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READING IS FUNDAMENTAL: THE EFFECT OF A READING PROGRAMME ON VOCABULARY DEVELOPMENT IN A HIGH POVERTY TOWNSHIP SCHOOL

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This paper discusses the development of the vocabulary of grade 7 learners in a reading project currently underway at a school in Atteridgeville, a township on the outskirts of Pretoria. A library has been established at the school and teachers throughout the school attend workshops designed to heighten their awareness of the value of reading and the importance of vocabulary, and to provide them with strategies to facilitate the development of reading. This paper focuses on the vocabulary development of grade 7 learners – they are in the senior phase of primary school and will soon be entering high school where they will be faced with more academic vocabulary in context-reduced textbooks. Learners' vocabulary was tested early in the year and then again towards the end to assess whether increased access to books and reading had had an effect on vocabulary growth. Results revealed that learners at the project school showed a lack of vocabulary, even at the end of the study period, not only in terms of academic words but also high frequency words. Extensive reading alone is clearly not enough – learners need explicit vocabulary instruction: in order to read successfully at high school level, learners need a working knowledge of academic vocabulary, and this knowledge is developed by reading – but learners cannot read successfully without an adequate basic high-frequency vocabulary.

Keywords: vocabulary, vocabulary growth, extensive reading, intensive reading, high frequency vocabulary, academic vocabulary, high-poverty schools

INTRODUCTION

The size of learners' vocabulary plays a crucial role both in reading and academic success, whether they are studying through the medium of their first language (L1) or not (Stanovich, 1986; Coady, 1993:18; Joshi, 2005). Because learners spend 12 or more years in formal education, vocabulary development is closely tied to literacy development: in order to increase their vocabulary to a level which will allow them to read their high school textbooks with relative ease, learners must develop sound literacy skills from the very onset of schooling. This does not seem to be happening in South Africa. Under ideal circumstances, children will acquire about ten new words a day in their mother tongue from two years of age onwards – by the time they are six, they should command a vocabulary of about 14 000 words (Joshi, 2005: 212). Nation (2006) suggests a figure of about 1000 words per year until one is 20. However, research has shown that despite this large oral vocabulary, the average grade 4 learner can only recognise about 3 000 words in print (Snow, Burns & Griffin, 1998). The 2001 audit undertaken by the South African National Department of Education (DoE) to

assess literacy levels across all nine provinces showed that only 38% of grade 3 learners could read at grade level in their L1. Furthermore, the Southern and Eastern African Consortium for Monitoring Educational Quality (SAQMEC) (Murimba, 2005) revealed that children in grades 1 to 6 were reading two grade levels below their own in English and in their L1, indicating that this is a widespread problem, and not limited to South Africa.

Studies mentioned by Joshi (2005) indicate that even though children 'made gains in reading in early grades [in their first language], poor vocabulary impeded their reading' (2005: 211). Joshi found that as early as grade 2, children with poor vocabularies had difficulties in catching up with average readers. As the level of schooling progresses, so the levels of abstraction in learning materials increase and supportive context is reduced. Processing and producing language becomes more cognitively demanding, necessitating the development of cognitive academic language proficiency (CALP) if learners are to succeed at school. A lack of basic vocabulary hinders learners in that they are forced to spend too much time decoding text, and not enough time interpreting what they read (Joshi, 2005; Nation, 2006).

The acquisition of CALP (Cummins, 1991; Pretorius, 2002; Smyth, 2002) may be inhibited in second language (L2) learners for various reasons. For instance, literacy skills may not yet be established in their L1. If learners are not reading adequately in the foundation phases and do not have the reading/literacy skills in their L1 to transfer to their L2 when they have to start reading and learning through this medium, they will struggle to read in their L2. Bilingual children must achieve a threshold of linguistic competence in their L1 if they are to transfer these skills successfully to their L2 (Cummins, 1991).

The low literacy levels mentioned above lead to the hypothesis that the vocabulary of these learners will be small. In South Africa, there is very little research into vocabulary acquisition and development in English as the language of learning and teaching (LoLT) and even less research into vocabulary acquisition in African languages. This article addresses the gap by examining the English vocabulary development of grade 7 learners in a high-poverty township school during the course of a year. Before the study is described, however, some aspects of vocabulary development will be considered.

THE CONTEXT OF VOCABULARY ACQUISITION

Studies (Joshi, 2005; Stanovich, 1986) have shown that learners who read well have larger vocabularies But how do learners acquire this larger vocabulary, and what kinds of words do they acquire? There are three categories of words, namely high frequency words, i.e., those 2 000 or so basic vocabulary items which form the automatic foundation of the fluent speaker's vocabulary; the 800 or so academic words, many of which are Graeco-Latin in origin and are essential for access to academic texts such as textbooks; and the unusual, technical words which are particular to specific disciplines, sometimes referred to as jargon words (Xue & Nation, 1984; Nation, 1993; Laufer & Nation, 1995).

A child's vocabulary will expand through exposure to print: most speech is not as rich lexically as written language. Spoken language will typically contain more high frequency words than written language which, as the level of schooling rises, will feature more academic words. This is true even of narrative texts. Most vocabulary is acquired outside the classroom – and then more often while reading than while talking or watching television: as far as vocabulary development is concerned, conversation is no substitute for reading (Joshi, 2005).

West and Stanovich (1991) propose that even low ability individuals who begin to read more will develop declarative knowledge bases (information that consists of consciously known facts, concepts or ideas that can be stored as propositions) and lexical tools that will facilitate further comprehension gains. This study found that exposure to print was effective regardless of a child's cognitive and comprehension abilities – even those with limited comprehension skills will build vocabulary and cognitive structures through immersion in literacy activities. 'A key argument is that vocabulary processing becomes automatic in more fluent readers allowing for more cognitive processing attention to be directed to top-down interpretation' (Coady, 1993:18). Inadequate exposure to print prevents children from building important knowledge structures such as vocabulary, metalinguistic knowledge and general world knowledge. A limited vocabulary contributes to reading difficulties and co-varies with language problems (Pretorius & Mampuru, 2007).

THE 'LEXICAL BAR' AND ACADEMIC SUCCESS

The work of Corson (1985, 1997) supports a possible socio-economic link between reading and vocabulary. He argues that communication in specialist knowledge areas of education necessitates the use of particular words, most of which are Graeco-Latin in origin. These words enter a child's productive vocabulary during adolescence but only under particular circumstances. Such words often have characteristics that make them seem 'bizarre, highbrow and difficult to language users who are not exposed to early and regular contact with them' (Corson, 1985: 27). They are mostly low frequency words, which hamper their activation because learners do not encounter them very often (Corson, 1997: 696). Corson contends that there is a 'lexical bar' in the English lexicon which makes it difficult for members of certain social groups to gain lexical access to knowledge categories of the school curriculum, in both their oral and written language and possibly even in their thought processes (1985: 28).

This phenomenon has been perpetuated by present educational and sociological forces. However, this type of specialist vocabulary is often essential for understanding the secondary school curriculum. Children who come from more advantaged, upper middle class backgrounds are generally more likely to have richer experiences and wider language contacts than poorer working class children. These richer experiences 'promote certain kinds of conceptual and lexical development' and reveal to them 'the conventions for applying words, the "rules" that are necessary for word learning' (Corson, 1985: 52).

In South Africa, schools in townships and rural areas have been traditionally disadvantaged in terms of both physical and human resources. Although the country is almost 15 years into a new democracy and, theoretically, equal opportunities exist for all, in reality these schools are still not providing the same quality of education as those in wealthier, better-resourced, historically advantaged areas. In South Africa, learners of English as an L2 are often mother-tongue speakers of an African language. Historically, development of these languages has been neglected (Granville, Janks, Mphahlele, Reed, Watson, Joseph, & Ramani, 1998; Sarinjeive, 1999) and as a result these learners may also have been denied access to specialist academic discourse, both because their own languages have not yet developed this kind of terminology and discourse and also because their access to English has been limited.

ACADEMIC SUCCESS AND VOCABULARY SIZE

As discussed above, research has revealed that a fairly large vocabulary is necessary for reading well and for success in academic studies, in that familiarity with a large number of vocabulary items frees the cognitive processes to focus on interpretation rather than comprehension (Joshi, 2005; Nation, 2006). Laufer (1997) believes that the most important lexical factor in good reading is the number of words in a reader's lexicon. She posits that a vocabulary of 3 000 word families (about 5 000 lexical items) is necessary for general reading comprehension. This should allow the reader to cover 90 to 95% of the running words of a text. Below this threshold, reading strategies are ineffective and readers may find themselves reading at the frustration level (Lesiak & Bradley-Johnson, 1983).

Exact estimates of how large a vocabulary children need at various levels of schooling to be able to cope with the course materials vary: Department of Education (DoE) assessment standards for grade 6 Additional Language (AL), for instance, mention that a vocabulary of 4 000 to 5 500 words is necessary to cope with reading at this level (Department of Education, 2005). Even learners who are good decoders struggle with comprehension if they encounter unknown words or words for which they only have a limited understanding. Too many unknown words in a text usually results in a lack of comprehension (Rupley & Nichols, 2005: 241). Nation (1993) supports this, believing that vocabulary size is an 'essential prerequisite to the development of skill in language use' (1993:131). As it develops, this skill allows for a growth in knowledge of the world through the competent use of the language. What all estimates do highlight, though, is the necessity for learners on the brink of secondary level education to be in the process of developing a sound, even automatic, knowledge of at least the 2 000 most frequent English word-families (the high frequency words), as well as a growing receptive knowledge of academic words.

LITERACY INSTRUCTION IN A DEVELOPING COUNTRY

Research (Horst, 2005; Rupley & Nichols, 2005; Pretorius & Mampuru, 2007) shows that extensive reading increases reading ability, improves language proficiency, increases vocabulary, broadens background knowledge, and translates to improved performance in content subjects. Yet, in many schools in South Africa, particularly those in townships and the rural areas, little time is devoted to literacy (Pretorius & Mampuru, 2007). Decoding skills are inadequately taught in the Foundation Phase and literacy is taught mainly from the blackboard and is frequently regarded as a 'subject', not as something integral to all areas and aspects of learning. Schools for the most part offer poor print environments and learners often come from print-deprived backgrounds where reading is undervalued. There is a poor culture of homework in schools (DoE, 2005). There is also a poor culture of reading in the schools and, generally speaking, in the communities feeding them. More emphasis on explicit vocabulary instruction is also needed. Very little explicit attention is given to vocabulary acquisition in schools and little attention is paid to meaning.

The books that children in township and rural schools encounter are mostly textbooks, which often have to be shared. There is a dearth of both fiction and non-fiction titles published in indigenous languages, hence learners have limited opportunities to develop academic vocabulary in their home language. Added to this, teachers may be poorly qualified and, as non-readers themselves, inadequate role models for the learners in their classes. Only ten of the 17 teachers at the project school in this study, for instance, had more than ten books at

home, and none belonged to a library when the project started. In fact, in 2005, only 27% of schools in South Africa had a library; at the start of this project, *none* of the 26 primary schools in the township in which the study was conducted had a functional library.

RATIONALE FOR THIS STUDY

As argued above, processing and producing language becomes more cognitively demanding as levels of abstraction increase and supportive context is reduced, as is the case in senior phase textbooks. As far back as the early nineties, the Threshold Report (Macdonald, 1990, in Pretorius, 2000; Macdonald, 2002) revealed that there was an immense gap between words black South African children knew at the end of grade 4 and words they needed to know to understand their grade 5 textbooks. Cooper (1999), examining vocabulary levels of first year students at two South African universities, found a relationship between vocabulary levels and academic performance: weaker students had smaller receptive vocabularies, and were particularly lacking in academic and lower frequency words. There is clearly scope for research which can translate into action in the field of vocabulary development among South African learners. Vocabulary is a good predictor of reading success in second language studies: an appropriate study of vocabulary is essential if a learner is to read proficiently in the L2, and vocabulary size can have a positive effect on reading comprehension (Laufer, 1997). There seems to be a 'reciprocal relationship' (Rupley & Nichols, 2005: 258) between knowledge of vocabulary and reading comprehension. As learners' vocabulary grows, so their ability to comprehend what they read grows also, and as their comprehension powers improve, so their ability to learn the meaning of new words from context increases.

In the case of L2 readers, there is evidence that reading problems in the L2 are caused especially by their lack of vocabulary (Alderson, 1984 in Laufer, 1997; Bossers, 1991 in Grabe & Stoller, 1997; Hacquebord, 1994). A previous study (Scheepers, 2006) on the vocabulary size of grade 7 learners in an immersion situation supports these findings: without an adequate vocabulary, these learners find it difficult to read. This underlines the critical importance of developing an adequate high frequency vocabulary (2 000 to 3 000 word-families, at least) in the L2 (Laufer, 1992, 1998; Nation, 1993) as a foundation on which to build an academic vocabulary.

RESEARCH AIMS

Because academic words are vital to success in academic study, the foundation of which begins in the senior phase of schooling, this study aimed firstly to measure the vocabulary size of grade 7 learners, according to three levels, namely the 1 000- and 2 000-word levels which constitute high frequency words, as well as the 3 000-word level making up the academic word category. This was to establish (1) the kind of knowledge these learners had of the most frequent words and (2) their knowledge of academic words.

The research questions were as follows:

(1) Will grade 7 learners' vocabulary increase after approximately eight months as a result of increased opportunities for reading?
(2) Will these learners make any gains in academic vocabulary over the same period?
(3) Will learners who increase their vocabulary size also perform better academically?

(4) Will learners who increase their vocabulary size also improve their reading in English?
(5) How will the performance of these learners on vocabulary, reading and language proficiency measures compare with that of learners from an independent school which was not involved in the project?

These issues of vocabulary development are explored in this article against the backdrop of the literacy project *Reading is FUNdamental*, a reading programme that was initiated in 2005 at a primary school in Atteridgeville, an urban township to the west of Pretoria. The programme was designed specifically to create a culture of reading in the school which, at the time that the programme was initiated, had no library. This project has helped the school to build up a school and classroom libraries. A concerted effort has also been made to increase capacity by developing teachers' skills: regular workshops are held by the programme organisers, and teachers are encouraged to assist learners with reading in the classroom and to create a print-rich environment at their school. The emphasis of this project is on raising awareness that reading is a fundamental part of life, and should not be restricted to language classes only. Reading is *fun* and children can and *should* all read for pleasure, but reading is also fundamental to school success.

Reading is FUNdamental adopts both extensive reading (encouraging learners to read widely and for pleasure) and intensive reading (teaching specific strategies in the classroom, based on ideas put forward in fortnightly workshops held with teachers). The focus of the project is on developing strong literacy skills from grade 1, in both the home language and the LoLT, English, using storybook reading and parental involvement in literacy activities. Learners were exposed to books by introducing them to a library and encouraging them to read regularly. They visited the library with their teachers and were encouraged to have a book in their schoolbags at all times, so that they could read when they had finished their work or had a free period. A whole-school approach to literacy is followed in the project and all stakeholders at the school – teachers, learners and parents – are involved. Essential to the success of the project is the establishment of a functioning library so that learners have easy access to age-appropriate books. At the time of data collection there were about 2500 books in the library. But of these, only 106 titles are in Northern Sotho, and these cater mostly for under-tens. Teenage literature in African languages is practically non-existent.

An ongoing series of assessments of language proficiency (in the form of a dictation test) and reading development (in the form of a comprehension test) in both English and the mother tongue was introduced to measure the effects of this reading programme. As part of this assessment process, I measured the English vocabulary of grade 7 learners to determine whether exposure and ready access to reading books did result in an increase in vocabulary size.

SCHOOLS CHOSEN

The project school is a high-poverty Quintile 1 school, i.e. a non-fee paying school. Learners come from disadvantaged backgrounds and print-deprived environments. Two-thirds of the learners at this school are fed each day through a school feeding scheme. In many cases, this is the only meal children will have that day. The school buildings are old with small, cramped classrooms and inadequate furniture, and the school is generally poorly resourced. Despite

these and other difficulties, however, the school is run by a committed and innovative principal and is moderately functional.

When this study began in 2005, the school comprised about 600 pupils, with a staff complement of 17. The focus of the present study was grade 7 learners, and there were two classes with a total of 109 children between them. Initial literacy in Grades 1 to 3 is in the home language of about 70% of pupils, Northern Sotho. English becomes the LoLT from Grade 4, when Northern Sotho becomes a subject.

For purposes of comparison, the Grade 7 learners at a small independent school in the same township were also assessed. This school comprises about 300 learners, all drawn from the same community as those attending the project school. About a third of learners come from poorer homes in the community and are funded by the school. The school is well resourced and follows a straight-for-English approach. Teachers are well-qualified and experienced.

METHODOLOGY

The focus of the study reported on in this paper is vocabulary development. The methodology takes its direction from prior research conducted on the effect of immersion on the size of grade 7 learners' English (L2) vocabulary (Scheepers, 2006). The same tests used in the project school were also administered in a small independent school in the same township for comparative purposes.

A chapter from a grade 7 history textbook was used as the corpus from which a multiple-choice vocabulary test was compiled. The chapter presented information in a narrative style which was felt to be accessible to learners at this level, regardless of whether the actual topic had been covered in class. Once a lexical profile of this chapter had been done with the software program VocabProfile, which arranges the words in the corpus into four levels, namely first 1 000, second 1 000, third 1 000 and 'not on any list', the test was compiled.

The test comprised 30 questions: ten questions to test the first 1 000 words (basic high frequency vocabulary), ten questions to test the second 1 000 words (basic high frequency vocabulary), and ten questions to test the third 1000 words (academic vocabulary).

The low frequency academic words came from the 836 words in the University Word List, or UWL (Xue & Nation, 1984). In total, together with the 2 000 high frequency words, this makes up a vocabulary of about 3 000 word-families, or approximately 5 000 words. This corresponds roughly with DoE assessment standards for grade 6 Additional Language (AL) for which a vocabulary of 4 000 to 5 500 words is necessary to cope with reading at this level.

The learners' scores on each of the three sections and the total score out of 30 were recorded and converted to percentages using the SPSS software program. The analysis of these results is discussed below.

Assessments of reading and language proficiency in the L1 (Northern Sotho) and the L2 (English) and L2 vocabulary at grade 7 level took place in April (pre-tests) and then again in November (post-tests) 2006 at the project school and at the comparison school.

RESULTS

The first research question was whether learners in a reading programme would show any increase in vocabulary size as a result of increased opportunities for reading. In order to measure their gains in high frequency vocabulary (Research question 1) and in academic vocabulary (Research question 2) learners were tested at the beginning of the project (April) and again in November. Their mean scores (expressed in percentages) are reflected in Table 1 below:

Table 1 Project School Grade 7 Vocabulary scores*

	Pre-test	***Post-test***
N	98	101
Level 1 (basic words)	46.2	47.7
SD	12.5	13.9
Level 2 (basic words)	41.4	44.5
SD	12.4	15.7
Level 3 (academic words)	35.3	39.7
SD	11.6	12.6
Total Vocabulary	40.9	43.9
SD	9.4	11.8

* Scores expressed as percentages

Two important trends were revealed here. Firstly, it was encouraging that gains were made, although these appear small. In order to test whether these were significant, a paired samples t-test revealed that they are statistically significant at all but the first level (t = -.910, p = .365; t = -2.755, p = .007; t = -3.316, p =. 001; and t = -3.706, p = .000, respectively). A less encouraging trend is the generally low scores at all levels of vocabulary revealed by these assessments. The low scores on the first two levels suggest that learners fell far short of having an automatic knowledge of the most frequent English words, a prerequisite for independent reading and a foundation for building academic vocabulary. Their scores on academic words (Level 3) were very low, suggesting that they could have difficulty reading high school textbooks.

In order to compare learners' vocabulary scores with their academic performance (to answer Research question 3), they were grouped according to the four Gauteng Department of Education (GDE) assessment categories on the basis of their November examination results. These four categories are:

Not achieved (0-39%)
Partly achieved (40-49%)
Achieved (50-69 %)
Outstanding (70% +).

The majority of the grade 7 learners (58) fell within the so-called 'catch-all' third category (see Table 2 below). This category covers a wide range, and as there is clearly a vast difference between a learner who achieves 50% and one who scores 69%, it could be regarded

as misleading. Nonetheless, as it is used by the GDE, I adhered to this categorisation in the study.

As can be seen from Table 2, learners in the two passing categories (*achieved* and *outstanding*) showed a gradual but steady gain in vocabulary scores across the three levels of the tests. The *outstanding* group showed very good gains in the 2 000 and 3 000 word levels (49% to 60% and 43% to 54% respectively). This group read more than the others and many of the learners were highly motivated, taking every opportunity to read. This supports the research findings that good readers who tend to read more have larger vocabularies (Stanovich, 1986; Horst, 2005; Pretorius & Mampuru, 2007; Rupley & Nichols, 2005).

Table 2 Project School Grade 7 Vocabulary scores* per assessment category

GDE category		***Level 1***		***Level 2***		***Level 3***		***Total Vocabulary***	
	N	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***
Not achieved	12	38.1	35.4	30.0	30.0	30.4	29.5	32.8	31.6
Partly achieved	17	41.2	40.5	37.5	38.2	27.8	31.4	35.5	36.7
Achieved	58	46.4	48.4	42.0	44.6	35.6	39.7	41.2	44.2
Outstanding	20	54.2	59.1	49.5	60.2	43.7	54.1	49.1	57.8

**Scores expressed as percentages*

The two lower categories (*partly achieved* and *not achieved*) showed very little gain or even a decline – these groups may have been floundering as the year progressed. This underlines the point that for poor readers, exposure to reading alone is not enough, and there must be explicit focus on the teaching of vocabulary.

In order to view vocabulary within the broader context of these learners' language and literacy performance (Research question 4), I compared their vocabulary scores to those achieved on the L1 and L2 language proficiency and reading comprehension assessments which were conducted by other researchers during the project. The results are provided in Table 3 below.

Table 3: Project School Grade 7 language proficiency, reading and vocabulary scores*

GDE category		*L1 Language proficiency*		*L1 Reading*		*L2 Language proficiency*		*L2 Reading*		*L2 VocabTotal*	
	N	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***	***Pre-test***	***Post-test***
Not achieved	12	52,3	36,1	17,8	15,3	17,1	22,9	14,3	19,3	32,8	31,6
Partly achieved	17	71,2	67,4	23,5	24,7	49,5	52,2	20,4	31,5	35,5	36,7
Achieved	58	70,3	71,3	30,2	39,1	63,8	66,3	28,9	41,6	41,2	44,2
Outstand-ing	20	70,4	77,6	38,3	54,0	77,1	86,4	44,3	64,1	49,1	57,8

**Scores expressed as percentages*

Again, the greatest gains across all four assessments occurred in the top two categories. The large gap between L2 reading and L2 language proficiency scores in the pre-test was beginning to close by the post-test: the learners in these two groups were reading more, particularly the *outstanding* group, and their scores reflect this. Their English vocabulary scores improved – not dramatically in the *achieved* category but quite considerably in the *outstanding* category. The belief that extensive reading can promote vocabulary growth is borne out by these results (Stanovich, 1986; Coady, 1993; Joshi, 2005), but more so in the case of already proficient readers than in the case of poor readers.

In order to place this school and its performance further in context (Research question 5), comparisons were made with an independent school in the township (Comparison school) which was not involved in the project at all (see Table 4 below). An independent-samples t-test was used to test for significant differences between the November total vocabulary scores, the reading proficiency scores and the language proficiency scores of learners from these two schools. These differences were highly significant in all cases ($t = -11.215$, $p = .000$; $t = -9.880$, $p = .000$; and $t = -5.817$, $p = .000$ respectively). As can be seen from the scores, despite having no reading programme in place and following a 'straight-for-English' approach, the comparison school outperformed the project school on all measures. What is particularly striking is the disparity between the project school and the comparison school's English reading comprehension and vocabulary scores. It appears from these results that the children at the comparison school were developing vocabulary more efficiently and reading better than learners at the project school, despite the intervention programme at the latter. The children at the comparison school were also considerably more proficient in English (as measured by the dictation tests).

Table 4: Comparison of mean scores (post-tests) according to schools

	Project School	*Comparison School*
Vocabulary Nov	43.9	75.4
N	101	24
Sd	11.8	14.2
Eng reading Nov	42.0	80.4
N	104	25
Sd	18.4	11.9
Eng lang. proficiency Nov	62.7	92.4
N	101	25
Sd	24.6	13.1

DISCUSSION

Several main trends can be noticed in the results. The first is that the learners at the project school revealed a lack of vocabulary, even at the end of the study period, not only in terms of academic words but also high frequency words (of which, at this stage, they ought to have an automatic knowledge). Although they made slight gains in the post-tests, they were still below the 50% mark at all vocabulary levels.

Reading and language proficiency in both the L1 and English were assessed by means of a comprehension test (reading) and a dictation test (language proficiency). Generally, the trends that were apparent in the vocabulary assessments were reflected in these results. English reading was closely linked to vocabulary – weaker readers showed the smallest vocabulary gains. Their English proficiency scores echoed this trend. In the course of their high school careers, these learners are likely to experience a vicious circle – they will learn less because of their language deficiency, and their language deficiency will increase because they cease learning – unless they are able to develop some survival strategies. This is an example of the Matthew effect (Stanovich, 1986), in the sense that those with less knowledge learn less, or get 'poorer', while the rich, i.e. the proficient speakers and readers, grow better or 'richer'. Unless these learners are assisted now they will probably continue to struggle with reading, and this will adversely affect their chances at succeeding in education.

When their scores were compared to the comparison school which is better resourced and has smaller classes, it became even more apparent how far behind the learners at the project school were lagging. It must be kept in mind that although this comparison school is an independent school and better resourced than the project school, and although the learners come mostly from a higher socio-economic bracket that the learners at the project school, they live in the same township and they speak an African language as their home language. There were no speakers of English as a home language at this school. Differences can thus not be put down solely to language issues. This does not imply an argument for a 'straight for English' approach: rather, it emphasises the importance of reading both inside and outside the classroom, as well as the importance of quality of teaching.

Looking specifically at the project school's results, the Matthew effect is again illustrated in the vocabulary gains made by the *outstanding* group (see Table 2). This group did a great deal

of reading and this is reflected in their vocabulary scores and L2 reading scores which improved noticeably more than their L1 reading scores. It must be kept in mind, however, that these learners read much more in the L2 than in their L1. An aspect which could be a cause for concern is the lack of improvement (and in some cases, even deterioration) in L1 reading scores among the *not achieved* and *partly achieved* categories, that is the weaker students. This underlines the need for reading in both the L1 and the L2 to be encouraged, and makes the dearth of suitable books available in the L1 even more of a concern.

All the learners at the comparison school fell within the *achieved* category, while there was a fairly even spread across the four categories in the project school. The fact that class sizes were much smaller at the comparison school (25 as opposed to 50-plus at the project school) and that no learners in this class were at risk of failing may partly account for the higher scores in all measures – with the exception of the examinations recorded – at the comparison school. Add to this the better resources and superior quality of learning environment and the gulf between the scores becomes more understandable. More than a third of learners at the project school (37%) fell within the *not achieved* and *partly achieved* categories and can as such be regarded as at risk. Scarborough (2001 in Rupley & Nichols, 2005: 241) found that struggling readers have lower than average vocabularies and this may often be attributed to language problems. This is certainly the case for learners at the project school, whose vocabulary size (see Table 1) suggests that they will not become independent readers without intensive intervention, hampering their chances of academic success at high school.

The greatest gains in vocabulary as well as in all the other assessments occurred in the scores of the project school learners in the *achieved* and *outstanding* categories. The *not achieved* and *partly achieved* groups showed no significant gains in vocabulary, and even some losses: most notably, learners in the *not achieved* category made no gains or actually scored lower on all three levels of the vocabulary assessment tool in the post-test, while the *partly achieved* group made no significant gains. It was also clear that these two groups were not keeping pace with more successful learners' L2 reading comprehension development. The paucity of their high frequency vocabulary suggests that because these learners did not have automatic recognition of basic, high frequency vocabulary, they were not reading with ease; for this reason, they were probably reading very little, if at all, and had less chance of building up a knowledge of academic words. These two categories of learners also manifested language as well as reading difficulties, as was revealed in the results presented in Table 3 above.

The limited high frequency vocabulary of weaker learners and a lack of significant growth despite increased reading, together with poor reading scores in both their L1 and their L2, are cause for concern. There are no clear reasons why, if these learners were reading extensively, their vocabulary showed little, if any, growth. It is possible that these children are 'at-risk' learners who are reading at the lowest (frustration) levels, and require assistance if they are to make any headway. In a class of 50-plus learners, individual assistance is however unlikely. Their reading skills are poor in both their languages and it may be that they simply cannot benefit from reading extensively on their own, without instruction. It is commonly accepted (Nation, 1993; Laufer, 1997) that knowledge of high frequency words should be automatic by grade 7; if this is not the case, learners will be hampered by having to decode basic words, slowing down and hindering their comprehension. A link exists between vocabulary (in language and reading, i.e. both productive and receptive) and academic performance – learners must be familiar not only with high frequency words, but also with the general *academic* vocabulary. Automaticity in high frequency words is vital as a foundation for academic vocabulary: but such automaticity can only develop if children read a lot. There is

good reason for applying the term *at risk* to these learners. They have not developed an automatic basic vocabulary in the language of learning, and they have not benefitted very much from a reading programme. If they have failed to develop good reading skills by this crucial level of schooling, they will find it increasingly difficult to catch up later. They may struggle with reading all their lives, and they are unlikely to develop a love for reading (Snow *et al*., 1998).

The results of this study of course reflect only a very small sample of schools and learners in South Africa. It would be interesting to extend such a study to both the better resourced suburban schools and also to rural schools in order to form a clearer idea of what is happening in these classrooms with regard to vocabulary development. However, if the results of this study are in any way representative, they give cause for concern.

PEDAGOGICAL IMPLICATIONS

What can be done to assist these learners? Extensive reading alone is clearly not enough – they need explicit vocabulary instruction early on. In order to read successfully at high school level, a learner needs a working knowledge of academic vocabulary, and this knowledge is developed by reading – but learners cannot read successfully without an adequate basic high-frequency vocabulary. Intervention at an early stage is essential if these learners are to develop their vocabulary to a size and depth which will allow them to cope with their high school textbooks. Teachers should be encouraged to view vocabulary development as vitally important: they must make learners aware of the value of knowing about words, the building blocks of language and reading development. Teachers must be made aware that learners need frequent exposure to words in order for them to become part of their productive vocabulary.

There are many ways in which teachers can develop learners' vocabulary. At the most basic level, they can encourage learners to keep vocabulary lists of both high frequency and academic words they come across in their reading, and this could even be turned into a game or competition in order to encourage learners to become involved in their own vocabulary development. As the class reads together, teachers should draw attention to words that are known to cause difficulties or those that might be unknown to learners, explaining and reinforcing them. Potentially problematic words can be highlighted before a reading exercise by drawing attention to them and asking learners to look them up (either at home or during group work sessions) so that these words are more familiar when the reading is done. Crucially, as the results in this study have revealed, at-risk learners need explicit teaching of basic high frequency words. Once these have been established, focus can turn to building an academic vocabulary.

Schools with access to computers and the internet can make use of the myriad word games that are available and that are designed to build academic vocabulary. Many of these games are based on a multiple-choice format using different levels of vocabulary. These can be fairly easily simulated as paper-and-pencil quizzes in schools which have no access to computers.

It is important to build learners' vocabulary size early on in their school careers so that by the time they enter high school, the high frequency words are recognised automatically and they are independent readers who read with ease, have well developed reading abilities and an emergent academic vocabulary. In short, academic proficiency cannot make up for poor reading skills and reading cannot improve without knowledge of words.

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