

# Equity, Efficiency and the Development of South African Schools<sup>1</sup>

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*Identifying the mechanisms for affecting the achievements of successful schools has become a major research focus in South Africa. Large scale descriptive studies have to date failed to make any progress towards this goal, largely because of a lack of data at the school and classroom levels. Small scale studies, on the other hand, which take these latter aspects as the principal focus for their research, have also not made much headway in revealing this secret, in part because they are too small in scale to generalise beyond the very particular circumstances of the respective case.*

Taylor et al, 2003, 66

The state of knowledge about South African schools has improved significantly since the above conclusions were drawn three years ago. In the intervening years a number of school improvement programmes have come to fruition, while several research initiatives have reported significant findings. This chapter examines the evidence arising from these developments and draws conclusions regarding future directions for both school improvement programmes and research on schooling.

Three sources of knowledge are available for researchers investigating school quality: large-scale testing initiatives, school effectiveness studies, and evaluations of school improvement programmes.

## 1. Large-scale Testing

South Africa participates in three cross-country comparative studies: TIMSS, PIRLS and SACMEQ. The message coming from all three sources is unambiguous: the country performs poorly compared with many of its more impoverished neighbours,

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and very poorly in relation to developing countries in other parts of the world. For example, in the latest round of SACMEQ testing conducted in 2000, of the 14 Southern and Eastern African countries participating, South Africa was placed ninth in both reading and mathematics at grade 6 level (See Table 1).

**Table 1: Reading and maths scores for SACMEQ II (From SACMEQ, 2005)**

Country	Reading		Mathematics	
	Mean score	$\Delta$ SES	Mean score	$\Delta$ SES
1. Seychelles	582.0	32.6	554.3	35.4
2. Uganda	582.4	23.2	506.3	22.9
3. Kenya	546.5	52.2	563.3	40.2
4. Tanzania	545.9	46.4	522.4	36.5
5. Mauritius	536.4	46.8	584.6	57.7
6. Swaziland	529.6	21.9	516.5	11.1
7. Botswana	521.1	27.2	512.9	30.9
8. Mozambique	516.7	12.5	530.0	5.1
9. South Africa	492.3	103.4	486.1	77.5
10. Zanzibar	478.2	24.1	478.1	9.9
11. Lesotho	451.2	5.3	447.2	-3.7
12. Namibia	448.8	64.6	430.9	52.6
13. Zambia	440.1	32.9	435.2	19.3
14. Malawi	428.9	17.8	432.9	14.0

South Africa is significantly behind Mozambique, a country with one-sixth the GDP of South Africa, although it has to be said that the latter has a gross enrolment ratio of 100%, in comparison to around 30% for Mozambique. Nevertheless, the picture to emerge from numerous results similar to those shown in Table 1 is that South Africa is not getting value for money from its public school system. Although school is accessible to the majority of children, the skills produced are expensive and their quality low. This affects both the trainability of adults in the workplace and the educability of school leavers entering the Further and Higher Education sectors.

A prominent feature of the system is the very high degree of inequality between schools, as shown by the differences in scores between high- and low-SES schools on the SACMEQ tests ( $\Delta$ SES in Table 1). The country's closest rival in degree of inequality in the region is its former colony, Namibia, which is also exceptionally high. This is obviously a legacy of the past and one which the present government is finding difficult to reverse.

Cross-national testing programmes are generally accompanied by surveys which provide a useful source of data at family, school and classroom levels, and may be used to search for policy variables associated with enhanced learning. Gustafsson (2005) used the SACMEQ 2000 dataset<sup>2</sup> in this way and found several significant factors. Most notable of these are time management in schools – a strong factor, which is very much less conspicuous in other SACMEQ countries – textbook supply and teacher training. We discuss these in more detail in section 5 below.

South Africa has a well established internal benchmark for student performance at the top end of the school system. This is the matriculation examination (matric), the results of which are used to certify the Senior Certificate at the end of Grade 12. Matric has been in existence for many decades. It has wide currency in the higher education sector, the employment market, and amongst parents and the general public. The matric exam provides the most reliable information on school quality at the high school level, and we illustrate its use for this purpose in section 3.3 below.

## **2. School Effectiveness Studies**

School effectiveness studies – research which looks specifically at factors which optimise learning – is a new field in South Africa. The first major study of this kind, the Pupil Progress Project (PPP), was launched in specific response to the paucity of knowledge in this area described in the quote which opens this chapter. The PPP was restricted to one province, the Western Cape<sup>3</sup> where a sample of 90 primary schools<sup>4</sup> was investigated across the full range of socio-economic status, language, learner performance and geographic location (van der Berg, et al, 2005). Data was collected on SES, family educational practices, school management, classroom teaching and learner performance in language and mathematics. Conventional regression and HLM

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<sup>2</sup> SACMEQ sampled 168 schools and 3,163 learners, or 0.3 per cent of the Grade 6 population

<sup>3</sup> The Western Cape is one of South Africa's two most developed provinces. This is reflected in the province exhibiting both the highest mean SES, and the best learner performance in national and international tests.

<sup>4</sup> The sample size is probably a little low, given the very high variability across South African schools: at 0,7 South Africa's rho value is almost twice that of the next highest figure in Africa (van der Berg, 2005).

techniques revealed strong associations with learning in the following areas: poverty, language, home educational practices and school management.

The PPP confirmed language as the most powerful influence on learning, after poverty: children are severely disadvantaged when the home language and the language of instruction (LOI) do not coincide<sup>5</sup>. This is a well established finding in South Africa (See Taylor et al, 2003 for a summary). In the home, the PPP found that learning is enhanced when parents speak to their children in the LOI, and where children read and do homework frequently.

At the level of school management, the PPP concluded that the deployment of textbooks, instructional leadership and time management all correlated significantly with learning. With regard to instructional leadership, learning is enhanced when principals lead the production of curriculum year plans by teachers and monitor their implementation.

No classroom level factors emerged as significant correlates of learning in the PPP. This is almost certainly due to the research design: the PPP was a snapshot study, with a single point of measurement, which is unable to link the characteristics of any one teacher to student performance, since the learning exhibited by a child at Grade 6 level is the product six years of schooling, generally involving at least six different teachers. Longitudinal studies are required to isolate the effects of individual teachers and their specific practices on pupil learning.

In another school effectiveness study in the Western Cape, conducted in 24 poor schools chosen so as to minimise SES differences, Reeves (2005) examined the effects of pedagogical practices on mathematics learning. The study controlled for prior achievement, administering tests at the start and end of the school year, and was therefore able to link gain scores exhibited by pupils with the classroom practices of individual teachers.

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<sup>5</sup> While national language policy strongly recommends that the home language be used in the classroom up to at least the end of the third grade, parents are given final authority over language choice.

Reeves found that teaching style (ie child-centred vs teacher-centred) did not matter as much as certain features of pedagogical practices. Most important amongst these are:

- micro pacing (teacher responsiveness to pupils' levels of ability and progress),
- making explicit the criteria by which any knowledge display is evaluated – and in particular correcting pupil errors – and
- engaging pupils at relatively high levels of cognitive demand with respect to both principled and procedural knowledge.

Another important finding was that more time spent in maths classes is related to achievement gain: simply by attending class, students have a learning opportunity, and inevitably some take advantage. The pedagogical variables that were emphasised in Curriculum 2005 – such as collaborative group work – did not emerge as significant in relation to gain scores. Reeves' findings also suggest that, although gain scores within any one year depend on both the subject knowledge of the teacher and her ability to understand her pupils and to pace delivery of the curriculum accordingly, the degree of curriculum coverage across grades, from one year to the next, may be a powerful cumulative factor in building pupils' knowledge.

### **3. Evaluations of School Improvement Programmes**

School improvement has a long history in South Africa (See Muller, 2000). In looking for causal effects between an intervention programme, educational practices and the dependent variable, school improvement evaluations add a significant level of complication to designs used in school effectiveness research. Causal effects are considerably more difficult to establish than statistical associations. South African research in this field has begun to identify elements of successful programmes. We discuss these by programme type.

### 3.1 Teacher- and school-focused initiatives<sup>6</sup>

Before the end of apartheid rule in 1994 school improvement was pre-eminently the domain of NGO activity, with non-government bodies opposed to the apartheid state striving to counter the ruling ideology by means of teacher in-service programmes. Learner-centred classrooms were seen as a reflection of democracy and liberation and their promotion became the prime focus of NGO activity. School improvement remains an area of activity within the NGO sector, although in recent years government has begun to move into this terrain in an attempt to raise the quality of schooling.

It is estimated that in the order of R1 billion from non-government sources is spent annually on school improvement initiatives in South Africa (Taylor et al, 2003). The overwhelming majority of these efforts have to date been directed towards improving the quality of education delivered by the poorest schools in the country. This activity has been in progress for at least two decades, although objective evaluations of these programmes is a relatively recent development. Thus, in a survey of this activity in 1995, 99 projects were recorded and an analysis done of all evaluations conducted on their programmes (Taylor, 1995). One-third of the projects produced evaluations of one or other kind. The analysis revealed that only one of the evaluations used objective measures of learning outcomes to assess impact (where small but significant positive learning gains were noted in science).

Until the fall of apartheid, these programmes were generally small in scale, and more often than not consisted of subject-focused training programmes for selected teachers in target schools. The Imbewu project (1998-2001), was the first large-scale initiative of this type in the country. Working in 523 rural schools in the Eastern Cape, teacher and principal training concentrated on the principles and methods of learner-centred teaching and outcomes-based education, as defined in the Curriculum 2005 documents. Perold (1999) found an enthusiastic response to the programme on the part of parents, principals and teachers. In a three year longitudinal study, Schollar (2001) noted that principals and teachers reported higher levels of understanding of

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<sup>6</sup> Also referred to as 'Inside-out approaches' (Muller, 2000).

Curriculum 2005. Schollar also measured changes in school management and classroom teaching practices as a result of the programme. Pupil tests were conducted, which revealed no learning gains in reading, writing and mathematics (ibid).

The Learning for Living project, working in 898 primary schools across the 9 provinces was both larger and of longer duration than Imbewu. In addition it showed a different focus in pursuing the goal of improving reading practice and outcomes in performance in project schools. The programme trained principals and teachers in teaching reading, visited classrooms to support and monitor the work of teachers, and saturated target schools with books and other reading materials. The first cohort of schools, which experienced the full 5 years of intervention, showed covariant learning gains of 8,4 percentage points in reading and 5,3 points in writing when compared with a set of control schools (Schollar, 2005).

### **3.2 Standards-based reform<sup>7</sup>**

Standards-based approaches to school improvement attempt to steer the performance of schools, by means of standards setting and external monitoring. This approach was initiated by the central government in South Africa in 2000 when the poor pass rates produced by many schools in the matric exam became a major concern. The Minister of Education led this campaign, giving prominent publicity to the issue and exhorting provinces to improve their performance on this measure. The effect on pass rates achieved by schools was marked, with the number of schools falling into the zero percent category dropping significantly (MoE, 2001; 2002).

The first instance of this approach at the provincial level was the Education Action Zone (EAZ) programme adopted by the Gauteng Department of Education in 2000. This was designed as a comprehensive systemic initiative which would include monitoring schools and providing support and training to principals, teachers and pupils. However, in reality, the programme did not fully meet its systemic intentions, focusing largely on accountability measures (Fleisch, 2001; 2003). A project approach

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<sup>7</sup> Also known as 'Outside-in approaches' (Muller, 2000).

was adopted in administering the programme, rather than strengthening the systems and capacity for school monitoring and support in the standard line functions of the GDE: thus, the EAZ was managed from the provincial head office, with special units responsible for earmarked schools and reporting directly to the provincial Minister of Education and the Head of Department.

The EAZ achieved an impressive rise in matric results in targeted schools, both in the absolute sense and relative to non-EAZ schools: not only did the overall pass rate jump by over 30 percentage points, but the number of candidates who passed increased from 1600 to over 3000. While the percentage of learners in the EAZ schools that received an endorsement or exemption remained very small, at less than 5%, the growth in these numbers was exponential (Fleisch, 2003).

While they certainly succeeded in squeezing a great deal of management slack out of the system, South Africa's standards-based school improvement initiatives also produced the kinds of distortions which have been the subject of much criticism internationally. Because of an almost exclusive focus on pass rates, as opposed to the number and quality of passes, school principals were tempted to manipulate the numbers by holding back less promising students, examiners were tempted to drop the standards of test papers, and the Department of Education was tempted to place undue pressure on the moderation process (Umalusi, 2004). These three factors, together with improvements in the management of schools, led to significant rises in pass rates over the period 2000-2004.

### **3.3 Systemic school development programmes**

The main aim of systemic school reform is to link together macro and micro levels of educational practice so that they reinforce each other. This involves aligning curriculum, teaching and assessment through the co-ordination of activity at the levels of the classroom, school, and the bureaucracy at district and higher levels. Targets are set, performance monitored and support offered in the form of training and resources. Systemic designs are now the most common approach to school development in South

Africa, although, as we shall see below, structural problems in the system prevent their being implemented as planned.

The District Development and Support Project (2000-2002) was the first initiative based on an explicit systemic design (HSRC, 2003). Working in 453 primary schools in the four poorest provinces, interventions were directed at improving the functionality of districts and schools and improving classroom teaching in language and mathematics. Objective tests of pupil performance in literacy and numeracy at grade 3 level were conducted during each year of the programme, and again one year later. Significant changes were recorded, and these were holding steady a year after the closure of the DDSPP, as shown in Table 2.

**Table 2: DDSPP scores for numeracy and literacy (HSRC, 2003)**

	Mean %			
	2000	2001	2002	2003
<b>Numeracy</b>	25.84	26.78	38.04	37.32
<b>Literacy</b>	52.58	50.23	57.22	56.01

While the gains exhibited by DDSPP schools appear to be impressive, in the absence of control scores, the significance of these results cannot be ascertained.

Systemic programmes were first conducted in primary schools and this sector remains a prominent focus for donor-initiated school development projects. However, in recent years high schools have also begun to feature in such activity. Funded by the Business Trust, the Quality Learning Project (QLP) (2000-2004) worked in 524 high schools selected by the nine provincial departments of education. The QLP was based on a systemic design, in which training and support programmes were aimed at achieving better management of districts and schools and improved classroom teaching. A longitudinal evaluation (HSRC, 2005) found that over the life of the project QLP schools achieved significantly better results in the matriculation examination than selected control schools, in terms of greater numbers of overall passes, university exemptions<sup>8</sup> and passes in mathematics and English. The evaluation

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<sup>8</sup> Pupils who pass with exemption satisfy the criteria for entry into higher education.

conclude that the project had a significant effect on the performance of these very poor, largely rural, schools.

QLP schools showed improvement relative to control schools in a number of areas:

- In terms of school leadership and administration, planning and financial management improved in project schools, although the general level of management remained low.
- Two components of curriculum leadership also stood out: monitoring curriculum delivery and support to teachers.
- At the classroom level significant improvements were noted in the degree of curriculum coverage completed by QLP classes, teaching to the appropriate level of cognitive demand, and the quantities of reading, writing and homework undertaken.

Path analysis modelling revealed that QLP interventions affected the functioning of the system in districts, schools and classrooms, improving indices of functionality relative to those for control schools at all three levels. These improvements, in turn, were associated with improved learner performance. Most notable was the effect of language-across-the-curriculum interventions on the overall matric pass rate: the implication is that good reading and writing skills are a prerequisite to good performance in all subjects and that intervening in this area can effect significant improvements in pupil performance.

Although the matric results of most schools in the country improved significantly over this period, the QLP outperformed those of both a set of control schools and the national mean, particularly in mathematics (Table 3). While improvements in the actual number of passes and the pass rates produced by QLP schools are only slightly better than those of the national mean, the QLP schools show very large differential improvements on three indicators of quality: number of exemptions, and the number of maths passes at both standard (SG) and higher (HG) grades.

**Table 3: Comparison of QLP matriculation results with the national mean, 2000-2004 (Kanjee and Prinsloo, 2005)**

	Increase 2000 – 2004								% Pass Change
	Passes		Exemptions		HG maths		SG maths		
	No	%	No	%	No	%	No	%	
<b>Total QLP</b>	4167	18.3	1182	34.8	585	152.3	8741	137.5	<b>14.0</b>
<b>Total SA</b>	47314	16.7	16493	24.0	8466	47.0	46512	58.0	<b>12.8</b>
<b>Difference*</b>		<b>1.6</b>		<b>10.8</b>		<b>105.0</b>		<b>79.0</b>	<b>1.2</b>

\* Computed by subtracting the percentage point improvements exhibited by the national mean over the life of the project from those exhibited by QLP schools.

Nevertheless, it should be noted that these gains were made off an extremely low base: thus the 524 QLP schools produced a total of 969 HG maths passes in 2004, which was up from only 384 achieved in 2000 (Taylor and Prinsloo, 2005). The majority of QLP schools (69%) remained incapable of producing HG maths passes in the fifth year of the project.

The HSRC evaluation also noted that 13 of the 17 QLP districts were restructured during the life of the project, and that some of these experienced repeated restructuring events, one of them up to 5 times. These findings reflect a major problem inhibiting the full implementation of systemic reform initiatives in South Africa. Not only are the provincial and district level bureaucracies extremely weak – characterized by large numbers of vacant posts, poorly developed management systems and a paucity of essential resources, such as vehicles to visit schools – but many are in a more or less constant state of instability due to frequent restructuring and personnel changes. Restructuring invariably follows a change of senior management, with the new leader ordering a reshuffling of roles and responsibilities, along new lines of patronage.

Under the circumstances, programmes such as the DDSP and the QLP are systemic in design only: in reality schools are essentially on their own, with virtually no support or monitoring from districts. The point is emphasized by another finding of the QLP evaluation study: no learning gains were discernible in maths at grade 9 or 11 levels. The most likely explanation for this result, in the light of the very impressive improvements at matric level, is that, whereas intense pressure is put on schools to perform in the matric exams, no monitoring is applied at lower levels of the system. The intense public expectation for schools to produce good matric results appear to have a strong effect on school performance.

The Dinaledi project, working in 102 poor high schools across the country was also structured as a systemic initiative, driven from the national Department of Education. Although at least some provincial departments did intervene at the school level, by and large there seems to have been little participation by the relevant district offices. Training was provided and materials supplied to teachers and principals (Human, 2003). Although no objective evaluation was conducted on Dinaledi, comparison with the national results show that project schools performed very much better than the mean (see Table 4). Nevertheless, 17% of schools ended the project without a single HG maths pass, while a further 28% achieved 5 or fewer such passes in the final year of the project.

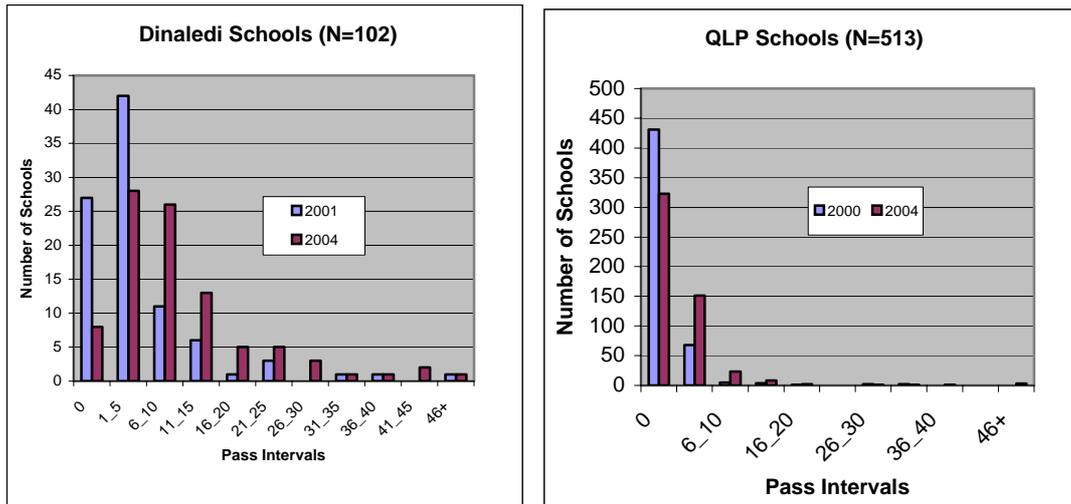
**Table 4: Comparison of Dinaledi matriculation results with the national mean, 2001-2004**

Schools	Increase 2001 - 2004												% Pass Change
	Passes		Exemptions		HG Math		SG Math		HG Science		SG Science		
	No	%	No	%	No	%	No	%	No	%	No	%	
<b>Total Dinaledi</b>	876	10.4	613	29.7	476	94.6	484	14.6	467	64.4	44	1.8	3.6
<b>Total SA</b>	53511	19.3	16797	25.6	180	0.7	25691	26.3	-6063	-16.6	-6462	-7.8	9
<b>Difference*</b>		-8.9		4.1		93.9		11.7		81.0		9.8	-5.4

\* Computed by subtracting the percentage point improvements exhibited by the national mean over the life of the project from those exhibited by Dinaledi schools.

While both were designed in broad outline as systemic initiatives, Dinaledi and QLP were very different in the details of their initial school profiles, and are therefore not strictly comparable. However, it is important to note that both, on average, showed impressive overall gains compared with the national mean, while at the same time a high proportion of schools in each programme benefited nothing from the respective intervention. These features are shown in Figure 1, the most notable aspect of which is that in both cases a significant number of schools remained in the 0% pass category after 4 or 5 years of intense intervention. These schools are impervious to interventions, from both the government and non-government sectors.

**Figure 1: Comparison of number of passes in HG maths between start and end for QLP and Dinaledi**



#### 4. School development post 2004

Figure 1 highlights a feature of all school systems which has long been known internationally (Hopkins, Harris and Jackson, 1997) and locally (Christie and Potterton, 1997) but which was not taken into account in designing school improvement programmes in South Africa prior to 2004. Instead, a blind drive for equity was pursued for the first decade of democratic government, characterised by a focus on the poorest schools, regardless of the effects of these policies. However, experiences with the QLP and Dinaledi have led to a very significant redirection of efforts, and in particular has given rise to a differentiated approach to school development on the part of both government and the South African private sector.

From the side of the state, while the national budget continues to distribute subsidies to schools proportional to their poverty rankings, the re-launch of the Dinaledi project is focused exclusively on better-performing schools. 400 high schools (out of a total of 6118) have been selected by the nine provinces according to their maths output and demographic profile: the minimum criteria for selection is 35 HG or SG maths passes amongst African candidates in the matric exam. The aim is to double the number of maths passes among African pupils in the next five years, and to increase the HG:SG ratio. It is intended to achieve this goal by training teachers, incentivising teachers and schools, and improving infrastructure and equipment. Essentially, Dinaledi is driven from the national level, with provinces and districts being given minor roles.

Similarly, no fewer than three distinct initiatives on the part of the corporate sector are targeting high schools with minimum levels of productive capacity. The Zenex Foundation, a major donor in education, has allocated R165 million over the next 10 years for programmes of this kind. The Centre for Development and Enterprise and the Independent Schools Association of South Africa are conducting feasibility studies and lobbying private sector donors to establish programmes based on differentiated approaches to school development.

International donors, in the meantime, continue with earlier models targeting the poorest primary schools. Thus second phases of the Imbewu Project and the District Development and Support Project (now called the Integrated Education Programme) continue, while a major new initiative, the Khanyisa Education Support Programme, was launched in 2003.

## **5. Lessons: Which Factors Optimise Learning?**

All research studies on the quality of schooling in South Africa concur that poverty remains far and away the most powerful determinant of educational opportunity. The PPP study found that between two-thirds and three-quarters of the variance in pupil scores is explained by socio-economic factors (van der Berg et al, op cit).

Interestingly, the poor appear to be more constrained by their school circumstances in acquiring numeracy skills than in literacy. Put another way, school is more important for learning numeracy than for learning literacy, or literacy is easier to learn at home than numeracy.

Effective educational practices occur in the home, the system, the school and the classroom. Such practices can be categorised into five broadly defined factors: language, time management, curriculum coverage, reading and writing, and assessment, giving rise to the matrix shown in Table 5.

**Table 5: Factors which influence learning at different levels of the school system**

FACTORS	EFFECTIVE PRACTICES			
	Home	District and higher	School	Classroom
<b>Language of instruction</b>	Speak LOI *PPP, Simkins (2003), Khanyisa	Clear policy guidelines Monitor	Policy for the school Plans for developing proficiency in LOI	Develop proficiency
<b>Time management</b>	Sign homework * van der Berg et al (2005 ), SACMEQ	Monitor time management in schools	Regulate time use *PPP, SACMEQ	Adjusting pace to pupil ability *PPP, Reeves
<b>Curriculum coverage</b>	Assist with homework * PPP	Construct and distribute curriculum standards. Monitor and support coverage. *QLP	Monitor and support planning and delivery. *PPP, QLP, SACMEQ	Teacher knowledge. Plan curriculum coverage. Complete curriculum standards. *PPP, Reeves, SACMEQ, QLP
<b>Reading &amp; Writing</b>	Read * PPP	Distribute books and stationery	Procure and manage books & stationery *PPP, SACMEQ, QLP	Read and write QLP
<b>Assessment</b>	Monitor results	Quality assure and monitor results	Quality assure tests. Monitor results. Guide and support *QLP	Assess. Provide feedback. *Reeves, QLP

\* Significant association found between improved learning and this factor in the project named: PPP (van der Berg et al, 2005), QLP (Kanjee and Prinsloo, 2005; Taylor and Prinsloo, 2005), SACMEQ (Gustafsson, 2005), Simkins (2003), Reeves (2005), Khanyisa (Simkins and Perreira, 2006).

The findings of the programmes described in sections 1-3 above illuminate a number of the cells in this matrix. Most prominent are language and home-related factors, which is not surprising given the strong co-linearity between these factors and poverty in South Africa. African children, which not only constitute the overwhelming majority but also fall predominantly into the poorest fraction of society, are largely schooled in English, which is a second or third language for almost all of them. Current government policy prescribes mother-tongue instruction for at least the first three grades, but this may be overturned by the parent body of any school and there is evidence that this is frequently done (Taylor and Moyana, 2005). As a result many of the poorest children are schooled in an unfamiliar language. The evidence summarised in Table 5 supports findings which have been well established in South Africa for some time: learning is greatly enhanced when the language of the home and that of the school coincide. Furthermore, where there is a dissonance between the two, children do better at school the more their parents speak to them in the language of instruction (Simkins and Patterson, 2003).

Other home level practices which stand out strongly are reading and the performance of homework. An early simplified PPP regression model showed a strong step-wise improvement in learning: children who read once a week have an advantage of about 5 percentage points in the literacy test over those who do no reading at home; when

reading is done 3 times a week the advantage is increased to 10 points, and those who read more than 3 times a week are likely to be about 12 points ahead. In the full regression models the effects of reading at home are more muted (around 3.5 points), but remain strongly significant. Similarly, regular homework adds around 2 percentage points to performance.

A number of school level management practices are associated with better than expected learning. Time regulation appears to be chief amongst these. Gustafsson (2005) notes that teacher latecoming is a factor in 85% of South African schools, and estimates that if all schools were brought up to the level of the best schools in this regard then overall scores on the SACMEQ tests would improve by around 15% across the system, and around 20% in the poorest schools. This factor has long been identified as a problem (Taylor and Vinjevold, 1999), and the latest studies (Chisholm et al, 2005) indicate that it continues to exert a strong inhibiting influence on the quality of schooling. The PPP research (van der Berg et al, 2005) suggests that relatively simple measures, such as keeping an attendance register for teachers, can have a significant effect on improving time management, and consequently on learning outcomes, although this indicator is probably a proxy for a more comprehensive system of time management.

Curriculum leadership and management is a second school level factor associated with learning. Co-ordinating the construction of teacher plans for curriculum coverage, and monitoring the implementation of the plans was found by the PPP to have positive effects. These results are supported by the findings of the QLP evaluation (Kanjee and Prinsloo, 2005; Taylor and Prinsloo, 2005). Gustafsson concurs with the QLP conclusion that providing advice to teachers by management is beneficial, and adds that fewer, well structured sessions are better than more frequent, less formal interactions.

In the domain of classroom practice, Reeves and the QLP evaluation agree that learning gains are proportional to the degree of curriculum coverage, and the extent to which the level of cognitive demand at which the material is presented approaches the level specified by the official curriculum. In addition, the QLP study found greater quantities of reading, writing and homework enhance learning, while Reeves

concluded that pupils perform better in maths when the teacher is responsive to the stage of development of individual children, gives explicit feedback in response to pupil knowledge displays and makes clear the criteria for judging a good display.

Table 5 also reveals three areas in which knowledge about South African schools is relatively poorly developed: two of these occur at the levels of the district and classroom, respectively, while the third, assessment, is a factor which cuts across all levels of the system. The paucity of knowledge about factors at the district level most probably arises because of the very low functionality of the majority of district offices. On the other hand, the failure of research projects to date to identify successful classroom practices probably derives from the paucity of longitudinal research designs. The silence around assessment is particularly puzzling. Expectations are that school-level practices in this regard – such as setting high expectations, quality assuring test papers, and monitoring results – would produce positive effects on learning. The lack of such findings in our research projects may derive from contradictory or uniformly poor practices in this regard. We will discuss these three silences in more detail in section 7.

## **6. Lessons: Which intervention models are most effective?**

The first lesson to be learnt from the many initiatives designed to improve the performance of poor schools in South Africa over the last two decades or more is that learning gains are difficult to achieve in such schools and, where they do occur, are only achieved in a fraction of the target schools, even when interventions are sustained for as long as 5 years. The poverty of the homes from which these children are drawn, is undoubtedly a major factor inhibiting educational progress. However, while some poor schools are capable of rising above their socio-economic conditions to achieve effective teaching and learning, many clearly sit below the threshold required to benefit from school development programmes conducted by outside agencies. In their three-part classification, Hopkins et al (Hopkins, Harris and Jackson, 1997) refer to schools of this type as ‘failing’, requiring what they described as type I intervention strategies. Rewards and sanctions have no bite, as the schools are unable to help themselves. It is estimated that of the more than 6000 high schools

in the country, 87% fall into this category. There is insufficient data on which to base an estimate of the extent of this problem in primary schools. These schools require a high level of external intervention and support. According to Hopkins et al there should be a clear and concerted focus on a specific, limited number of factors. In many schools in this state the first thing to be done is to remove the principal, and strong mediation may be required to break situations of conflict between various groups in the school.

Only government has the authority to intervene here. But, as we have seen, provincial and district officers, by and large, are incapable of doing this, certainly on the kind of scale required to turn around the relatively large numbers of failing schools in all provinces. The Gauteng Department of Education was able to do it through the EAZ programme but, since this was not achieved through the line function, it was not sustainable. In the meantime, support-type interventions, which include all the projects described above, have no effect on such schools, as both the QLP and Dinaledi programmes amply demonstrate.

There are many reasons for the inability of the education bureaucracy to establish strong management systems and provide adequate monitoring and support functions to schools, including poor traditions inherited from the past, progressive inhibitions against holding teachers and schools accountable, resistance to accountability measures by strong teacher unions, and relations of patronage which dominate provincial departments and which ensure that merit and technical expertise are given low priority when appointing staff. Collectively these factors constitute a weak state: they combine to prevent the building of the capacity and continuity required to establish a well functioning civil service. It is clear that non-government interventions, on their own, can have little or no effect on type I schools at the present time. This situation will persist until provincial departments have the political will, resources and technical expertise to intervene authoritatively.

This situation reveals the need by central government to prioritise building capacity in the provinces as a prerequisite for impacting on type I schools. Furthermore, where non-government initiatives do work in such schools, they will only realize success through co-operation with those parts of the civil service which exhibit relatively high

levels of management capacity. In those sectors of the system which do not possess this threshold capacity, which includes the large majority of school districts, non-government and state initiatives should concentrate their efforts on well- and moderately-functioning schools, as is being done by the second phase of the Dinaledi project and a number of private sector initiatives. The point is emphasised by the costs of some of the school improvement projects described above, as shown in Table 6.

**Table 6: Costs of selected school development programmes**

<b>Project</b>	<b>Total cost</b>	<b>Duration</b>	<b>No of schools</b>	<b>Total cost/school</b>	<b>Cost/school/year</b>
<b>Imbewu I</b>	R93,5m	4 years	523	R179 000	<i>R45 000</i>
<b>Learning for Living</b>	R153m	5 years	898	R170 000	<i>R34 000</i>
<b>QLP</b>	<i>R139m</i>	<i>5 years</i>	<i>524</i>	<i>R265 000</i>	<i>R53 000</i>

It is certain that gains achieved by programmes such as the QLP would have been far more impressive, and have been achieved at a much lower cost, had the type I schools been removed from each project cohort. Clearly, a differentiated approach to school development is required if resources are not to be squandered in applying inappropriate interventions to schools which cannot benefit from them. In short, directing school improvement initiatives towards type I schools is highly inefficient, and in any case provides little by way of increased opportunities for poor children. There is a strong case for the view that, by targeting schools which exhibit minimum levels of management capacity, school improvement programmes will achieve higher levels of both equity and efficiency than has been the case over at least the last 10 years.

A second lesson derived from our survey of school development initiatives in South Africa is that, where learning gains are recorded, they are associated with programmes with a clear focus on specific behaviour, such as the improvement of reading, effected through relatively intense interventions in the form of teacher training and accompanied by sufficient materials to make up for the often poor supply available in disadvantaged schools. Particularly instructive here is the finding by the QLP evaluation that a programme which promoted reading and writing in all high school subjects had a marked effect on results achieved in the matric exams.

The debate concerning the format of training programmes, however, has not been conclusively resolved. Imbewu is representative of the progressive tradition which holds that teachers merely need to be oriented towards child-centred teaching strategies, which they had been prohibited from practicing under apartheid, in order to bring out the full potential of all their children. In the last five years much evidence has accumulated to call this approach into question, including the lack of learning gains achieved by Imbewu, the conclusions of the Review Committee on the inappropriateness of Curriculum 2005, and the growing body of knowledge about the poor state of teacher content knowledge (Taylor and Moyana, 2005; Human, 2003).

The new approach to teacher in-service training adopted by the national government may be instructive in this regard. The first round of training on the new curriculum implemented in primary schools from 1996 focused on the principles of child-centred pedagogy and was delivered through a relatively light programme of afternoon workshops. In contrast, in training teachers for the new high school curriculum government is adopting a different approach, focusing on subject knowledge, delivered through 100 hours of instruction, and structured around a programme which incentivises both attendance (R5000 per teacher) and demonstration that the knowledge has been acquired (R20 000 per teacher for passing the post-programme test).

The third lesson to emerge from our survey emphasises the importance of school management in providing the conditions to optimise learning. Key levers at this level include time management, curriculum leadership and the provision and deployment of textbooks. School development programmes which give explicit attention to these aspects are likely to achieve higher success than those who do not.

A final lesson is that it is only through evaluations, which use objective measures of pupil performance and which include adequate controls in their designs, that it is possible to ascertain whether a programme has had any effect on learning or not, and, if so, which factors are responsible for those effects. The South African education sector does not have a strong evaluation tradition, but a shift towards objective evaluations has been discernible over the last three years, and policy makers are

beginning to talk with growing confidence about evidence-based policy choices. We now turn to a more detailed examination of this issue.

## **7. The state of the knowledge base: Implications for research**

Much has been learned about South African schools in the last ten years, with the pace of knowledge development picking up markedly in the last three. Nevertheless, the base of this knowledge is extremely thin, resting on no more than half a dozen studies. Borman (2005) recommends the replication of findings on any particular model by 10 or more studies overall and 5 or more third-party control-group studies as a standard for establishing the model's scientific basis. If we accept this measure then South Africa has a long way to go before school improvement efforts are placed on anything approaching a scientific footing. In addition to replicating those findings which are beginning to emerge, three areas stand out as requiring special focus: the link between school and home, and a number of issues related to school management, and classroom practice.

### **7.1 Linking school and home**

Two issues in this terrain require attention, one methodological and the other substantive. The methodological issue concerns the use of SES data in controlling for poverty. Simkins and Patterson (2003) determined that children, even at the upper end of the high school, do not provide accurate information on indicators such as family income and the education levels of their parents. On the other hand, sending a questionnaire home with the children generally produces low returns. In order to get around this problem in the PPP study, van der Berg et al (2005) used mean SES figures for the enumerator area in which the school is situated from the 1996 census data. While this approach may be broadly adequate for comparing performance between schools it is obviously not able to account for within-school differences, which, international research tells us, are often greater than between-school variation. Ideally, a measure of SES status for individual pupils is required to unravel subtle classroom level effects.

Closely linked to this problem is the issue of family educational practices, and in particular, reading at home. Since this factor is strongly associated with learning, it is important to investigate the degree to which it may be strengthened in poor families. The best approach to this issue would appear to be to identify children from poor homes who perform well at school, through a large scale school effectiveness study, and investigate educational practices in their homes through a case study approach.

## **7.2 School management**

Gustafsson (2005) supports the earlier findings of Croach and Mabogoane (1998) that, for data derived from surveys linked to large-scale testing programmes, the residuals are often more important than the production function itself: in other words, more is left unexplained than can be explained by the data available. These authors agree that this problem most likely arises from inadequacies in the method used to obtain reliable data on activities at the level of school management and classroom practice. This problem is considerably reduced in our other two sources of data: school effectiveness studies such as the PPP (van der Berg, 2005; see also Reeves, 2005) and evaluations of school improvement programmes such as the QLP (Kanjee and Prinsloo, 2005). These studies used mixed-methods to obtain more sensitive data through direct observation of schools and classroom, face-to-face interviews and document analysis.

However, the issue is far from being solved, and important gaps remain in our knowledge about effective school management. The problem appears to be that management cycles are generally considerably longer than the periods researchers are able to spend in schools. Thus, for example, quality assurance meetings on assessment are likely to happen once or twice a term, and are unlikely to coincide with research visits. Consequently, fieldworkers have to rely on the reports of managers about such practices, and these reports are more likely to reflect what managers think they should be doing rather than actual practices. Attempts to obviate this problem by getting data on management practices from a variety of sources (principals, departmental heads, teachers, governing body members and pupils) has gone some way to strengthening

data reliability, but has not fully resolved the issue (Taylor and Moyana, 2005; Simkins, 2006). Here too it is likely that detailed case studies of successful schools would seem to be the most likely way of illuminating elements of effective management.

### **7.3 Classroom practices**

Classroom level practices only emerge as significant in South African studies where longitudinal research designs are employed. Studies such as the school effectiveness research conducted by Reeves and the QLP evaluation have identified a number of classroom factors associated with learning, but much remains obscure. An important next step would be to identify effective approaches to teaching reading. All our findings to date confirm the powerful influence of reading on learning, while descriptive data indicates the very poor practices on the part of teachers are rife in South African schools (Taylor and Moyana, 2005). Yet, no studies have been conducted on identifying effective teaching practices which lead to effective pupil reading in poor schools.

## **8. Conclusion**

Commenting on his analysis of the SACMEQ II data, Gustafsson notes that:

*Whilst the performance statistic is 67 per cent, the SES statistic is 63 per cent. What this means is that the inter-school inequalities, relative to overall inequalities, are greater with regard to performance than they are with regard to socio-economic status. Willms and Somers argue that it is important for this to be the other way round. Schools should have an equalising effect on society, so a higher intra-class correlation coefficient for performance than for socio-economic status is something one should try and reverse in South Africa.*

Gustafsson, 2005, 2

The point here is that, instead of ameliorating the inequalities in South African society by providing poor children with the knowledge and skills needed to escape poverty and contribute to national development, the majority of schools, at best, have no

equalising effect; at worst they may even be further disadvantaging their pupils. As a result, not only is a lack of skills placing a ceiling on economic growth of the country, but poor communities are able to make little more progress under a democratic government than they were under apartheid. This situation is partly a result of inappropriate policies, but largely a consequence of the inability of the weak state to effectively implement its policies at the school level. Both problems are exacerbated by the poor state of knowledge about schools. The good news is that the rate of progress in building our understanding of effective educational practices is picking up.

The accumulating evidence indicates the following measures are most effective in increasing educational opportunities, particularly for poor children:

- Targeting schools with the capacity to utilise additional resources for improving pupil performance. It seems that around 400 formerly disadvantaged high schools and an equal number of advantaged schools would qualify for such support<sup>9</sup>. Given that many of the latter still enrol relatively few black pupils, the cause of equity would be further advanced if these schools were incentivised to shift the demographic profile of their roll towards greater representativity.
- At the same time government needs to give priority to improving management capacity of provinces and districts so as to equip them to intervene in schools which at present are nowhere near realising the potential of the children in their care. This would require filling key management posts, abolishing patronism, stabilising structures and personnel, standardising functions, and instituting performance management systems.
- Improving school management, particularly with respect to increasing the time available for teaching and learning, which at present is being used very inefficiently in the majority of the country's schools.
- The effective use of this time, in turn, will be enhanced if school managers provide guidance to teachers in delivering the curriculum: this includes planning and monitoring coverage of the curriculum, and the provision and deployment of textbooks and stationery.

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<sup>9</sup> Giving a total of only 13% of the nation's 6118 secondary schools which could be used for these purposes.

- At the classroom level learning is facilitated by coverage of the curriculum, pacing of curriculum delivery so as to cater for pupils' individual needs, giving explicit feedback to pupil knowledge displays, maintaining high levels of cognitive demand, and frequent reading, writing and homework.

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