

## CONFIDENTIAL – MY SUMMARY ONLY (35 to 8)

### NSES

The NSES (National School Effectiveness Study) is a research programme aimed at identifying lessons for policy and practice for government, principals, teachers, and parents. Policy lessons arising from any research study are most powerful if they can be shown to apply to the whole school population, and in order to address this consideration a nationally representative sample of 300 schools was drawn for the study. All provinces were included in the sample except Gauteng, which was excluded when it was discovered that provincial tests were being written at the same time as the first round of NSES data collection.

The NSES followed a cohort of children for 3 years, commencing with Grade 3 in 2007 and ending with Grade 5 in 2009. Around 16 000 children participated in each year of data gathering, within which a cohort of 8 383 in 268 schools was tracked over all three years.

Learner performance, the dependent variable, was assessed by means of literacy and mathematics tests administered in English to the learners at the end of each year.

The context of multiple languages in South Africa creates a disadvantage for many learners, and a situation in which the right policies around language of instruction are not immediately obvious.

What this chapter has demonstrated, though,

- is that frequent exposure to English outside of school for those whose home language is not English or Afrikaans is beneficial for both their literacy and numeracy.
- Speaking and hearing English on the television was associated with higher achievement when controlling for home language and poverty.
- Those who spoke English at home up to three times a week did significantly better than those who never spoke it, while children who practice English four times or more a week did even better.
- The same positive increments emerged for hearing English on TV 1-3 times a week, or 4 times or more.

School resource variables were typically not important determinants of achievement. Factors such as pupil-teacher ratios and school facilities were found to be only weakly associated with student achievement.

- Rather, indicators of effective school management were consistently related to learning outcomes. This is in line with other research suggesting that the impact of school resources is conditional upon those resources being well managed.
- No resource is more poorly used in South African schools than time, and a positive effect in both literacy and maths
- Interestingly, teacher absenteeism was approximately twice as high in schools where the teacher attendance register was not up-to-date.
- Another school management factor positively associated with better literacy scores is whether an inventory for textbooks and readers was present and up-to-date.

- Students in schools where inventories were both available and up-to-date performed better and achieved the highest gains.
- A positive effect was obtained for schools in which curriculum planning was reportedly done using a year schedule.

### Teacher and classroom factors

- The models provide evidence that frequent assessment practices, teacher planning, teacher knowledge, and curriculum coverage vary substantially across South African schools and are strongly linked to educational achievement.
- Classroom level factors associated with literacy gains were teacher assessment practices and the quantity and quality of learner writing observed in workbooks.
- Classes who had completed at least one writing exercise of any kind per week over the year were at a very significant advantage,

For numeracy, enhanced gain scores were associated with

- frequency of homework, number of exercises completed in workbooks over the year, and the number of curriculum topics covered.
- Assessment practices also appear to have a more prominent effect on numeracy than on literacy.
- Teachers who spent more time on assessment and who frequently administered class tests produced greater numeracy gains.
- A structured division of labour distributes functions and integrates curriculum delivery across the classroom, the school, and the home.
- School level systems regulating the flow of work are time management, curriculum planning, assessment, book procurement, and teacher professional development. While there certainly are standard features to these systems, in general, innovative *solutions need to be found to local manifestations of the problems endemic to poor communities: learner hunger, poor punctuality, shortages of books and classrooms, and home conditions not conducive to parental engagement. The case studies provide vivid examples of how enterprising principals deal with these issues under the most difficult conditions.*
- *They provide examples of how good leaders can make an enormous difference to the quality of teaching and learning, when compared to ineffective principals working under the same socio-economic and cultural conditions.*

The case studies further suggest that the 15 variables which we examined are not all of the same importance in determining the quality of school leadership. **Most important are two which appear to be primary levers for improving learning:**

- ***setting and communicating learning goals and time management.*** The first captures the extent to which leadership is able to unite all actors in the school – parents, pupils, and teachers – behind a coherent and consistent focus on teaching and learning, while the second reflects the extent to which time is maximised and directed towards achieving these goals.

A second set of indicators are those which drive curriculum delivery:

- *regulatory conditions (establishing and maintaining clear norms of behaviour and disciplinary procedures),*
- *distribution of leadership roles (defining, allocating and coordinating various functions to members of the management team and leader teachers),*
- *directing curriculum planning and monitoring (school leaders play a direct role in these functions), and*
- *collegial practice on both curriculum delivery and assessment (teachers systematically work together on matters of curriculum, pedagogy and assessment).*

The third set of indicators contains those activities which are associated with better performance, but after a certain threshold has been reached these practices seem to add no further value. These are

- *parental involvement and governance.*

Collectively these indicators point to those key nodes in the complex machinery of schooling most likely to leverage improved performance:

- *developing proficiency in the language of instruction;*
- *use of books as the key technology for conveying knowledge;*
- *and professional development to improve teachers' subject and pedagogical knowledge.*

In conclusion, we would recommend that, regardless of exactly when a switch of language should occur, several strategies be pursued in order to ameliorate the language related obstacles to learning in the South African context.

- Teachers and learners should be given support that is focussed on easing the transition to English as the LOLT.
- Classrooms should be provided with sufficient reading materials in both English and the home language, and the importance of reading and writing should be stressed to school leaders and teachers (see Chapters 6 and 7).
- Pre-service and in-service training should aim to improve the proficiency of primary school teachers in both African home languages and English.

While writing helps us remember and better understand ideas, information, and experiences, not all types of writing tasks have the same effect on learning. Some tasks, like writing summaries or analytical essays, require a deeper level of processing than answering fill-in-the blank or short answer questions. Studies have found that the degree to which information is reformulated or manipulated through writing has an impact on how well the information is integrated, learned, and retained. This finding would seem to favour analytical essays as the writing task of choice, since they tend to demand careful structuring of an extended argument, and evaluation and reformulation of

the material. This is not to imply that structured language exercises should be neglected, but that, in addition, extended writing is even more important. The NSES study reveals that such writing is done very seldom in South African classrooms, and this must rank as one of the biggest shortcomings of the school system, particularly for children from poor homes.

Both forms of common learning impedance described above are caused by a breakdown in building the relationship between mathematical writing and the concepts represented by written symbols, in the one case by moving too quickly to the abstract, and in the second by moving too slowly. In both cases South African learners are simply not doing nearly enough writing to transcend these stumbling blocks.

On average, only 24% of topics were covered in both Grades 4 and 5. Overall, 88% of teachers had covered no more than 35 (40%) of the 89 topics specified in the Grade 5 maths curriculum, and 58% had covered no more than 20 topics (22%) in Grade 4.

It is clear that the overwhelming majority of South African teachers of mathematics avoid topics which are in any way challenging. Only the simplest of topics are taught to learners. This practice has the most disastrous effects on the mathematical knowledge to which learners are exposed.

Teacher professional knowledge can be said to be comprised of three components:

- disciplinary knowledge,
- subject knowledge for teaching, and
- classroom competence; or,
- put another way,
- content knowledge of the respective school subject; theoretical and research findings concerning the nature of the subject and methods of teaching it; and the practical ability to convey the subject to learners in real classrooms.
- We concern ourselves in this chapter primarily with the first of these, on the assumption that sound disciplinary knowledge is a prerequisite for making progress in the other two, important as they also are for good teaching.
- The last few years has seen the accumulation of evidence to indicate that the majority of South African teachers know little more about the subjects which they teach than the curriculum expects of their children, and that some teachers know considerably less than this.

## Mathematics

The 42 items in the teacher math test may be clustered into 5 mathematical strands: arithmetic operations; fractions, ratio and proportion; algebraic logic; rate of change; and space and shape. 15 items were common to the teacher and learner tests. Teacher scores are shown in Table 6.

Table 1: Teacher percentage scores on the SACMEQ maths test

	Arithmetic operations	Fractions, ratio and proportion	Algebraic logic	Rate of change	Space and shape	Total
SACMEQ	69.55	57.65	48.75	44.47	66.33	57.47
SA	67.15	49.68	46.51	42.30	56.44	52.39

## CONCLUSIONS

- The implications are that providing teachers with a thorough conceptual understanding of their subject should be the main focus for both initial and in-service teacher training.
- getting school leaders and teachers to understand that reading and writing should be done every day in every subject,
- and that extended writing in all subjects, interpretive analysis of language texts and complex problem solving in maths should be undertaken weekly.
- However, any such pedagogical gains are likely to reach a low ceiling, unless a great deal more attention is paid to teacher subject knowledge at the same time.

*A high rate of learners dropping out in the last three grades of high school remains a problem for both genders, despite improvements in the throughput rate at the top end of secondary school.*

*The good news is that the proportion of overage children in the system appears to be diminishing rapidly.*

grade repetition is clearly not serving these learners well. It is evident that grade repetition that involves doing the same thing over and over again and hoping that what did not work the first time somehow will work the second time is not successful, and the fact that over-age children are falling further behind their peers shows that they are gaining less from learning from one year to the next. It seems likely that this situation reinforces the learning difficulties and substantially affects learners' self-esteem.

The NSES data which, except for Gauteng, is representative of South African schools, shows that

1. attendance and punctuality by principals and teachers,
2. thorough curriculum planning,
3. frequency and use of assessment for teaching,
4. teacher knowledge,
5. writing in both language and mathematics, and
6. curriculum coverage vary substantially across South African schools,
7. and are strongly linked to improved pupil test scores.

In particular, they note the growth of three kinds of accountability measures in the developing world:

1. information for accountability,
2. school-based management, and
3. teacher incentives.

### *Information for accountability*

**According to Bruns, Filmer and Patrinos, the theory behind information for accountability programmes is that they provide the clients of education (students and parents in the case of schooling) with the information necessary to hold providers (schools) accountable for results.**

South Africa's first foray into the terrain of school accountability is represented by the Annual National Assessment (ANA) exercise, which has four goals: '... to expose teachers to better assessment practices, make it easier for districts to identify schools in most need of assistance, encourage schools to celebrate outstanding performance and empower parents with important information about their children's performance. The first full administration of ANA occurred in 2011, consisting of two components: 'universal ANA', in which all learners in grades 2 to 7 were tested in both languages and mathematics, and 'verification ANA' at grade 6 level in 1800 schools, where more rigorous moderation procedures were applied during administration, and test scripts were remarked centrally after being marked by teachers. Testing was conducted in February, on the assumption that the scores reflected those of grades 1 to 6 at the end of 2010. The two components of ANA are very different in their design, and would best serve rather different purposes, neither of which is suitable for knowledge for accountability use, despite DBE intentions in this regard.

ANA is also partly intended as a systemic measure. In her opening sentence to the Foreword to the report on the 2011 round of administration, the Minister of Education states that a goal of ANA is to monitor the improvement of the quality and levels of educational outcomes in the schooling system, toward the target of 60% achievement by 2014. The 'verification' component of ANA lends itself well to this purpose, provided that the tests are well constructed. Further, provided that administration, scoring and analysis are rigorously standardised, the results will be reliably comparable across schools and subsequent administrations. These conditions apply only to a sample of schools, which is all that is needed for systemic purposes, but scores can only be used as accountability measures in these schools.

Since the 'universal ANA' tests are administered and scored by teachers, under minimal conditions of procedural standardisation, the ANA cannot produce data that is reliable enough to be used comparatively. Under these conditions the margins of error are too great to sustain credible comparisons. This feature precludes the use 'universal ANA' as a tool which can be used for accountability purposes.

Although governed by national and provincial policies concerning curriculum, and assessment, principals are largely left to get on with the job. In very few of the country's 81 school districts is monitoring anything more than a bureaucratic compliance procedure, with little relation to what happens in the school. This situation does not breed respect for bureaucratic authority. As the literature review of Chapter 4 indicates, most principals are unaware of their role in providing instructional leadership. Government has committed itself to holding schools accountable for performance, through contracts signed with each principal, although the unions continue to oppose any moves in this direction.

Our studies indicate that a key element in effective leadership is

1. the belief in individual and collective agency: principals in poorly performing schools appear resigned to their circumstances, while effective leaders are able to engage productively with the same conditions.
2. A second general characteristic of good school leaders is that they are skilled in human relations, able to build harmonious team approaches to teaching and learning, and to avoid the kind of conflict that debilitates many schools.

First among the 'hard' skills required for effective instructional leadership

3. must be sound disciplinary knowledge,
4. a thorough understanding of the curriculum, a grasp of elementary psychometric principals,
5. and skill in interpreting test scores.

### ***Teacher incentives***

Bruns and her colleagues describe a number of schemes directed towards rewarding teachers for improving or maintaining performance, as measured by means of test scores. Of particular interest is the scheme in operation in the Brazilian state of Pernambuco, where a pay bonus programme is linked to attainment of annual school improvement targets. The programme has been accepted by teachers, and shown to lead to significant improvement in learning levels. However, rigorous evaluations of similar schemes in Nashville and New York show that teacher rewards have no effects on learning.

### **Teacher development**

The theory behind teacher development programmes, if such a self evident consequence could be ***called a theory, is that teachers cannot teach what they don't know, and therefore, in order to get them to teach better, their knowledge base needs to be developed.***

### **Conclusion: towards professional accountability**

It is a fundamental principle of societies governed by the rule of law that all institutions, public and private, and their inhabitants must be accountable for the resources they expend in relation to outcomes achieved. And, from this perspective, the South African school system exhibits very low levels of accountability. There is no doubt that many schools need to be held to account to a far greater extent than they are at present for matters such as poor time management, failure to procure and manage adequate supplies of books, and infrequent reading and writing in class. Implementation of the proposal to standardise one grade level (say grade 6) of the ANA and to administer this externally, would provide the kind of metric required by any large bureaucracy to track systemic performance, identify schools and personnel with problems, and provide reliable data which school leaders, teachers, learners and parents can use to improve their own efforts.

***However, to attempt to propel progress in schooling by enticing teachers with carrots while beating them with sticks, like so many donkeys, hardly seems a sustainable strategy for driving higher levels of performance in a complex network of loosely coupled sub-systems in which knowledge is the product.***

Regarding professionalization of the civil service, mechanisms must be found to orient the system towards expertise and away from nepotism and years of service as criteria for advancement which currently dominate. A key intervention nexus would be to focus on improving the subject expertise of school level leaders: principals, deputy principals, and heads of department. Steps in this direction would be to set benchmark knowledge requirements for eligibility for these positions, provide training programs (online, face to face, or some combination), allow free rein to motivated individuals to develop their own expertise in these areas, and restructure salary scales to attract talented teachers into positions of leadership.