El the most *underqualified* group of all, yet their classroom practice was

arguably the most progressive of the groups observed and their learners' performance outshone all others.

ii. What length of professional experience do you have?

Length of experience was not a significant point of difference between the educators at the experimental and the control schools. Average experience as an educator at the experimental schools was slightly lower than in the control schools - 9,25 years as opposed to 13,2 years - but this was offset by their longer experience in that particular grade, in which the experimental school educators had served an average of 5,3 years as against the 2,2 years of the control school educators.

The practitioner in the experimental ECD centre who was interviewed had 5 years' experience, while her counterpart in the control ECD centre had 8 years' experience.

iii. Have you received any INSET in the last two years?:

Here, too, educators at experimental and control schools were fairly evenly matched. During the past eighteen months, all the public school educators had attended OBE workshops run by GDE personnel, typically comprising several afternoons spread over a month, Even Grade 2 educators had attended these workshops as they expected to have to implement Curriculum 2005 in either Grade 1 or Grade 2 in the foreseeable future. In addition, all of them had received informal INSET from one or other NGO in the implementation of a particular approach to initial literacy instruction. Typically, this consisted of four or five days' worth of contact training - usually spread over several afternoons - and, in a few cases, a follow-up visit in the classroom. Both the NGOs involved - the Molteno Project and St Andrews' Outreach - have respectable credentials but the comparative quality of their training, and its real effects on classroom practice, cannot be judged in this case.

Neither of the practitioners at the ECD centres had had any INSET during the past two years.

In addition to the above, educators at the experimental schools had received training and support from the principal of E1 in the application of Montessori principles and practices. For the staff of E1 itself, this amounted to ongoing direction which unequivocally determines the entire character and curriculum of the school. For the educators in the other experimental schools, it was much more distant, irregular and attenuated. Most of them had attended just four or five day-long workshops in the past eighteen months or so, with perhaps a follow-up visit in the classroom. Considering how little actual training the educators in the experimental schools had received, it is remarkable that their teaching practice has been influenced even to the limited extent that it has.

B. Professional Views & Practice

i. Do you use a particular reading scheme or programme in your English lessons?

All but three of the educators interviewed answered "No" to this question. This and classroom observation made it clear that these educators did not feel bound to any particular text or reading scheme, regardless of any exhortation to do so that they may receive from purveyors of proprietary courses. On the other hand, the observation lessons of the three educators who claimed to use a particular scheme did not provide any evidence that those schemes were being systematically implemented.

This raises a methodological issue which goes beyond the scope of this research but has important implications for educator training and development. Many educators seem to be quite unaware of the theoretical underpinnings of the methods they use. This leads them to mix elements of fundamentally incompatible methods. An eclectic methodology is certainly defensible, and perhaps even desirable, if it results in the systematic use of a broad range of different but compatible strategies. However, what is commonly presented as eclecticism seems in many instances to be no more than a random, unprincipled combination of incongruous teaching techniques.

ii. When do you teach reading in English?

There was a considerable range of responses to this question, though the statement "In most English lessons" predominated at both experimental and control schools.

Educators at E1 claimed to teach English reading in every lesson of every day and observation of their programme proved that this was no idle boast. The school follows the Montessori method as described in Section 6 of this report quite rigorously, with all its attendant emphasis on reading. All texts are in English and the educators use English almost exclusively in the classroom, though learners (especially the younger ones) were often heard to mix English with the mother tongue in communicating with one another. The result for the learners is massive exposure to English, in both the written and the spoken word. This must be considered an important contributing factor to their remarkable competence in English.

At the other extreme, one educator at C2 said that she taught English reading just once a week, although some English is taught daily.

Generally speaking, educators at experimental schools seemed to give their learners more *individual* reading tasks than their counterparts in the control schools. This may well be a significant difference between the two groups.

iii. What type of books do your learners read in their English lessons?.

A great variety of books were cited in response to this question - even by educators within a school. Apart from textbooks, many educators seemed to have assembled a considerable amount of enrichment reading material for their learners - including children's library books, readers from other language courses, magazines and comics.

The experimental schools were the only ones to include teacher-generated and learner-generated texts in their classroom reading material.

iv. Do you teach reading mostly by look-and-say or by phonics (letters and sounds)?

In keeping with established Montessori practice, educators in the experimental schools consistently placed phonics at the core of their reading programme. Educators in the control schools, on the other hand, were almost equally divided between phonics and look-and-say. In practice, most educators were seen to use a bit of both methods, but the Montessori-trained educators in the experimental schools used phonics first and foremost, while educators in the control schools - even those who used the *Letterland* materials, which are based on a phonics approach - were not as systematic.

This was another important pedagogical distinction between the experimental and control schools, which was confirmed by classroom observation.

v. Do you conduct specific reading lessons? If so, how?

At both the experimental and the control schools, educators were almost evenly divided amongst themselves in their answers to this question - but for very different reasons. Educators at the experimental schools who answered "No" went on to explain that reading was part of most classroom activities - a claim largely borne out by classroom observation. Their colleagues who answered "Yes" usually meant that they included a distinct reading component in their English lessons, rather than that they set aside a specific period for nothing but reading.

Educators in the control schools were likewise divided between those who claimed to conduct specific reading lessons and those who said they integrated reading into their daily English lessons. Subsequent classroom observation indicated that, in fact, very little time was being spent on reading and almost none on individual reading.

This discovery raises a second far-reaching pedagogical issue. Over the past decade or so, the pre- and in-service training of educators has tended to emphasise the integration of the four language skills (speaking, listening, reading and writing) into every language lesson. Thus, a discrete reading lesson no longer really exists in many

schools. Instead, reading episodes - sometimes planned, sometimes not - occur at intervals throughout the lesson. These episodes, which may or may not include formal instruction, are typically very short and heavily subordinated to the overall content of the whole lesson. As a result, the teaching of reading is in many instances a rather haphazard affair, difficult to excise from the continuous flow of events in the classroom.

While the international trend has also been towards integrated language lessons, the researchers' understanding is that, in practice, formal reading instruction still merits a place of its own in the foundation phase curriculum. South African schools seem almost unique in the extent to which they have submerged initial reading instruction in the general melee of junior primary classroom activities. This may have more to do with prevailing inadequacies in educator-competence and classroom management than with pedagogical theory.

vi. How do you introduce new vocabulary in reading?

With the telling exception of El, all the educators at experimental and control schools alike said that they conveyed the meaning of new words by demonstration, by showing pictures, by dramatization or by explanation in the mother tongue. That is, they all relied on the transmission of *meaning* from educator to learner.

El educators, by contrast, said that their learners first had to try to deduce the meaning of new words from context or from accompanying illustrations. For them, the meaning of the text is something that the reader must work out for himself. Only as a last resort would the educator explain the unfamiliar term, and then only if an understanding of the whole text demanded it. Given the complexity and the sheer volume of text that E1 learners are expected to read, this laissez faire approach is probably a necessity. Without it, the educators would spend all their time explaining the meaning of new words. But it must also be said that there are sound pedagogical reasons for developing text-deciphering and word-attack skills in young readers. The unusual degree to which independence is early fostered in E1 learners - as evidenced by just this sort of situation - may help to explain their reading success even in comparison with learners at the other experimental schools.

vii. Before the learners start reading a book in class, do you do any pre-reading activities with them? If so, what?

All but one of the educators in the experimental schools answered "Yes" to this question, while all but one of the educators in the control schools answered "No". These mirror-image responses illustrate a fundamental difference between the two groups not only in the teaching of reading but in their overall approach to language teaching and learning. As a group, educators in the experimental schools were far

more inclined than their counterparts in the control schools to set up individual tasks for their learners, prime their mental pumps (so to speak) and then let them get on with the task by themselves. They were, in short, more learner-centred. To the extent that they followed this strategy of introducing the task, preparing the learners to engage with it and then stepping out of the learner's way, they encouraged the development of the learners' self-confidence and intellectual autonomy.

viii. Do you let the learners read aloud as a group (chorusing)? Why/ Why not? Most educators at both experimental and control schools considered chorusing to be of limited educational value. However, most were prepared to use it occasionally for reasons which, to the researchers at least, seemed somewhat spurious - such as `enabling the learners to helping one another' or 'helping the weaker ones to become more confident'.

The E1 educators were firmly against chorusing. In their view, mass group activities do not encourage individual learning.

ix. Do you let the learners read aloud individually to you or one another? Why/ Why not?

There was almost complete consensus on this one. All but one of the educators interviewed agreed that letting the learners read aloud individually builds their confidence and motivation to read. It was also seen as the best way to gauge their reading proficiency.

x. Do you let the learners read silently by themselves in class? Why / Why not?

All but one of the educators in the experimental schools and most of the educators in the control schools answered "Yes" to this question. The majority view was that silent reading develops the learners' ability to decode text for themselves, improves concentration and builds self-confidence. The dissenters did not contest this assertion but merely felt that their learners were not yet proficient enough as readers to manage on their own.

xi. Do you ever read aloud to the learners? Why / Why not?

An interesting division arose from this question - not between the experimental and control schools but between E1 and all the others. The E1 educators alone answered "No" to this question, explaining that they want the learners to find out things for themselves. All other educators answered "Yes" and supported this answer with a

variety of reasons, including: "it develops their concentration and listening skills", "I can demonstrate proper pronunciation and tone of voice" and "it encourages the children to bring their own books to school for us all to read".

xii. Do you do any post-reading activities with the learners? If so, what sort?

Almost all the educators claimed to do post-reading activities with their learners, usually involving comprehension questions, dramatizing or drawing episodes from the story that was read or language exercises based on the text. Some educators seemed to be more inclined towards creative activities than others, but this was not related to their being in an experimental or a control school, and all the examples cited represented good educational practice.

xiii. What sort of records do you keep of the learners' reading progress?

Once again, E1 stood apart from the rest. Records there are intended to indicate the learner's overall performance on a series of graded tasks involving the integrated use of language, mathematical, logical-deductive and referencing skills. No records are kept of progress in "discrete" skills like reading and writing. This reflects the Montessori philosophy of focusing on the development of the whole intellect - indeed the whole person - rather than one academic subject at a time.

Virtually all the other educators said that they kept individual records of one sort or another on learners' progress, though at experimental and control schools alike most were disturbingly vague about just what they thought they were measuring, and how.

xiv. How would you deal with the following reading problems on the part of learners:

- *Mixing up letters*
- *Reading one word at a time and so losing the* meaning *of the sentence*
- *Inadequate vocabulary*
- *Inadequate background knowledge*
- *Missing out words or putting in words*

The comments here were very varied and are worth reading in their summarised form in *Appendix B.*

In essence, they suggest that most educators rely heavily on frequent and regular *practice* to overcome reading difficulties. The main difference seems simply to be that some educators make that practice as varied and interesting as possible, while others

make it boring and repetitive. In this respect, educators in the experimental schools had an advantage over their counterparts in the control schools. An integral part of the Montessori method is the use of a series of letter- and word-recognition activities, including sandpaper letters, a movable alphabet and an "I-spy" game. The educator who employs these devices will certainly make her early reading lessons reasonably lively and engaging for the learners. It must be said that educators in the experimental schools did not always do justice to these, and other, Montessori methods, while educators in the control schools had some very good ideas of their own. On the whole, however, the Montessori-influenced educators in the experimental schools evinced a stronger sense of using a variety of remedial activities systematically than did educators in the control schools.

xv. Any other comments on the teaching of reading?

The comments offered in response to this question were not particularly illuminating, perhaps because the questionnaire had already covered most of the salient points. Many educators highlighted the difficulties which young black children face in learning to read English, a foreign language with a phonetic system quite different from their own. Most, too, emphasised the importance of praise in motivating the learner to persevere in the face of setbacks. On an encouraging note, several educators noted that learners find great satisfaction in mastering the intricacies of reading English.

8. ANALYSIS OF CLASSROOM OBSERVATIONS

The 14 educators who were interviewed were also observed conducting an English lesson with one of the target groups in their classrooms. In each case, an entire lesson was observed, usually lasting an hour or longer and in no case less than 40 minutes.

A summary of the researchers' observations is presented as *Appendix C.* Like the interviews, these observation sessions were extremely illuminating. They are discussed below under the headings used in the observation schedule.

A. Educator & Class Data

This section repeated some of the data on the educators' qualifications and experience that was captured as part of the educator interview schedule, with the same conclusions being drawn.

Class-sizes were generally large, particularly in the experimental schools where five classes comprised 50 or more learners as opposed to only one such class in a control school. Two experimental school classes and three control school classes comprised

40-49 learners. Two classes in the control schools had 30-39 learners. One experimental class consisted of 22 learners.

The seating of the learners in the classroom hinted at the methodological differences between the educators. None of the experimental-school educators sat their learners in rows, whereas two of the control-school teachers did so. Three of the control-school educators and one experiment-school educator had organised their learners into ability groups, while one educator from each camp allowed her learners to arrange themselves into social groups. The five remaining experimental-school educators allowed free seating and free-movement throughout the lesson. In all the E1 and two of the E2 classes, the furniture had been arranged so as to allow different activities to be conducted simultaneously by different groups of learners - a teaching group over here, silent reading over there, classroom maintenance somewhere else, and so on. In E2, a public school, the learners were of course grouped by grade and by classes, but in E1, an independent school, the Montessori principle of free association within broad age-groups was observed.

B. Teaching Processes

i. What teaching methods does the educator use?

Educators at the experimental schools generally adopted more varied and more learner-centred teaching techniques than their control-school counterparts. Thus, seven of the eight experimental-school educators combined in their lessons demonstrations, discussions, tasks for individual learners and even a limited amount of organised peer-teaching. The E2 educators added to this some group activities, which the E1 educators avoid in deference to the emphasis which the Montessori philosophy places on the individual. Only one experimental-school educator was seen to lecture her learners, for a short time only.

In the control schools, by contrast, four out of six educators used the lecture method, two of them exclusively and two in conjunction with other, more learner-centred activities. The remaining two educators used a variety of methods, including demonstrations, individual and group tasks, and some peer-teaching.

ii. What does the educator spend most of her time doing?

Unsurprisingly, educators at E1 spent most of their time demonstrating and facilitating learners' activities, listening to the learners talking and observing them at work. Their colleagues at E2 and E3 did more talking themselves, though they still managed most of those learner-centred activities.

All but one of the educators at the control schools spent most of their time talking to the learners, though three of them also gave some time to facilitating and observing the learners' activities. The ECD practitioner at C3 stood out amongst this group for her learner-centred, minimum-of teacher-talk approach.

iii. What classroom resources are available to the educator?

All the classrooms were reasonably well-equipped, with at least a chalkboard, basic classroom furniture in sufficient quantity and some storage space. There were also enough textbooks for every learner to have access, or shared-access, to one when needed. All the learners had exercise books or files. Posters and wallcharts were evident in most classrooms.

E1 had a abundance of home-made instructional materials and realia, and a good selection of shop-bought educational toys and games. E2 and E3 were noticeably less well-equipped, though there was still a reasonable amount of home-made materials and realia in sight.

C9 was also quite well-resourced with posters, wallcharts, class libraries and some home-made material. C3 was even more so. On the other hand, C2 classrooms were rather spartan.

iv. What resources does the educator use?

During the observation lessons, experimental-school educators generally drew upon a greater variety of classroom resources than did control-school educators. This was especially true of E1, where learners were swiftly dispersed amongst a range of individual activities. E2 and E3 educators were less proficient at organising such activities but most of their learners made some constructive use *of* the classroom resources. Two E2 educators seemed bound to their textbooks.

With one exception, the lessons at the control schools were traditional chalkboard and textbook affairs. Only the ECD practitioner at C3 was able to incorporate other materials into her lesson.

v. What language(s) does the educator use for instruction?

Six of the experimental-school educators used only English during their English lessons, one used mainly English with occasional switches to the mother tongue and one used mainly Zulu with occasional switches to English.

One of the control-school educators used only English, three used mainly English with occasional switches to the mother-tongue, while two used mainly Zulu with occasional switches to English.

Thus, the experimental-school teachers put more emphasis on the actual use of English during the English lesson.

vi. How does the educator introduce new language?

Educators at experimental schools were more organised and systematic in the presentation and practice of new language,

Educators at E1 modeled the new item of language and then sent the learners off to complete some reinforcement activity individually. At E2 and E3, educators modeled the new item and then drilled the learners individually or in pairs, in sequence.

Only two of the control-school educators, one at C1 and the other at C2, were able to manage the process of language presentation and practice so effectively. Three appeared to use new language at random, or at least without meaningful practice on the part of the learners. The ECD practitioner at C3 adopted an informal teaching method in which she provided her learners with new items of language mostly on request and allowed them to practise freely among themselves. This may be appropriate to very young learners in a pre-school environment.

vii. What feedback does the teacher give learners?

There was a slight difference in the practice of the educators in the experimental and the control schools. Seven of the eight experimental-school educators gave appropriate feedback on correct as well as incorrect responses from learners and corrected errors in an encouraging way. The remaining experimental-school educator corrected errors in an encouraging way but gave little feedback to learners on correct responses.

In the control schools, three educators gave appropriate feedback on correct as well as incorrect responses from learners and corrected errors in an encouraging way, one corrected errors in an encouraging way but gave little feedback to learners on correct responses, and two gave their learners no real feedback at all.

viii. How does the educator correct learners' mistakes?

No significant differences were observed on this point. Almost all the educators would rephrase the task or question for the same learner to try again before redirecting it to another learner. One experimental-school educator and two control-school educators

had a tendency to provide the correct answer themselves before the learner had had a chance to think the matter over. One control school educator appeared to have no strategy at all for correcting or even noticing errors.

ix. What sort of questions does the educator ask?

Here a clear difference was apparent. Five of the experimental-school educators but only one of the control-school educators asked a wide variety of questions, including probing, open-ended and viewpoint questions. Two experimental school educators and one control-school educator asked mostly closed questions, with a few open-ended ones, One experimental- and three control-school educators asked only simple recall or other closed questions. One control-school educator asked no questions at all.

In summary, then, the experimental-school educators gave their learners more opportunity and encouragement to express themselves and develop independent thinking skills.

x. Does the educator encourage learners to "chorus"?

Control-school educators proved more likely to encourage chorusing, three of them doing it often and one sometimes as opposed to two sometimes and none often amongst the experimental-school educators. Three control- and five experimental-school educators did not allow chorusing at all during the observation lessons.

xi. How does the educator handle different ability-levels?

A variety of techniques was observed at experimental and control schools alike. The experimental-school educators tended to adopt a more individual approach, allowing learners to work at their own pace, with some guidance and support from the educator. This was not observed in the control schools, where ability-grouping was favoured. Organised peer-teaching, on a small scale, was observed in three experimental-school lessons and one control-school lesson. Encouragingly, only one experimental-school and one control-school educator made no real differentiation between learners of different abilities. Ail the others had some organised strategy for dealing with this perennial problem.

xii. Is the educator's work displayed in classroom?

Educator's work was displayed in all but one of the experimental classrooms and all but two of the control classrooms.

xiii. Is the learners' work displayed in classroom?

Learners' work was displayed in half the experimental and half the control-school classrooms.

C. Learning Processes

i. What resources do the learners use?

Learners in the experimental schools used a greater variety of classroom resources - including textbooks, reference books, worksheets, posters, realia, educational toys and games - than their counterparts in the control schools. In all the lessons observed in the experimental schools the learners used materials beyond their own textbooks and the chalkboard in only one control-school lesson did this happen.

ii. What oral work do the learners do?

In all but one of the experimental-school lessons observed, learners individually answered questions posed by the educator or other learners, asked a few questions themselves, discussed things in pairs or in groups and were generally allowed a fair measure of free speech.

In the control schools, by contrast, learner-talk was limited to answering questions posed by the educator, individually at times but often in chorus.

iii. What reading do the learners do?

Learners in the experimental schools generally did more individual reading, of a wider range of texts, than learners in the control schools. At E1, as has already been mentioned, the volume and variety of texts is impressive, ranging from simple "command cards" to full-blown reference books. Much of this reading is done individually, though some pair and small-group work is allowed. In E2, learners read aloud individually to the educator or to one another in pairs. Some silent reading was observed. Only in one lesson was no reading by learners seen at all.

In the control schools, reading by learners was mostly limited to words and sentences on the chalkboard or in a textbook, sometimes read aloud individually and sometimes chorused. Nevertheless, one educator conducted a stimulating reading lesson, involving readings in groups and pairs. In two lessons, no reading at all was done by the learners.

iv. What written work do the learners do?

The pattern here was similar to that reported under question (iii) above. Whereas learners in the experimental schools were often assigned a variety of writing tasks, usually derived from the "command cards" or other worksheets generated by the educator, learners at the control schools were mostly restricted to completing sentences in their textbooks, or simply transcribing words from chalkboard to exercise book.

v. What sort of listening do the learners do?

Learners in all the schools heard a good deal from the educator, either in the form of instruction given or questions asked. In the experimental schools they also heard from one another in discussions or individual readings. This was uncommon in the control schools, where only two educators officially sanctioned learner-to-learner talk.

vi. What other work do the learners do?

A variety of activities involving reading, writing, speaking, listening and referencing was observed in four lessons in the experimental schools, while in two lessons the learners were kept busy with assigned work right to the end. The remaining two educators officially allowed free play at the end of the lesson, with rather disruptive consequences for other learners.

In five of the six lessons observed in the control schools, the educator kept the learners busy on a single task which she assigned them. The remaining lesson allowed time for play.

vii. What do learners do when they have finished their set work?

In the experimental schools, most learners took the initiative in seeking out more "task cards", helping slower ones in their midst or tidying up the classroom. In only two lessons was disruptive behaviour observed.

In the control schools, this same initiative was observed in only one lesson. Elsewhere, the learners either waited passively for further direction from the educator or resorted to playing around.

viii. How do learners interact with the educator?

On this point, there was a marked difference between experimental and control schools. In five observation lessons in the experimental schools, but only one in the control schools, were the learners seen to offer spontaneous comments, questions and opinions. Elsewhere in the experimental schools, they readily volunteered to answer questions posed by the teacher, but this was true in only one other control-school class. the norm for the control schools was for learners to speak, either individually or in groups, only when called upon by the educator.

ix. What questions do learners ask?

A distinction between experimental and control schools, similar to that noted in question (viii) above was apparent here. In E1, learners asked questions to clarify things they did not understand, often showing insight and creative thinking in the process. In E2, learners similarly took the initiative to ask clarifying questions, though less frequently and with less keenness. In E3, only a few learners were observed to ask simple questions calling for the repeat of factual information.

In only two control-school lessons did the learners ask any questions at all, usually asking for clarity on things they did not understand.

x. How independent are the learners?

This question focused on the extent to which learners were able to use resources to access information on their own. Learners at E1 were outstanding in this respect, often initiating their own work and pursuing it with little or no supervision from the educator. In E2 and E3, they were fairly independent, in that, having received clear instructions from the educator, they would generally proceed with their work with only occasional supervision. In only one lesson did the learners fail to work in their groups without constant, direct supervision from the educator.

In none of the classes observed in the control schools had the learners attained the degree of independence seen at E1, although two classes, at C2 and C3, had reached a degree of independence comparable with that usually seen at E2 and E3. On the other hand, in the remaining four classes at the control schools, learners were heavily dependent upon instruction and constant supervision the educator.

xi. What do learners spend most of their time doing?

On this point, each school displayed a distinctive uniform pattern. In E1, learners spent most of their time working individually, conversing with one another or the educator

about their work. In E2, learners worked in groups or pairs, conversing periodically with the educator. In E3, an ECD centre, learners spent most of their time in creative activities, free play or listening to stories from the practitioner.

In C1 and C2, learners spent most of their time listening to the teacher or, in two classes, working in groups. In C3, also an ECD centre, most of the learners' time was spent in free play or listening to stories.

9. ANALYSIS OF TEST RESULTS

The tables below summarise the results of the reading tests.

Table 2 : Results of Pre-Test

Test Group	N	Median	Mode	Range	Mean Score	Mean %
E1: 5 yr-olds	10	4	5	6	**4.2**	**6**
E1: 6 yr-olds	8	16	17	19	**14.8**	**21.1**
E1: 7 yr-olds	11	17	16	26	**17.9**	**25.6**
E1: 8 yr-olds	9	36	35	21	**37.1**	**53**
E2: Gr 2 6 yr-olds	10	9	9	11	**8.8**	**12.6**
E2: Gr 2 7 yr-olds	20	10	9	12	**9.5**	**13.6**
E2 : Gr 2 8 yr-olds	12	12	12	13	**11.2**	**16**
E3: Gr 0 5 yr-olds	18	3	3	5	**2.3**	**3.3**
C1: Gr 1 6 yr-olds	10	6	6	8	**6.8**	**9.7**
C1: Gr 2 7-8 yr-olds	11	2	12	15	**11.2**	**16**
C2: Gr 1 6 yr-olds	34	6	1	11	**4.4**	**6.3**
C2: Gr 2 7 yr-olds	19	9	8	9	**8.5**	**12.1**
C3: Gr 0 5 yr-olds	15	2	0	7	**2.1**	**3**
C4: Gr 0 5 yr-olds	10	4	3	10	**4.6**	**6.8**

Table 3: Results of Post-Test

Test Group	N	Median	Mode	Range	Mean Score	Mean %
E1: 5 yr-olds	10	5	0	11	**4.9**	**7**
E1: 6 yr-olds	8	25	25	26	**22.2**	**31.7**
E1: 7 yr-olds	11	26	-	25	**24.4**	**34.8**
E1: 8 yr-olds	9	60	57	14	**60.4**	**86.3**
E2: Gr 2 6 yr-olds	10	24	-	16	**24.4**	**34.8**
E2: Gr 2 7 yr-olds	20	22	22	29	**24.4**	**34.8**
E2 : Gr 2 8 yr-olds	12	30	33	18	**28.6**	**40.6**
E3: Gr 0 5 yr-olds	18	4	1	11	**4.9**	**7**

Test Group (Contd)	N	Median	Mode	Range	Mean Score	Mean%
C1: Gr 1 6 yr-olds	10	9	10	8	8	11.4
C1: Gr 2 7-8 yr-olds	11	23	23	22	21.9	31.3
C2: Gr 1 6 yr-olds	34	6	6	9	6	8.6
C2: Gr 2 7 yr-olds	19	17	20	32	17.7	23.3
C3: Gr 0 5 yr-olds	15	4	7	11	4.3	6.1
C4: Gr 0 5 yr-olds	10	7	7	9	8.5	12.1

Table 4: A Comparison of Growth in Reading Competence

Test Group	N	Pre-Test	Post-Test	Growth
E1: 5 yr-olds	10	4.2	4.9	0.7
E1: 6 yr-olds	8	14.8	22.2	7.4
E1: 7 yr-olds	11	17.9	24.4	6.5
E1: 8 yr-olds	9	37.1	60.4	23.3
E2: Gr2 6 yr-olds	10	8.8	24.4	15.6
E2: Gr2 7 yr-olds	20	9.5	24.4	14.9
E2: Gr2 8 yr-olds	12	11.2	28.6	17.4
E3: Gr0 5 yr-olds	18	2.3	4.9	2.6
C1: Gr1 6 yr-olds	10	6.8	8	1.2
C1: Gr 2 7-8 yr-olds	11	11.2	21.9	10.7
C2: Gr1 6 yr-olds	34	4.4	6	1.6
C2: Gr2 7 yr-olds	19	8.5	17.7	9.2
C3: Gr0 5 yr-olds	15	2.1	4.3	2.2
C4: Gr0 5 yr-olds	8	4.6	8.5	3.9

Table 5: A Summary of Growth in Reading Competence

Experimental Groups	Growth (increase in Mean Score)	Growth %		Control Groups	Growth (Increase in Mean score)	Growth %
E1: 5 yr-olds	0.7	1		C4: Gr 0 5 yr-olds	3.9	5.8
E1: 6 yr-olds	7.4	10.6		C1: Gr 1 6 yr-olds	1.2	1.7
E1: 7 yr-olds	6.5	9.3		C1: Gr 2 7-8 yr-olds	10.7	15.3
E1: 8 yr-Olds	23.3	33.3				
E2: Gr 2 6 yr-olds	15.6	22.3		C2: Gr 2 6 yr-olds	1.6	2.3
E2: Gr 2 7 yr-olds	14.9	21.3		C2: Gr 2 7 yr-olds	9.2	13.1
E2: Gr 2 8 yr-olds	17.4	24.9				
E3: Gr 0 5 yr-olds	2.6	3.7		C3: Gr 0 5 yr-olds	2.2	3.1
Average	**11.1**	**15.9**		**Average**	**4.8**	**6.9**

Table 6: Differences in Mean Scores on Pre- and Post-Tests

	Mean Pre-test Score	= %	Mean Post-test Score	=%
Experimental schools	13.2	18.9	24.3	34.6
Control schools	6.3	9	11.1	15.8
Difference	6.9	9.9	13.2	18.8

From this data, the following points emerge:

i. Scores are low overall. To some extent, this reflects the generally low standards of English reading proficiency in South African primary schools, a phenomenon reported by other researchers[1]. On the other hand, it should be borne in mind that the test groups range in age from 5 to 8 and in grade-level from Grade 0 to Grade 2. For the test to allow the best learners in Grade 2 to "show their paces" it had to be pitched at a level that learners in lower grades found very challenging indeed. This inevitably resulted in the scores being skewed to the left.

ii. Learners in the experimental schools generally scored higher, in both the pre-and post-tests, than learners in the control schools. In the pre-test, learners in the experimental schools averaged a test score of 13,2 (or 18,9%), compared to an average test score of 6,3 (or 9%) attained by control-school learners. In the post test, the average test score for the experimental-school groups was 24,3 (or 34,6°!0) as opposed to 11,1 (or 15.9%) for the control-school groups. The exception to this pattern was the 5 year-old group from C4, which outperformed the other 5 year-old groups in pre- and post-test scores. This may be attributable to the fact that these learners are acquiring English in a first-language environment. In all other age-groups, the experimental schools produced higher scores, particularly in the post-test, reflecting a higher overall standard of reading competence.

iii. Reading progress was more marked in the experimental than in the control schools. On average, learners in experimental schools increased their reading scores between the pre- and the post-test by 11,1 (or 15,9%) whereas learners in control schools increased their reading scores by an average of only 4,8 (or 6,9%). Once again, the 5 year-old groups were the exception to this rule, with C4 showing the most progress and E1 the least. The principal of E1 attributes the relatively poor showing of this group in her school to its high percentage of learners with special educational needs. Even so, this E1 group still attained higher scores than their counterparts in C3 in both pre- and post-tests, though the difference between their pre- and post-test scores was less pronounced. Thus, the picture of higher standards of reading competence in the experimental schools is maintained..

[1] See, for example, Macdonald (1990:46), Rambau (1992) and Elley et at (1997)

iv. The pattern of the experimental schools' higher scores points to a more effective initial reading programme. The higher pre-test scores attained by the experimental schools in the pre-test may be attributed to the fact that they were introduced to the new approach in 1997 and had already begun implementing it to some extent before the research commenced. It must be emphasised, however, that during the period of the research the experimental schools *increased* their lead over *the control schools.* Thus, the difference between their mean scores increased from 6,9 (or 9,9%) in the pre-test to 13,2 (or 18,8%) in the post-test. The higher scores of the experimental schools in both pre- and post-tests indicate that their approach to initial reading was more effective than that of the control schools. The increase, from pre- to post-test, in the *difference* between the experimental-school and control-school scores suggests that the superiority of the experimental schools' approach to initial reading becomes more pronounced as time goes on. C4 is the notable exception to this general pattern - unsurprisingly, since all its educators and most of its learners are mother-tongue speakers of English.

10. RESULTS OF DISCOURSE ANALYSIS

Learners' discourse collected at the same time the tests were written is analysed in the table below.

Table 7: Analysis of Learners' Discourse

Group	C-Units		Nouns		Verbs		Verb Tenses	
	Mar	Aug	Mar	Aug	Mar	Aug	Mar	Aug
E1 5 year-olds	23	31	11	15	8	11	2	3
E1 6 year-olds	32	32	17	18	12	14	2	3
E1 7 year olds	34	25	12	18	13	14	3	4
E1 8 year-olds	36	34	24	21	18	20	3	6
E2 Gr2 7 year-olds	21	-*	6	-*	8	-*	2	-*
E2 Gr2 8 year-olds	28	-*	20	-*	14	-*	2	-*
E3 Gr0 5 year-olds	30	30	10	10	10	10	2	2
C1 Gr1 6 year-olds	12	13	6	7	3	4	1	2
C1 Gr2 7-8 year-olds	18	18	9	10	5	5	1	2
C2 Gr1 6 year-olds	10	10	8	8	6	6	2	2
C2 Gr2 7 year-olds	28	21	11	11	9	9	2	2
C3 Gr0 5 year-olds	0**	0**	0**	0**	0**	0**	0**	0**
C4 Gr0 5 year-olds	45	57	23	30	26	26	4	5

Notes

* No data available

** This group was so weak in oral-aural competence that no meaningful scores could be established. Typically, the learners would be unable to converse at all with the interviewer until they had been given some English phrases by the interviewer

As can be seen from the table, learner-groups at the experimental schools scored higher on almost every count than their counterparts in all but one of the control schools. The exception to this pattern is C4, which scored highest overall on most counts. This may be attributed to the fact that all the educators at C4 were mother-tongue speakers of English, as were most of the learners. In very broad terms, then, the discourse analysis suggests that the learners' oral-aural competence in English mirrors their reading competence as established by the reading tests. To that extent, the discourse analysis supports the validity of the test results.

The above scores are become more meaningful when they are illustrated by examples of actual discourse. What follows are some typical snatches of discourse which indicate the exit-level competence of the learners.

E1 (Grade 0: 5 year-olds):

Interviewer:	M, tell us what's in your picture.
M:	He's going and then the dog is come with him.
I:	What sort of man is he? What's he going to do?
M	He's going to sit and sleep. *[incorrect: The man is hunting]*
I:	What's he got here?
M	A gun.
I	Yes. And who's coming with him?
M	It's a dog.
I	Where are they going?
M	To the tree.
I	Let's see what happens next in L's picture. L, who's waiting for this man?
L	A crocodile
I	Where is the crocodile sitting?
L	In a water
I	And what's all this here?
L	Grass.
I	What is the crocodile doing?
L	He's going in the water.

E1 (Grade2: 7 year olds):

Interviewer: K, what's happening in your picture?
K The boys are standing in the water.
I Why are they doing that?
K Because they want to swim
I Then what happens?
K The girls are washing and the boys are playing with their toys
I Where are the girls washing?
K In the bath.
I And where did they get the water?
K The river
I Okay, S, tell us what happens in your picture.
S The boys are swimming.
1 Where are they swimming?
S In the river.
I And what's this over here?
S A tree.
I What happens now? Oh, T. wants to tell us.
T The monkeys takes their clothes and then the girls run to the trees because the monkeys have taken the clothes.

E2: (Grade 2: 7 year-olds)

Interviewer. T., what do you see in your picture?
T A crocodile
I What is the crocodile doing?
T [No response]
I Is he walking?
T Yes
I Where is he going? ... Where do you think he's going?
T He's going to eat... eat...
I He's going to eat somebody! Okay, now let's look at R's picture. What do we see here?
R Dogs.
I How many dogs?
R Two dogs.
I And this man - what is he doing?
R *[No response]*
I Do you know what this is? *[indicating the hunter's gun]*
R *[No response].*
I It's a ...? Anyone?
S: Gun
I Yes. What's he going to do with his gun?

S To kill an *olifant*
1 Maybe an elephant. Where's he going in your picture, S.?
S Dogs.
I Yes, but where is the man going?
S To the crocodile
I Yes, he's going to hunt the crocodile.

E3: (Grade 0: 5 year-olds)

Interviewer: Z, what is in your picture?
Z I see a girl
I How many girls do you see?
Z Two girls *[Incorrect: there are three]*
I Count them for me
Z 1.. 2
1 And this one?
Z Two
I Well, how many boys are there?
Z Three boys
I Yes. What are they doing?
Z Walking
I Where are they going to?
Z A tree
I Clever girl! N, tell us about your picture.
N I see a boys. There are three girls. They are playing. And a tree and a grass and a water.
I Good. What are the girls doing here at the tree?
N I don't know.
I They are picking something. What is this?
N I don't know.
I They are picking fruit. Tell us what happens in your picture, C.
C I see three monkeys. This three monkeys is up a trees. And there is coming the girls. These boys is naked from the water. And these monkeys is steal the clothes. This boy is say, "I see him! I see him!". These three girls is walking. And she says, "No, no, look there!". This one is touch the tree. And then... then.. This girl says "I see him!"

C1: (Grade 1: 6 year-olds)

Interviewer: H., can you tell me what's happening in your picture?
H: Boys, girls.
I What are they doing?
H *[No response]*

I What colour dress is this girl wearing?
H: Red [Correct]
I And this one?
H Yellow [Correct] I And that?
H Blue
I Now, what is this?.. What do you see? Here?
H [No response]
I Okay, let's ask K.... What's in your picture?
K Boys and girls.
I Yes. What are these girls doing?
K Flower.
I Where is the flower?
K *Blom* [Afrik = Flower]
I Tell me about the blom.
K: Water.
I Water... Okay, let's see what M. says.
M *[Unable to respond in English to any questions]*
I Can you tell me something in English?
M *[No response]*
I Okay, let's speak to T. What's in your picture, T? Try to tell me in English.
T (Unable to respond in English to any questions but names items in picture in Zulu and comments briefly on scene depicted]
I Good, T. Can you say it in English?
M *[No response]*

C2: (Grade 2: 7 year-olds)

Interviewer: P., what do you see in your picture? Tell me.... What's that?
P *[No response]*
I Obani lo? *[Zulu = Who are these?]*
P Bafana *[Zulu = boys]*
I Yebo! Man]e: Khuluma `Singisi *(Zulu= Yes! Now, speak English*]
P Boys. Girls. Girls.
I Good! What colour dress is this girl wearing?
P Yellow
I Yellow! Yes! And this one?
P Red
I Very good! What is this?
P lmithi *[Zulu = trees]*
I What colour is it?
P Green
I And this water?
P Blue

I Very good. Thank you, P. Now S, what's in your picture?
S Girls
I Show me the girls... Count them...
S Boys
I What are they doing ... ...
S (Unable to proceed in English. Makes a few comments in Zulu]
I Okay, E, tell me what you see
E Boys
I What are they doing?
E Swimming
I Yes. What is this?
E *Imphahla [?]*
I In English?
(E unable to proceed in English.]

C4: (Grade 0; 5 year-old mother-tongue speakers)

Interviewer: J, tell me what you see in your picture.
J There's a man with a gun. He's got a dog with him.
I Where do you think he's going?
J To kill crocodiles. And he's got a gun with - to shoot.
I What's this with him?
J A dog.
I What's the man wearing?
J Clothes.
I Tell me about them. What colour are they?
J Orange.
I Okay, now let's look at what's in G's picture.
G Well, the crocodile's chasing him. He had a gun and the crocodile chases him. The gun... he dropped the gun by his head and the crocodile chases him and then he shoots the crocodile and so the crocodile never got the dog. Here it is.
I What was the crocodile doing?
G Chasing him to eat him.

The discourse analysis proved to be a blunter instrument than the reading tests in that it failed to discriminate to any useful degree between scores attained early in the year and those later in the year. The samples of discourse quoted above may illustrate why this was so: learners' oral-aural competence was simply too limited to permit subtle gradations. The extent to which learners' reading competence developed in tandem with their oral-aural competence cannot, therefore, be established from this data. However, since that relationship was of peripheral interest only to this research, the inconclusiveness of the data on that point is of no real consequence. What the

discourse analysis data does indicate is that the experimental-school groups progressed farther and faster than their control-school counterparts.

11. CONCLUSIONS

The evidence of the reading tests and the discourse analysis points to a higher level of reading competence amongst learners in the experimental schools. Interviews with educators and direct classroom observation further indicate that the greater competence of the experimental-school groups is largely due to the instruction which they receive and not to any inherent differences between the resources or facilities of the schools, the educators or the learners themselves. A comparison between data gleaned from E1 and that from the other experimental schools suggests that the more consistently its Montessori-derived methodology is applied, the better the results.

From the interviews and classroom observations, the following factors appear to be the most important contributors to the success of the experimental schools:

i. The amount of English used in the classroom. As noted earlier, learners at the experimental schools were exposed to a significantly greater volume and range of English than were the control-school learners. In the case of E1, the situation could accurately be described as saturation and immersion in English. Learners at the experimental schools were therefore better-supplied with an essential raw material for language acquisition, namely, meaningful input.

ii. The number of *individual* reading activities performed by the learners. A widely recognised principle amongst language researchers is that the development of reading proficiency, in both a first and a second or foreign language, is dependent upon *intensive* and extensive reading by the learners on their own (Rivers & Temperley; 1978:225). The extent to which this principle was applied in the experimental schools represented a critical difference between them and the control schools.

iii. The degree of autonomy and independent learning fostered in the learners. Educators at the experimental schools paid much more attention to this important aspect of the learners' development than did their colleagues in the control schools. This was evidenced by the types of tasks they assigned to their learners, the questions they asked, the dialogues that took place between educators and learners, the resources that were made available to the learners, how the learners spent most of their time, how the educators spent most of their time, and even the seating arrangements in the classrooms. Simply stated, learners at the experimental schools were encouraged to find things out for themselves, and this resulted in more effective learning.

iv. The systematic teaching of phonics. To the extent that the experimental-school educators followed the Montessori approach to initial literacy, they also followed a systematic programme of phonics-based reading pedagogy. By contrast, the teaching of phonics in the control schools was at best unsystematic and educators there often relied on look-and-say methods. This was an ongoing mistake on their part. There have been numerous comparative studies on phonics versus look-and-say, with virtually every single one of them showing results in favour of phonics (Flesch; 1983:28-39),

v. The encouragement of peer teaching. This was more frequently observed in the experimental than in the control schools. Peer-teaching has been identified by researchers in both developed and developing countries as an effective educational strategy (Lockheed & Verspoor; 1991:66). The relative freedom of movement and association enjoyed by learners in the Montessori-influenced classroom, and the emphasis there on independent learning, provide both opportunities and incentive for peer-teaching. This must be considered an important advantage of that approach.

Another possibly significant difference which emerged between experimental and control schools during the course of the research was the amount of time spent on the tasks of teaching and learning. Though not directly within the scope of this study, which focused mainly on methodological issues, it is nonetheless worthy of note since research from a variety of countries has shown that the amount of time available for instruction directly affects how much children learn (Lockheed & Verspoor; 1991:57). The normal school day at E1 ran from 08h00 to 15h00, about two hours longer than most public schools. Moreover, as an independent school, it was presumably less affected by the strikes and other disruptions which plague public schools. The extended teaching and learning time which this afforded may have contributed to the exceptionally good results at that school. However, this could not have been the most significant factor since the other two experimental schools, E2 and E3, kept normal public school hours and were still able to show significantly better results than the control schools. Nor was there any evidence that the experimental schools suffered fewer disruptions or were markedly better managed than the control schools.

From the evidence produced by this research, it appears that the success of the experimental schools can be attributed mainly to their pedagogy - which constituted the significant, observable difference between the experimental and control schools - rather than to their socio-economic environments or general school management. The critical elements in the pedagogy of the experimental schools, as described above, are not unique to the Montessori approach, though they are well exemplified by it. They can be found at the heart of a broad range of pedagogically-sound approaches to education in general and primary language teaching in particular. Nor are they applicable only to the teaching and learning of initial reading skills. In such respects as their encouragement of individual cognitive activity, their fostering of self-directed enquiry

and autonomous learning and their emphasis on learning by doing, they are fundamental to good educational practice anywhere. Evidence from school E1 showed that its Montessori-inspired approach, systematically applied, engendered significant learning gains by the pupils. Schools E1 and E2 proved that ordinary educators in ordinary public schools and ECD centres can successfully adopt and implement these methods with minimal in-service training and support.

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