National Report 2014

The quality of learning outcomes

Reducing the inequalities at the higher levels of schooling in South Africa



The National Education Evaluation and Development Unit 222 Struben Street Private Bag X895, Pretoria, 0001 Telephone: (012) 357-4130/4131 Fax: (012) 323-9186 e-mail: vanstaden.a@dbe.gov.za Website: http://www.education.gov.za/NEEDU.aspx We love reading.

All our citizens read, write, converse and value ideas and thought.

We are fascinated by scientific invention and its use in the enhancement of our lives.

We live the joy of speaking many of our languages.

We know our history and that of other peoples. We have clear values.

National Development Plan (NDP, 2012: 4)



Acknowledgement

The generous provision of documents, many unpublished, and verbal information by the former Acting Director-General and officials in the Department of Basic Education (DBE) is gratefully acknowledged.

The present National Report 2014 was written by Nick Taylor, Sibusiso Sithole and Lynn Mayer.

The national report is based on 24 district reports, with contributions from: Gugulethu Bophela | June Engelbrecht | Jeanette Marchant | Azwindini Masia | Lynn Mayer | Margaret Mayers | Fathima Osman Vithagan Rajogopaul | Sibusiso Sithole | Nick Taylor.

> The district reports were derived from 183 school reports, written by: Gugulethu Bophela | Claudette Coollen | Arackal George | Ben Lubisi | Rose Magwai Zami Makhatini | Getrude Marajh | Jackie Masetla | Azwindini Masia | Bruce McIntosh Nancy Mdabula | Barbara Millward | Bhekisisa Mvelase | Bongi Maria Nkabinde Sasah Netshifhefhe | Shaeda Dadabhay | Suliman Saloojee.

> > Administrative and logistical support was provided by: Leah Mokgawa | Ronald Pillay | Adrie van Staden | Mogale Vuma.

> > > Design and Layout by Kamogelo Makgoga Department of Basic Education

ISBN: 978-1-4315-2716-8

Table of Contents

Acknowledgement					
Table of Contents					
List of	Tables				
List of	Figure	s			
List of	Textbo	xes			
List of	Acron	/ms			
١.	NEED	U's work in 2014			
	1.1	Mission and functions of NEEDU			
	1.2	NEEDU's legal status			
	1.3	Problem statement			
	1.4	Evaluation design and method			
	1.5	Sample			
	1.6	Reporting			
2.	Assess	ment			
	2.1	General considerations			
	2.2	Annual National Assessment			
	2.3	The National Senior Certificate			
3.	Instru	ctional leadership			
	3.1	Time management			
	3.2	Language of learning and teaching			
	3.3	Support programmes for mathematics			
	3.4	Support provided by districts			
	3.5	Learning outcomes			
	3.6	Learning and teaching support materials			
4.	Barrie	rs to learning			
5.	Staffin	g			
6.	Profes	sional Development for Educators			
	6.I	Educator capacity			
	6.2	The Integrated Strategic Planning Framework			
	6.3	In-service professional development			

	6.4	Initial teacher education
7.	Concl	usion and Recommendations
	7.1	Furthering the National Development Plan
	7.2	Instructional leadership
	7.3	Human resource deployment: making the most of the talents of current employees
	7.4	Educator professional development
Refere	ences .	
Appen	ndix 1:5	School Sample
Appen	ndix 2: <i>A</i>	A note on data
Apper	ndix 3:T	Throughput Grades 9-12

List of Tables

Table 1: NEEDU sampling frame 2012-2016
Table 2: Comparison of TIMSS 2002 and 2011 scores for mathematics, by province (per cent of sample) 8
Table 3:Assessment types, sources of risk and mitigation strategies 9
Table 4: Percentage of learners exhibiting variable scores greater than 8% of one standard deviation on ANA
Table 5: Comparison of school and moderated scores, EFAL and mathematics, Grade 9 ANA 2013
Table 6: Correlation between original and moderated marks 18
Table 7: Performance in EFAL (percentage of EFAL cohort), 2011-2014 25
Table 8: Gender distribution of EFAL candidates and pass rates by gender, 2014
Table 9: Numbers of schools not offering mathematics, by province 27
Table 10: Proportion of candidates taking and passing mathematics, by province, 2011-2014. 27
Table 11: Percentage of NSC candidates passing mathematics at 50% and 60%, 2011-2014
Table 12: Gender distribution of African candidates and pass rates in mathematics, 2014
Table 13: Percentage of NSC candidates obtaining Bachelor level passes, by province 2011-2014
Table 14: Distribution of poverty, NSC participation and passes, per province (2014)
Table 15: Proportion of Quintile 5 learners, Western Cape
Table 16: NSC enrolments, passes and pass rates 2008-2014.
Table 17: Compliance with CAPS requirements for minimum time allocation in the Senior Phase sample
Table 18: Learner and teacher absenteeism in the FET Phase sample 35
Table 19: Learner and teacher absenteeism in the Senior Phase sample 35
Table 20: Learner and teacher absenteeism in the FET Phase sample (attendance records). 36
Table 21: Learner and Teacher Absenteeism in the Senior Phase sample (attendance records) 36
Table 22: Punctuality of teachers and learners in the FET Phase (teacher perceptions) 37
Table 23: Punctuality of teachers and learners in the Senior Phase (teacher perceptions) 37
Table 24: Punctuality of teachers and learners in the FET Phase (time register and observations)
Table 25: Punctuality of teachers and learners in the Senior Phase (time register and observations)
Table 26:Teacher time lost in the Senior Phase (teacher perceptions) 39
Table 27: Learning time lost in the FET and Senior Phases (observations)
Table 28: Teaching and learning time lost in the NEEDU sample of schools 40
Table 29: District support in the NEEDU sample of schools .44
Table 30: Curriculum coverage in the NEEDU sample of schools 52
Table 31: Availability of mathematics textbooks in the FET Phase and Senior Phase samples 53
Table 32: Availability of English textbooks in the FET Phase and Senior Phase samples 53
Table 33: Availability of textbooks in the NEEDU sample of schools
Table 34: Type and duration of vacancies in the FET and Senior Phase (SP) samples 58
Table 35: Qualification of mathematics teachers.
Table 36: Filling of vacant teaching posts in the NEEDU sample of schools. 60
Table 37: Government training budget and actual spending in 2013/14 (millions)
Table 38:Trends in training spend, 2010/11 – 2013/14, as reported by PEDs*
Table 39: Number of employed beneficiaries of training, 2013/14
Table 40: Number of personnel identified for training, 2014/15
Table 41: Gain scores of project and control groups, Grades 4 and 6 combined, 2007.
Table 42: Progress on nine indicators for assessing NSC performance (%) 80

List of Figures

Figure 1: Kernel Density curves of Grades 3, 4 and 5 literacy by former education department
Figure 2:Theory of change assumed by the Action Plan to 20145
Figure 3:Throughput by grade for cohorts reaching Grade 12, 2006-2014
Figure 4: National enrolment Grade 9-12, with percentage throughput for each cohort
Figure 5: EFAL pass rate at 40%, 50% and 60%, 2011 - 2014
Figure 6: Mathematics pass rate and proportion of matric candidates taking maths, 2008-2013
Figure 7: Proportion of NSC candidates taking mathematics, by race (per cent)
Figure 8: Percentage of NSC candidates passing mathematics at 50%, by race
Figure 9: Percentage of NSC candidates passing mathematics at 60%, by race
Figure 10: Schools in the FET Phase sample visited by district officials
Figure 11: Schools in the Senior Phase sample visited by district officials
Figure 12: Rating the support services of districts (FET Phase sample)
Figure 13: Rating the support services of districts (Senior Phase sample)
Figure 14: Number of days on which writing took place in English books in the FET Phase sample
Figure 15: Number of pages of writing in English books in the FET Phase sample
Figure 16: Number of days on which writing took place in English books in the Senior Phase sample
Figure 17: Number of pages of writing in English books in the Senior Phase sample
Figure 18: Number of transactional texts written by learners in the FET Phase sample
Figure 19: Number of essays written by learners in the FET Phase sample
Figure 20: Number of transactional texts written by learners in the Senior Phase sample
Figure 21: Number of essays written by learners in the Senior Phase sample
Figure 22: Number of days on which writing took place in mathematics in the FET sample
Figure 23: Number of pages of writing in mathematics in the FET Phase sample
Figure 24: Number of days on which writing took place in mathematics in the Senior Phase sample
Figure 25: Number of pages of writing in mathematics books in the Senior Phase sample
Figure 26: Barriers to learning according to principals

List of Textboxes

Box I:A note on the Trends in International Mathematics and Science Study (TIMSS).	. 8
Box 2:The formative assessment school	15
Box 3: Press statement on the 1+4 Programme	66
Box 4:The Primary Mathematics Research Project, 2004 - 2012	70
Box 5: Evaluation of the Reading Catch-Up Programme	72
Box 6: Programme to Improve Learning Outcomes	74

List of Acronyms

ACE	Advanced Certificate in Education
ANA	Annual National Assessment
Bed	Bachelor of Education
CAPS	Curriculum and Assessment Policy Statements
CEM	Council of Education Ministers
CEMIS	Central Education Management System
CM	Curriculum Manager
CSI	Corporate Social Investment
DBE	Department of Basic Education
DD	District Director
DG	Director General
DHET	Department of Higher Education and Training
DPME	Department of Planning Monitoring and Evaluation
EC	Eastern Cape
ECDE	Eastern Cape Department of Education
EDO	Education Development Officer
EGRA	Early Grades Reading Assessment
ELRC	Education Labour Relations Council
EMIS	Education Management Information System
ESR	Educator to school ratio
FAL	First Additional Language
FET	Further Education and Training
FP	Foundation Phase
FS	Free State
FSDE	Free State Department of Education
GDE	Gauteng Department of Education
GET	General Education and Training
GP	Gauteng Province
GPLMS	Gauteng Primary Literacy and Maths Strategy
HEI	Higher Education Institutions
HEQC	Higher Education Quality Council
HL	Home Language
HOD	Head of Department
HR	Human Resource
INSET	In-service Training
InterSen	Intermediate and Senior Phases
IQMS	Integrated Quality Management System
ISPFTEDSA	Integrated Strategic Planning Framework for Teacher Education and Development in South Africa
ITE	Initial Teacher Education
ITERP	Initial Teacher Education Research Project
JET	Jet Education Services
KZN	KwaZulu-Natal
KZNDE	KwaZulu-Natal Department of Education
LER	Learner to educator ratio
LOLT	Language of Learning and Teaching
LP	Limpopo Province
LPDE	Limpopo Department of Education

LSEN	Learners with Special Education Needs
LSR	Learner to school ratio
LTSM	Learning and Teaching Support Materials
MBE	Minister of Basic Education
MEC	Member of the Executive Council
Med	Master of Education
MP	Mpumalanga Province
MPDE	Mpumalanga Department of Education
NECT	National Education Collaboration Trust
NC	Northern Cape
NCDE	Northern Cape Department of Education
NCS	National Curriculum Statement
NEEDU	National Education Evaluation and Develop- ment Unit
NDP	National Development Plan
NEPA	National Education Policy Act
NGO	Non-governmental Organisation
NNSSF	National Norms and Standards for School Funding
NSC	National Senior Certificate
NW	North West Province
NWDE	North West Department of Education
OBE	Outcomes Based Education
OSD	Occupational Specific Dispensation
PED	Provincial Education Department
PGCE	Post-graduate Certificate in Education
PILO	Programme of Improved Learning Outcomes
PLC	Professional Learning Community
PIRLS	Progress in International Reading Literacy Study
PMRP	Primary Mathematics Research Project
RCT	Randomised Control Trial
RCUP	Reading Catch-Up Programme
SA	South Africa
SACMEQ	Southern and East African Consortium for Monitoring Educational Quality
SADTU	South African Democratic Teachers Union
SA-SAMS	South African School Administration and Man- agement System
SETA	Skills Education and Training Agency
SITA	State Information Technology Agency
SGB	School Governing Body
SMT	School Management Team
SNP	School Nutrition Programme
STEM	Science, Technology, Engineering and Mathe- matics
TIMSS	Trends in International Maths and Science Study
WC	Western Cape
WCDE	Western Cape Department of Education

1

1. NEEDU's work in 2014

I.I Mission and functions of NEEDU

The National Education Evaluation and Development Unit (NEEDU), is designed as an evaluation institution which is at arm's length from that part of the civil service responsible for the administration of schools. The unit was established in 2009 and reports directly to the Minister of Basic Education (MBE).

The Report of the Ministerial Committee that investigated the establishment of NEEDU (DOE, 2009) and the NEEDU Bill (DBE, 2011a), which was based on the recommendations of the Committee, continue to frame the work of the organisation. An important principle embraced by the Ministerial Committee is that the unit is to focus on the *improvement of schooling* as set out in the recommendations of the Ministerial Committee:

- to provide the MBE with an authoritative, analytical and accurate account on the state of schools in South Africa and, in particular, on the status of teaching and learning in all schools;
- to recommend minimum performance standards for schools, mindful of the different histories, missions and capacities of South African education institutions; evaluation in these circumstances must be seen to be fair, contextually sensitive and credible;
- to account for the attainment (or otherwise) of those standards by all schools through a sophisticated monitoring and evaluation system;
- to identify (on a system-wide basis) the critical factors that inhibit or advance school improvement;
- to make focused recommendations for redressing the problem areas that undermine school improvement and, in this respect, to recommend appropriate developmental interventions to support schools;
- to propose appropriate sanctions to ensure that schools offer effective education for all learners;
- to strengthen internal evaluation capacity within schools in ways that reliably inform and complement external evaluation;
- to monitor the different levels of school support (governors, districts, provinces and the national department) and the extent to which there is considered action on proposed interventions, whether in the form of developmental support or in the form of disciplined action;

- to review and assess existing monitoring, evaluation and support structures and instruments on a regular basis to ensure clarity, coherence, and complementarity in the ways schools and teachers are measured and supported;
- to provide schools with evidence-based advice on how to pursue school improvement in their particular contexts;
- to promote school improvement through the dissemination of good practice.

(DOE, 2009: 65-67)

I.2 NEEDU's legal status

While NEEDU continues to follow the prescriptions of the Bill, which was directed towards setting up the organisation as a statutory body, the unit operates in a legal vacuum, since the Bill no longer has any status following the decision by the Department of Public Service and Administration (DPSA) to pursue a new legal pathway. Plans are currently in progress to set NEEDU up as a government component, known as the Office of Standards and Compliance for Basic Education (OSCBE). At the time of writing, only two steps remained to put the organisation onto a firmer footing. First, the MBE would consult with the Council of Education Ministers (CEM) on the Regulations, formulated in discussion with DPSA, DBE legal advisors and the State Law Advisor. Second, OSCBE would then be established by means of promulgation of the regulations. Permanent staff can then be recruited.

I.3 Problem statement

There is consensus that, although the South African school system provides access to a very high proportion of children of school-going age, the overriding problem is systemic underperformance. To make matters worse, the quality of schooling is inequitably distributed, with the poorer 80% of the population generally receiving schooling of significantly inferior quality to that enjoyed by the most affluent 20%. The majority of South African children - from homes of working class or unemployed parents, and frequently child-headed households - attend township or rural schools previously administered by the Department of Education and Training (DET) or one of the homeland administrations prior to 1994. On the other hand, children located in the rapidly deracialising middle class, attend schools formerly reserved for minority race groups, which generally produce educational achievement that is closer to the standards achieved in developed countries. Encouragingly,

2

a number of schools serving poor communities are beginning to improve their performance very significantly, although they make up a negligible fraction of the total school population.

The full extent of this inequality is illustrated by comparing the performance of historically white schools (previously administered by the House of Assembly, or HOA) with that of former DET schools. Using data from the National Schools Effectiveness Study (NSES) (Taylor, S, and Taylor, N, 2013a),

Figure I shows the distribution of literacy scores for Grade 3, 4 and 5 learners from two segments of the school system. The three solid lines represent DET schools and the three broken lines represent historically white schools. For both groups of schools, the distribution of achievement improved with each year (shifting to the right). The distribution for Grade 5 students in historically disadvantaged schools still showed a considerably weaker pattern than that of Grade 3 students in historically white schools. It is clear that by the fifth grade the educational backlog experienced in historically black schools is already equivalent to well over two years' worth of learning.

in the historically privileged part of the school system perform substantially better in reading than African language learners of the same socio-economic background enrolled in historically disadvantaged schools. This finding suggests that schooling can begin to reduce the yawning disadvantage under which poor African children continue to suffer.

The type of schools that provide 'better education' is not always defined in racial terms. The work of Christie, Butler and Potterton (2007) challenged the fallacious belief that African language learners would 'graze in greener pastures' only if they migrate from historically disadvantaged black schools to historically advantaged white schools. These researchers found that some disadvantaged black schools, the *schools that work*, in spite of battling precarious stability of staff, inadequate resources and social conditions of poverty – manifesting among other things in hunger, AIDS orphans, and schoolgirl pregnancy – continued to achieve good results in the National Senior Certificate (NSC). Because these schools that work do not have even the most basic resources (materials, finances and personnel) that their historically advantaged white counterparts take for granted,





Source: Taylor, S and Taylor, N, 2013

These patterns are mirrored in the distribution of NSES mathematics scores, and are replicated by both the Progress in Reading Literacy (Howie et al., 2008) and the Southern and Eastern African Consortium for Monitoring Education Quality (Spaull, 2011) studies. It is concerning that these historical patterns of disadvantage persist in the schooling of poor children.

Figure I emphasises the point that in South Africa the greatest influence on children's progress through school and their subsequent life chances is their home background. At the same time, there is clear evidence that *the type of school* a child attends can make a significant difference to the rate of their educational progress, whatever the home circumstances. Taylor and Yu (2009) reported that African language learners enrolled

they exhibit the following strong inner capacities to achieve good results:

- focus on their central tasks of teaching, learning, and management with a sense of responsibility, purpose and commitment;
- carry out their tasks with competence and confidence;
- have organisational cultures and mindsets that support a work ethic, expected achievement, and acknowledged success; and
- have strong internal accountability systems in place, which enable them to meet the demands of external accountability, particularly in terms of NSC achievement.

Reducing the disadvantage under which poor African children continue to suffer is the point of departure of a wide-ranging study by the Department of Economics at Stellenbosch University, on commission from The Presidency and the European Union, which argues that education is the only way out of the poverty trap for the majority of South Africans:

... education [is] the only viable avenue for poor people who want to enter the top end of the labour market, with all its attendant economic benefits. Education therefore has a significant role to play both in providing opportunities to individuals as well as through its potential to unravel the apartheid-era social structure and create a more cohesive and less polarised society.

van der Berg et al., 2011:3

The Stellenbosch study goes on to argue that, even if as many as 2¹/₂ million jobs were to be created overnight, this would reduce the poverty headcount ratio by around 9 percentage points, but the effects on the Gini coefficient would be negligible. The low education levels and limited experience of those currently unemployed mean that, even if they were employed, it would probably be at low wages, thus having little impact on wage or income inequality:

The labour market is at the heart of inequality, and central to labour market inequality is the quality of education. To reduce income inequality substantially requires a different wage pattern based on better human capital for the bulk of the population. Prospects for this at present appear inauspicious. Policies that address inequality by intervening in the labour market will have limited success as long as the considerable pre-labour market inequalities in the form of differential school quality persist.

Van der Berg et al., 2011:11

In the same vein, the National Development Plan (NDP) notes that raising living standards to the minimum level proposed in the plan will involve a combination of increasing employment, higher incomes through productivity growth, a social wage and good-quality public services; these challenges are interlinked:

Improved education, for example, will lead to higher employment and earnings, while more rapid economic growth will broaden opportunities for all and generate the resources required to improve education.

NDP, 2012: 15-16

To summarise: while the South African middle class is fast losing its racial complexion and receives schooling of a generally acceptable standard, poor children remain trapped in apartheid patterns of poverty, where race and class coincide. Schooling is central to reproducing these patterns. It is for this reason that government has identified education as the country's overriding or apex priority. In its *Action Plan to 2014*, the Department of Basic Education (DBE) sought to find ways of improving the quality of schooling for the majority, consisting of poor, largely African, learners. The extent to which DBE is achieving its goals, as encapsulated in its *Action Plan*, is the central concern of the current NEEDU cycle of school evaluation.

I.4 Evaluation design and method

NEEDU has adopted a research-focused approach in order to identify blockages to quality schooling, and in particular to find ways of reducing the pernicious inequalities described above. The theory, evaluation design, and method which framed NEEDU's work in 2014 are described in the NEEDU National Report 2013 (NEEDU, 2014a) and will not be repeated in detail here. What should be emphasised is that NEEDU's evaluation of the South African school system essentially involves interrogating to what extent the logic of schooling holds across four principal levels: national, provincial, district and school. In other words, how do educational goods and services - in the form of policy, resources, and monitoring and support activities delivered by higher levels of the system - impact on the performance of the lower levels? This hierarchical structure is reflected not only between levels of the system, but also within each level, the most important of which occurs at the school where the activities provided by the principal and other leaders are presumed to assist the performance of teachers, whose activities, in turn, affect the quality of learning. The national administration which first assumed office in 2009, and was returned following the general election of 2014, gave explicit focus to this logic through a comprehensive and detailed action plan (DBE, 2011b), summarised in Figure 2.

Implementation of the Action Plan followed shortly after its publication, through measures such as the 'repackaging' of the curriculum in the form of the Curriculum and Assessment Policy Statements (CAPS); the annual distribution of workbooks in mathematics and language to learners in Grades R through 9; the administration of the Annual National Assessment (ANA) tests; and extensive teacher training. Scores on the ANA tests and the NSC exam are seen as key to tracking the progress of the Action Plan in improving the quality of schooling. Although NEEDU has not been evaluating the extent to which each of the goals articulated in the Action Plan are being achieved, the four vectors depicted in Figure 2 are being examined, in the interests of identifying blockages and replicating activities that are having a positive impact on the quality of teaching and learning.

4

Figure 2: Theory of change assumed by the Action Plan to 2014



Source: Constructed from DBE, 2011b

During the course of 2014, the Action Plan to 2014 was modified, extending the immediate time frame to 2019 and the outer horizon from 2025 to 2030, to bring it in line with the NDP. However, the long-range goals and targets were kept the same or very similar (DBE, 2015a). Towards the end of 2014, a greater sense of urgency was injected into implementation of the Action Plan through the adoption of the Big Fast Results methodology and six priorities, later reduced to four (DBE, 2014a):

- ICT in education
- Curriculum provisioning, including mathematics, science and technology
- HR planning, management and development
- Infrastructure development

The stance adopted by the present NEEDU report is that each of these priorities depends heavily on educator capacity for success. Even the fourth of these priorities requires a complex array of expert functions, from careful budgeting and financial control at the provincial level to make available sufficient funds for the maintenance of new plant, to expert institutional management to ensure that such plant is kept in good repair.We therefore give considerable attention below to current efforts aimed at developing educator capacity at all levels of the system.

Both the theory of change implied in the Action Plan and the activities mounted by the DBE and provincial departments to give effect to its goals have been widely welcomed. However, in a field as complex as schooling, the best of intentions may be frustrated by inappropriate interventions, and political actions and technical measures may not always pull in the same direction. As the NDP observes:

... leaders sometimes advocate positions that serve narrow, shortterm interests at the expense of a broader, long-term agenda. It is essential to break out of this cycle, with leaders that are willing and able to take on greater responsibility to address South Africa's challenges.

NDP, 2012: 47

Bringing attention to such practices is one of the tasks that NEEDU is best suited to fulfil, standing as it does outside of the immediate pressures of political and administrative leadership.

Table 1: NEEDU sampling frame 2012-2016

Year	Semester	Location	School Phase	Provinces	Districts	Schools
2012	Second	Urban	Foundation (Grades 1-3)	9	15	134
2012	First	Rural monograde	Intermediate (Grades 4-6)	9	16	99
2013	Second	Rural multigrade	Multi-grade (Grades I-6)	9	18	120
2014	First	Urban and rural	FET (Grades 10-12)	9	12	93
2014	Second	Urban and rural	Senior (G7-9)	9	12	90
2015	First	Urban and rural	Follow up visits	9	26	158
	Second	Urban and rural	Special Needs Education	8	29	180
2016	First	Urban and rural	Special Needs Education	I	23	120
	Second	Urban and rural	Follow up visits	9	16	133

I.5 Sample

The NEEDU plan is to investigate all phases of schooling and all school districts over a five-year cycle, as shown in Table 1.

In the first semester of 2014, 93 secondary schools were visited in 12 districts, focusing on the Further Education and Training (FET) Phase (Grades 10-12). In the second semester a further 90 schools situated in 13 districts were evaluated, where the Senior Phase (SP) was the focus. While the Senior Phase encompasses Grades 7-9, high schools generally start at Grade 8, hence NEEDU only looked at Grades 8 and 9. Schools were selected using a stratified random sampling method, the details of which are given in Appendix 1.

I.6 Reporting

The NEEDU National Report 2014 was preceded by a draft report for each of the 183 schools and 24 districts and sent to the respective institutions for verification and comment. Reports were then finalised after engagement with the respective institutions. The National Report 2014 gives an overview of the findings of the research undertaken in 2014, and should be read in conjunction with the 2012 and 2013 NEEDU Reports (NEEDU, 2013; 2014a; 2014b) to obtain a comprehensive picture of primary and secondary public ordinary schooling.

In 2015, data validation had to be done to improve data quality. It is for this reason that the release of this report was delayed. While this report presents findings of the study in 2014, it recognises that at the time of its release (2017), many developments have occurred and we will reflect on these developments.



NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

6



Because of the key role of the NSC and ANA programmes Bin the DBE's Action Plan, we discuss their design, processes and products before embarking on a description and findings of NEEDU's work in 2014. A key question guiding this discussion is: to what extent are these large-scale testing exercises, as presently practised, suitable for the purposes for which they are designed? But before turning to this question, it is instructive to consider some general principles that govern the purposes, design and use of tools of this kind.

2.1 General considerations

Accountability, systemic evaluation and certification

Internationally, school assessment systems of the type represented by the ANA and the NSC – centrally directed, periodic and universal in application – are generally used for some or other combination of four purposes. First, they may be used to hold schools and higher levels of the system to account, through pressure from administrators, parents and the public in general. Incentives and sanctions may be used to reward or punish schools, depending on the extent to which performance meets expectations. The *No Child Left Behind* programme in the United States is a prime example of a system used primarily for accountability purposes.

A second goal of large-scale testing systems is to measure the state of the school system, generally as part of a programme to improve performance. This purpose is often linked to the first, in which case a single set of tests serves both purposes. The annual Western Cape Systemic Evaluation (WCSE) tests administered in primary schools in the Western Cape provide an example of this combination. However, unlike No Child Left Behind, the WCSE is a low stakes exercise, with no public reporting of results and no sanctions for poor performance, although it does attract additional attention from district and provincial support systems. Financial prizes are given to schools for improved performance. No Child Left Behind, on the other hand, has attracted widespread and stinging criticism (see for example, Ravitch, 2010), while demonstrating no conclusive evidence of systemic improvement in more than a decade of administration (see, for example, Townsend et al., 2013).

Where the first two goals – accountability and systemic evaluation – are not linked and the second stands alone, universal application is not necessary and the tests may be administered in a representative sample of schools. Examples of such systems include the *Southern and Eastern African Consortium*

for Educational Quality (SACMEQ), the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS). South Africa participates in all three of these comparative exercises. While scores on the first two have been disappointing in revealing no improvements in country scores, the latest TIMMS results show a very marked rise in performance (Box 1). After no improvement during the 1995, 1999 and 2002 iterations, South African learners moved from a mean score of 285 in 2002 to 352 in 2011 in mathematics and from 268 to 332 in science (Reddy et al., 2015). Although the country still lags behind other countries at similar stages of development, these changes represent very significant improvements.



TIMSS assesses mathematics and science scores in Grade 8 and Grade 9. In 2011 SA entered only Grade 9 learners, on the grounds that at this level there was closer alignment between intended and assessed curricula.

Table 2: Comparison of LIMISS 2002 and 2011 scores for mathematics, by province (per cer
--

			Low	Intermediate	High	Advanced
Unit	Year	< 400	400 - 475	476 – 550	551 – 625	> 625
MC	2011	53	47	24	12	3
VVC	2002	53	47	26	13	4
	2011	71	29	12	3	0
INC	2002	75	25	П	3	0
CP	2011	52	48	24	8	2
Gr	2002	89	11	2	0	0
EC	2011	67	33	14	5	0.5
гэ	2002	93	7	3	I	0
МР	2011	82	18	3	0.5	0
T.IL.	2002	91	9	4	2	0.5
	2011	74	26	8	I	0.5
	2002	99	I	0	0	0
K7N	2011	76	24	9	3	I
κζη	2002	93	7	3	I	0
EC.	2011	77	23	9	2	0
	2002	95	5	2	I	0
ID	2011	82	18	6	I	0
LI	2002	99	I	0	0	0
SA	2011	69	31	12	4	I
54	2002	89		5	2	0.5
Botswana	2011	50	50	15	3	0

Low - basic knowledge of whole numbers, decimals, operations and simple graphs

Intermediate - apply maths knowledge to situations, problem-solving and working with graphs

High and Advanced – high level problem-solving, reason with geometric figures, analyse graphical detail.

- SA showed significant improvement, across all levels. Thus, in 2002, 89% of the SA sample fell below the Low benchmark, indicating that 89% did not exhibit basic knowledge of whole numbers and decimals, operations and simple graphs. By 2011, this had fallen to 69%.
- SA shows a wider spread of scores than Botswana, indicating higher levels of inequality. For example 1% of SA learners attained the Advanced level in 2011, while none did so in Botswana; 70% of SA learners failed to reach the Low level, while in Botswana only 50% were at this level.
- In 2002, 93% of learners tested in the Free State scored below the Low benchmark, but by 2011 this had been reduced to 67%.
- The Western Cape distribution of scores remained unchanged between 2002 and 2011.
- Gauteng exhibited gross underperformance in 2002, where the distribution of scores mirrored that of the SA population, but which in 2011 had improved to the point where the distribution was identical to that of Western Cape.

According to Reddy et al. (2015), the most likely explanation for differences across provinces is that government's pro-poor investment policies have targeted the most disadvantaged schools and households, and have had their most immediate impact on the poorest-performing districts.

Source: Reddy et al., 2015

8

Large-scale assessment procedures which serve a third goal – certification – are often associated with those directed towards one or both of the first two purposes. In South Africa the NSC is the prime example of this kind of system. Evidence that the NSC serves all of the first three purposes of large-scale assessment systems is reflected in the fact that, in addition to providing school leavers with accreditation of various kinds, the NSC is widely considered by all stakeholders to provide the most reliable measure of systemic and school performance, while at the same time teachers, schools, districts, provinces and the DBE are held accountable for the results. Similarities and differences between tests which serve the first three purposes are further revealed when considering threats to the validity and reliability of test instruments and results, and hence of their usefulness (Table 3).

Risk factors and their mitigation

Two factors stand out when considering sources of risk and their mitigation with respect to the first three assessment types. The first involves standardisation of the instruments and procedures. In order to be comparable from one year to the next (vertically) and between schools in the same year (horizontally), rigorous psychometric techniques must be applied in the design and construction of the tests. And, whether the tests are administered by teachers or external agents, without very extensive training on use of the instruments, a wide variety of practices may be applied in administering and marking them, resulting in low reliability in comparing results. Under these circumstances, differences in scores between schools, or rises and falls across time could be due to different administrators applying different standards, and not to any differences in learning.

Table 3: Assessment types, sources of risk and mitigation strategies

Assessment type		Threats to validity, reliability and use	Risk mitigation strategies
1. 2. 3.	Accountability Systemic Evaluation Certification	 Non-standardised test design, administration, scoring and reporting, resulting in non- comparability of tests vertically (over time) and horizontally (between different parts of the system). 	 Rigorous psychometric methods employed in test design. Administration, scoring and reporting done by external agents. Standardise procedures. Training and quality assurance of personnel and processes.
		 Cheating by test takers and/or administrators. Raising the stakes (intensifying pressure, rewards and sanctions) increases the tendency to cheat. 	 Systems to detect cheating. Punishment of cheaters. Keep the stakes relatively low, especially punitive measures such as 'naming and shaming', and closing non-performing schools.
			objectives in test items.
4.	Formative	 Linking formative assessments to any of types I-3, leads to confusion of purpose and some of the risks listed above, especially narrowing the curriculum and cheating. 	• Keep formative assessment separate from other types
		 Assessment system not linked to training programmes and resources. 	• Link test instruments and processes to teacher training and materials design.
		 Test users do not understand how to apply diagnostic procedures, and hence how to tailor instruction to the findings. 	 Training and development; in-school professional development, including modelling
		 Parents and the public do not understand what the results mean 	Public education

Similarly, erratic marking by teachers may affect the reliability of test results, which may have the effect of deflating results. This happens when the subject/content knowledge of many teachers is so poor that they cannot identify valid, alternative responses.

A second risk factor involved in assessment exercises falling into types 1-3 is the problem of cheating. And when the stakes are increased by loading test results with consequences, the risk of cheating rises proportionally. For example, Jacob and Levitt (2003) have shown that a very significant number of teachers read the answers out to their children when administering standardised tests in Chicago public schools over the years 1993-2000, the results of which, in part, determined their salaries.

The most effective strategy for standardising the instruments and procedures, obviating conflicts of interest and strengthening public confidence in the results, is to contract an external agent to perform these functions, or at the very least to quality assure them. With respect to the NSC, this condition is addressed through the legislative requirement that quality assurance of the entire process is undertaken by the statutory body, Umalusi, which is independent of those parts of the system whose reputations depend on trends in annual scores. This is no guarantee that insiders do not attempt to sway public opinion about what the results mean, nor that cheating is eliminated completely (as happened in the 2014 NSC). But, putting the standardisation functions in the hands of an independent body meets the minimum conditions for public trust in the results.

In addition to these political and technical considerations, there is a wider debate about testing programmes aligned to one or other combination of the first three purposes described in Table 3. While this debate may at times focus on technical issues, it often assumes a largely ideological character, generating a great deal of heat in the process, which in turn tends to obscure and distort the important issues that it raises. A flavour of this debate is reflected in Diane Ravitch's characterisation of the testing regime which has taken hold in the US since the institution of No Child Left Behind, as leading to the 'death' of the American school system (Ravitch, 2010). The same sentiment is widespread in writing about testing in the UK where, for example, Beck and Young (2005: 1) see large scale testing programmes as part of the '... assault on the professions and the restructuring of academic and professional identities.' Such critiques of testing are part of a broader analysis, couched in ideological terms, which accuses government of instituting a managerialist culture, through a 'technology of performativity' and the 'tyranny of metrics' (Ball, 2008: 53-4). As Hoadley and Muller note, 'Testing is, in this critique, solely a technology of control, and teachers and learners alike are, curiously, deprived of any agency in the process' (2014: 1).

It is easy to respond in one of two ways to such critique: either to be swept along by its anti-establishment sentiment and reject large-scale testing out of hand; or to reject the criticism as overheated and exaggerated. Both responses would be wrong: the first because it overlooks the positive potential that national test programmes hold for teaching and learning; and the second because these critiques have a very valid point, albeit one that tends to be obscured by their totalising discourse and conspiracytheory perspective. The question then becomes: how does one realise the promise that large-scale test programmes hold for pedagogy, while minimising the negative effects that have been documented in many studies in various contexts?

The first step in responding to this question is to recognise the potentially destructive effects of these programmes. Mostly these concern teachers' tendency to emphasise those parts of the curriculum most frequently tested, at the expense of other valuable curricular objectives. This effectively results in a narrowing and dumbing-down of the curriculum, since the most easily testable skills tend to be those demanding the lowest levels of cognitive challenge. The higher order skills are more difficult to assess, because they require higher levels of professional judgement on the part of those scoring the tests, and hence are not only more time consuming and expensive to assess, but also produce less reliable scores. In particular, extended writing exercises in literacy and problem-solving tasks in mathematics are seldom tested.¹

Formative assessment

This brings us to the fourth assessment type shown in Table 3, the kind popularly referred to as assessment <u>for</u> learning, following Black and Wiliam's (1998) classic formulation. There are many ways in which tests falling into this category may be used to assist teachers to improve their pedagogy, including signalling what is important in the curriculum and demonstrating the standards appropriate to the grade. But perhaps their most important function is to diagnose weaknesses in learner knowledge, and hence in teaching and learning practices. This is insightful, particularly for teachers, but such tests also provide key information regarding the design of intervention programmes to address these weaknesses, and to track progress in closing the gaps. For this reason we use the term formative assessment to emphasise the important role such tests play in shaping and directing pedagogy.

¹ The *Programme for International Student Assessment (PISA)*, to which 65 countries subscribe, began to test non-routine problem solving abilities in some countries in 2012.

Formative assessment covers a range of activities, from the use of standardised tests such as ANA, to micro-level on-going engagements between individual learners and the teacher, and everything in between, including class tests, exams, written exercises and oral quizzes. All are formative, in the sense that their primary purpose is to inform teachers and learners about learner misconceptions and learning strategies. Similarly, feedback varies greatly in terms of both its detail and the actors to which it is aimed, depending on the grain size. Thus, at the coarsest level - which applies to national standardised tests like ANA - a 40-item test can provide diagnostic information only at the broad topic level; for example, it can reveal problems with the addition of fractions, but is unlikely to pinpoint the difficulty to a specific area, such as the use of lowest common denominator. At the same time, the analysis generally only provides diagnostic information down to the level of the school.

In contrast, finer-grained assessment instruments – such as class tests – may cover only a narrow subsection of a particular topic in an attempt to identify more specifically the nature of learning difficulties experienced by individual learners. At an even finergrained resolution, a Socratic discussion between teacher and a single learner may be useful in pinpointing the precise nature of misconceptions, false paths, and innovative techniques (see Box 2 below). It goes without saying that, across this entire spectrum, the higher the levels of teacher knowledge and pedagogic skill, the more successful the formative process will be in shaping effective teaching and learning. Yet, these are the skills most lacking in many teachers and the greatest challenge posed by ANA is how to develop the capacities in teachers so that the tests can be used optimally to drive pedagogy.

Assessment exercises used for formative purposes are rather different from the first three types. The main source of this difference lies in the extent to which teachers and instructional leaders are involved in test construction, administration, scoring, analysis and reporting. For tests designed for accountability, systemic or certification purposes, risk minimisation dictates that educators should be excluded as far as possible from direct involvement in these processes. Since they have a vested interest in the results, and since they introduce idiosyncratic practices, teachers are not the best agents to administer the tests and this task is best performed by outsiders who are trained and monitored to produce standardised, highly reliable results.

However, achieving the aims of formative tests depends on the involvement of educators in all stages of the cycle. Through their participation in administering and scoring the tests, teachers and their managers gain direct experience of and insights into the performance of their learners, while involvement in test design and analysis of the results provides important opportunities for professional development in these key curriculum processes. It should be clear from this discussion that combining diagnostic testing with any of the other three types significantly increases the kinds of risks outlined in Table 3.

2.2 Annual National Assessment

Purposes

The DBE report on the 2013 iteration of ANA (DBE 2013) lists the purposes of the exercise as:

- Exposing teachers to best practices in assessment
- Targeting interventions to schools that need them most
- Giving schools the opportunity to pride themselves on their own performance
- Giving parents better information on the education of their children.

These goals are predominantly oriented towards formative purposes. However, the duality of purpose (formative and systemic evaluation) is apparent throughout the reports detailing the results of both the 2013 (DBE, 2013; 2014b) and 2014 (2015b; 2015c; 2015d; 2015e) ANA exercises. The point is emphasised in the World Bank review commissioned by the DBE in 2012, which notes that:

Among high-level stakeholders within the DBE, the main value of the ANA is as a key component of an accountability framework. ... In contrast, at both provincial and school levels, stakeholders would prefer a more diagnostic role, where the ANA results directly inform educational policy and classroom practice.

World Bank, 2013: 4

Furthermore, although ANA is not intended to serve as a high stakes test, by reporting the results by province and district, a degree of competitiveness and accountability is introduced. This tendency is enhanced at lower levels, where provinces and districts compare the results of individual schools, drawing attention to differences between schools and across years. The World Bank review puts it this way:

The ambiguity about the purpose of the program has also resulted in the unexpected characterization of the tests to students as extremely high-stakes. Many schools require students to wear their best clothes on the day of testing, and, anecdotally, it is common for children to cry during testing due to stress and their task confusion. World Bank, 2013: 16

An uneasy amalgam of goals thus drives the ANA programme, a situation which, as we have detailed in section 2.1 above, leads to contradictions and compromises, a number of which we discuss in what follows.

ANA as systemic evaluation instrument

The systemic evaluation purposes of the ANA tests would prescribe strict comparability of the instruments across time. This is a condition which the DBE acknowledges is not met:

There is ... no control over the comparability of tests and, consequently, on the comparability of results on a year by year basis. This means that no technically defensible comparisons can be made on the results of ANA 2013 to those of previous years although the results of each year are valuable for the year under review.

DBE, 2015b: 9

To address this limitation, in 2013, the DBE had started a process of reviewing the assessment design to provide separate instruments, one set that will be used for systemic purposes and the other for diagnostic/formative purposes.

One distinguishing feature of the systemic assessments will be strict confidentiality so that the same instruments can be used over time to ensure that comparisons are based on a defensible design. DBE, 2013: 7

Eighty (80) of the 114 graphs and tables summarising the 2014 results, together with the accompanying text, compare scores across the last two or three years (DBE, 2015b). Given that the test structure does not permit comparisons from one year to the next, about 70% of the data in the report is misleading. This was also the case in 2013 (DBE, 2013), as noted in the NEEDU Report for that year (NEEDU, 2014a). The World Bank review (World Bank, 2013) and the DBE's ANA Advisory Committee (ANA Advisory Committee, 2013) had advised against the use of ANA results to make vertical comparisons.

The immediate and longer term effect precipitated by using a test that is not fit for the purpose to make certain conclusions is incalculable. All participants in the system are under the mistaken impression that, with the exception of Grade 9 mathematics, scores in all grades are improving strongly in both literacy and mathematics. Thus, complacency is likely to follow the publication of the results, a very dangerous mood in a climate when the school system, particularly at primary level, is in need of reform.

Issues of test design, data analysis and use

The comparability of tests is best achieved through the use of anchor items, which remain constant in successive tests. DBE is unable to use this method, because the tests are administered and scored by teachers, who thus have advance notice of any items that may be used to anchor the test the following year. This is the most obvious example of how measures taken to maximise the diagnostic uses of ANA undermine its systemic evaluation potential. Less satisfactory, though acceptable, methods may be used to approximate comparability, such as the techniques used by Umalusi to moderate NSC scores. While the DBE has not aligned ANA scores in successive years, it is encouraging to note that work is underway in terms of the evolution of the ANA design to reach a stage that guarantees robust direct comparisons of results over time. In the report on the ANA of 2013, the DBE cautioned that:

It is important to note that the current stage in the evolution of the ANA design features has implications that must be borne in mind in interpreting the results of ANA 2013. One such feature is that ANA tests for each cycle are left exposed to schools and learners and new tests are developed for the next cycle.

DBE, 2013: 7

Problems of ANA test design go beyond the lack of comparability, and include the absence of any attempt to standardise or benchmark the tests. The World Bank review describes this issue as follows:

There is currently no methodological justification for interpreting the student scores relative to educational standards. Although there is an a priori assumption that 50% represents competent performance, there is no rationale for establishing this threshold as conceptually equivalent to "required competence" or "adequate achievement". ... Other reporting benchmarks, such as the seven-categories of achievement, effectively have no basis for interpretation.

World Bank, 2013: 31

The kinds of benchmarking procedures described in this quote, as illustrated for example in the TIMSS tests (see Box I, Table 2), require sophisticated psychometric skills, just one of the high level technical procedures (including item review, test piloting, sample selection, analysis design, and external review of reports), which the DBE does not have the capacity to undertake fully on its own. Besides, public credibility will be significantly enhanced if outside experts participate in and verify the outcomes at all stages of this complex set of processes. For this reason, the World Bank review recommended an expanded role for the Advisory Committee. An improved ANA design

_12

with recommended features from the Advisory Committee was planned for 2015 but this did not materialize due to the impasse with teacher unions.

The difficulties involved in the annual ANA cycle have been greatly aggravated in the past through the very short timeframes set by the DBE for completion of the process. While Umalusi locates each cycle of the NSC in an 18-month timeframe commencing with the setting of papers early in the year and ending with their administration in schools in October the following year - the DBE compresses ANA into a 9-month cycle. This places extraordinary pressure on DBE staff. The resultant pressure not only leads to a lack of adequate rigour being applied in carrying out several key ANA procedures, as outlined above, but compresses the space required for the DBE to exploit opportunities for synergy between different programmes. ANA provides an excellent opportunity to link the implementation of CAPS, the learner workbooks, and teacher professional development, but over-commitment on the part of officials responsible for ANA and short timeframes severely constrain this potential.

capture may be high variability of results from one year to the next, thus rendering vertical comparison highly unreliable.

While all intervention programmes aim to change the quality of learning, as measured by test scores, in a positive direction, there are limits to how much change is possible over the course of one year. Based on the findings from international comparative standardised tests, Gustafsson (2015) concludes that 8% of a standard deviation is the maximum change in learner scores that can plausibly be expected from one year to the next as a result of better teaching. Any change larger than this threshold is likely to be the result of factors other than improved instruction, such as differences in test standards, variation in the administration and/or marking of the tests, incomplete data capture, or cheating.

Applying this measure to a comparison between the 2012 and 2013 ANA scores, Gustafsson concludes that abnormally large positive changes were exhibited by significant proportions of leaners in both subjects in Grades 3, 6 and 9 (Table 4).

	Grade 3		Grade 6		Grade 9	
	Maths	HL	Maths	EFAL	Maths	EFAL
Percent learners in districts with abnormally large positive change	99	14	100	93	53	11
Percent learners in districts with abnormally large negative change	0	52	0	0	7	42

Table 4: Percentage of learners exhibiting variable scores greater than 8% of one standard deviation on ANA

Note: HL = home language; EFAL = English first additional language

Test administration and data management

Test design is not the only factor considered in rendering tests horizontally and vertically comparable. Rigorously standardised test administration, scoring and data capture are equally important. As noted above, using teachers to undertake these tasks promotes the diagnostic elements of ANA but severely compromises their systemic evaluation potential, and increasing the stakes attached to the results accentuates this tension.

Regarding data management, the reliability of the test results is brought into question by incomplete data capture. Following an analysis of the 2013 data, Gustafsson (2015) concludes that the 'great majority' of districts did not display sufficient completeness of data collection to allow for meaningful districtlevel reports. For instance, at the Grade 3 level, and focusing on language marks, only 29 of the 86 districts had at least 85% of learners captured. One manifestation of incomplete data Thus, 'implausible' positive variation occurred in the case of 99% of learners in Grade 3 mathematics, 14% in Grade 3 home language (HL), 100% in Grade 6 mathematics, 93% in Grade 6 English first additional language (EFAL), 53% in Grade 9 mathematics and 11% in Grade 9 EFAL. Abnormal downward trends between 2012 and 2013 were far less common, but nevertheless exhibited by 52% of learners in the Grade 3 HL test and 42% in the Grade 9 EFAL test. Administration of the tests has been tightened considerably since 2012 – indeed, the system as a whole has made great strides in a very short space of time – and therefore we would expect these wild variations to calm down. Keeping track of these and other indicators suggested by Gustafsson's work would be a good way of assessing improvement in test administration.

Systemic evaluation and diagnosis

The discussion in section 2.1 emphasises the diagnostic potential of formative assessment. However, systemic evaluation may also be used for diagnostic purposes. This is another area in which the design of ANA can be improved. The Advisory Committee has stated categorically that ANA is not a diagnostic test, but a criterion referenced achievement test, and that the data can be used diagnostically to a very limited extent, since there is not a sufficient number of items per content area (sometimes only one item), and the items were not developed to cover a range of skills or mastery within any specific content area (ANA Advisory Committee, 2013: 1).

The implication is clear: in order to derive more detailed diagnostic information from ANA, the tests must be designed to probe specific curricular domains, and include sufficient items to provide a valid and reliable picture of the state of learner knowledge in each respective domain. The problem with fulfilling these requirements is that they will result in tests of impractical length. The way around this problem is to adopt a matrix sampling method, administering different fractions of the overall test to different sub-samples of the test population.

Maximising the pedagogic potential of ANA

The primary purpose of formative assessment is to use the results to improve teaching and learning in the classroom, either directly by the teacher reflecting on her own practice and that of her peers, or indirectly through in-service training (INSET) programmes and other interventions designed to address issues identified by the assessment.

In an early survey of research into the learning effects of programmes incorporating a formative assessment component, Black and Wiliam (1996: 4) concluded that such interventions produce significant, and often substantial, learning gains, with typical effect sizes of between 0.4 and 0.7. What this means, according to Black and Wiliam's calculations, is that a gain of effect size 0.4 would improve performances of pupils in the English General Certificate in Senior Education (GCSE) exam by between one and two grades; a gain of effect size 0.7, would raise England from the middle of the 41 countries involved in TIMSS to being one of the top 5. But the most encouraging finding quoted by Black and Wiliam is that pedagogically focused assessment benefits low attainers more than the rest, and so reduces the spread of attainment whilst also raising it overall. In other words, formative assessment has the potential to reduce inequity in the system.



Promoting learner activity

Much has been written on formative assessment over the last two decades confirming Black and Wiliam's conclusions. Indeed, in the school improvement literature, where formative assessment is generally referred to as *feedback*, this is one of the factors found to be most consistently associated with improved learning. But Black and Wiliam's description of a school in which *assessment for learning* is optimally applied remains as good a picture as any (Box 2).

African classrooms. Such a climate places a major limitation on the effective use of formative assessment.

Promoting educator agency

One of the intentions of ANA is to provide a tool for promoting formative assessment, not only in classrooms and schools, but also between successive layers of the system. The tests are intended to serve as a mechanism for aligning and integrating the work of subject advisors and other curriculum personnel in districts, provinces and the DBE with that of the school

Box 2: The formative assessment school

A founding assumption of formative assessment is that learning is most effective when students actively participate in the process. This involves verbal and written engagement between teacher and learners, and among learners. For assessment to function formatively, the results have to be used to adjust teaching and learning. For this reason, feedback to any pupil should be about the particular qualities of her work, with advice on what she can do to improve.

Opportunities for pupils to express their understanding should be incorporated into any pedagogical engagement, for this will initiate the interaction whereby formative assessment aids learning. The dialogue between pupils and a teacher should be thoughtful, reflective, focused to evoke and explore understanding, and conducted so that all pupils have an opportunity to think and to express their ideas.

Assessment of learners' knowledge displays, verbal or written, should not be restricted to the allocation of grades or scores, but must offer guidance on how work can be improved. The more immediate and explicit this guidance, the more useful it is to the learner.

Teachers within a school, grouped by phase or subject, should meet regularly to discuss matters of curriculum, pedagogy and assessment. Among other tasks, test design and results should be reviewed critically by the group, and the implications for pedagogy discussed. Peer observation among teachers is a powerful professional development tool, providing what Black and Wiliam (10) describe as:

... a variety of living examples of implementation, by teachers with whom they can identify and from whom they can both derive conviction and confidence that they can do better, and see concrete examples of what doing better means in practice.

In other words, in-school professional development holds enormous promise for improving pedagogy. Source: Constructed from Black and Wiliam, 1996

The pedagogical culture which predominates in most South African schools is very different from the ideal sketched in Box 2, as described extensively in the literature: very little learner talk, particularly with respect to asking questions; inadequate frequency and quality of reading and writing; and a lack of meaningful communication between teachers on issues of curriculum, pedagogy and assessment (see, for example, Hoadley, 2012). The first of these receives the least attention; while instructional leaders are beginning to pay closer attention to reading and writing, the value of listening and speaking does not warrant anywhere near the same level of concern or activity. Yet, grappling with a new concept is greatly facilitated by speaking about it, questioning, and engaging with the teacher or fellow students, gaining more information and new perspectives on the idea. This implies an active learner, busy with talk, reading and writing - all in the service of cognitive development. Yet these elements are in very short supply in the majority of South

management teams (SMT) and teachers. For a start, they send a powerful signal across the system regarding the standards to be applied in each grade and subject, and give examples of assessment tasks demanding a variety of cognitive tasks at different levels of difficulty.

Knowledge about the formative intentions of ANA is high among most provinces and districts visited by NEEDU in the past three years, where systems are emerging to collate scores, moderate marking, analyse the results, and design intervention strategies. With few exceptions, these systems generally have a long way to go before they start providing real assistance to teachers, but at least they are gearing up to do so. Again, the point must be made that administration of the tests has improved, while data management and use is beginning to move towards greater reliability; developments which are perhaps as much as can be expected after only four years of this massive

national programme. The international literature is clear that systems of this kind take a number of years to bed down and have an effect on teaching and learning. Currently, the biggest breakdown in the formative logic of ANA occurs at the school and classroom levels. We illustrate these points with evidence from NEEDU's visits to schools, districts and provinces in 2014. The evidence falls into two categories: the quality of ANA test data at school level, and the use of ANA data at all levels of the system.

Quality of school-level data

NEEDU compared the 2013 ANA scores from a sub-sample of schools in the 2014 NEEDU sample with the scores for the respective schools in the national database. The purpose of this exercise was to ascertain to what extent the final scores, moderated by districts and provinces and collated in the DBE database, had been communicated to schools. The results are summarised in Table 5. The first point to note is that, had the moderated scores been communicated to schools and had schools then recorded these moderated scores and provided them to NEEDU when requested, there would be a match between the scores provided by schools and those provided by the DBE. The fact that the scores provided by 65% of schools in the case of EFAL and 45% in the case of mathematics – the total numbers of schools in Scenarios 2 and 3 – did not match those in the national database indicates that the moderated scores were not communicated to these schools. This is one possible explanation for the differences between ANA scores found in schools and those in the national database.

In Scenario I, school scores match the moderated scores and marginal differences can be attributed to human error or rounding. Two possible explanations would account for this situation. Either the moderated scores were communicated to schools and reflected in their records, or these schools

	EFAL	Mathematics
Number of schools in sample*	40	47
Scenario 1: School scores match DBE scores**	14 schools (35%)	26 schools (55%)
Scenario 2: School scores exceed DBE scores	12 schools (30%)	12 schools (26%)
Scenario 3: DBE scores exceed school scores	14 schools (35%)	9 schools (19%)

Table 5: Comparison of school and moderated scores, EFAL and mathematics, Grade 9 ANA 2013

Source: NEEDU school visits 2014

*Sample sizes vary because comparison data for both subjects were not available in all schools and some schools do not offer EFAL.

**This includes instances where the discrepancy is less than one percentage point.

The figures above, together with the text that follows, should be taken as indicative of the kinds of practices in schools rather than reflecting the 'average' practice in South African schools, since the sample is not representative of the population. The sample was constructed by randomly selecting one district in each province from the 24 districts visited by NEEDU in 2014.

The data in Table 5 reveal three different scenarios that NEEDU observed in schools. It was beyond the scope of this study to establish reasons for variation in ANA scores found in schools and those in the national database. The following are possible explanations for the variation. Further investigation is required to gather empirical evidence.

demonstrate good practice in the marking of exams and there was not need to adjust their scores in the moderation process. The percentage of schools in the sample with exam scores equal to the moderated scores provided by the DBE was considerably higher in mathematics (55%) than EFAL (35%). This would seem to indicate that these were the original scores, as marked by teachers, which did not require moderation.

One factor or a combination of three factors could explain a mismatch between scores in the remaining schools in Scenarios 2 and 3. First, it is likely that the moderated scores were not communicated to schools — resulting in schools keeping the original and unmoderated scores as opposed to the moderated scores stored in the DBE database.

Second, over-scoring and under-scoring by school markers may account for the mismatch in Scenario 2 and Scenario 3, respectively. Over-scoring occurs when markers accept

NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

16

incorrect responses or parts of answers as correct. This can be attributed to undue leniency on the part of the marker or, in extreme cases, outright cheating. The manipulation of exam scores in this way is often precipitated by pressure to improve high stakes exam results, which may happen for several reasons. Under-scoring occurs when teachers grade strictly according to the mark scheme and do not accept valid, alternative answers as correct. A mark scheme can never anticipate all possible answers, and this is especially so for open-ended questions eliciting unique, individual responses. Markers are expected to use discretion, drawing on their subject knowledge to evaluate alternative responses and award marks accordingly. The inability to identify equivalent, correct answers signals serious shortfalls in subject knowledge on the part of markers. These markers are unable to assess the validity of learner responses, which has serious implications for all aspects of teacher practice, not only the validity of different types of assessment.

Discrepancies in marking language exams are not uncommon since this inevitably entails some subjective interpretation of language; for example, evaluating the effectiveness of sentencelevel and text-level constructions in extended writing, or the suitability of alternative vocabulary for answering reading comprehension questions. While scores will vary from marker to marker, this should result in marginal differences of one or two percentage points in the overall averages at most.

Although assessment in mathematics is undoubtedly far more objective than language, there is an element of judgement requiring marker discretion. Marks are awarded for steps in working out and not just the final answers, so markers must take into account alternative approaches to problem-solving or doing calculations and award marks accordingly. Where schools have scores significantly above the moderated scores, it is likely that teachers mark too leniently, condoning a high number of unacceptable steps or calculations. The opposite scenario, where moderated scores exceeded the school scores, is of even more concern since it indicates that teachers are unable to recognise valid steps in calculations and problem-solving and therefore do not award the marks due. This points to a serious lack of mathematical skill among mathematics teachers which, as with English, has far-reaching implications for teaching and learning.

Third, a mismatch between the school and DBE scores can be caused by human error when capturing data at different capturing centres in the provinces. Teachers at school and at the centralized moderation centres across the provinces recorded all learners' marks on computer-generated mark sheets. The completed mark sheets were then forwarded to a central capturing centre that was managed by provincial officials. In all provinces, the local district was tasked with keeping accurate records that reflect the receipt of mark sheets from schools and those that are returned to schools in cases where there are corrections to be made.

At these centres, the capturing of marks was done directly onto the GET (General Education and Training) mainframe system. This double capturing process is likely to lead to a situation where the original school scores are incorrectly captured at the capturing centres.

DBE has made notable progress to control the effect of marking and double capturing of marks on the credibility of the final ANA scores. Moving away from manual capturing of ANA scores at school level to electronic capturing using SA SAMS (South African School Administration and Management System) is a step in the right direction to minimise errors associated with capturing of the learner scores at different levels. Similarly, the DBE's stringent system to minimise the effect of capricious marking on the credibility of the final ANA scores is noteworthy. This system entails the following:

Marking and moderation at school level: As of ANA 2013, universal ANA marking takes place at school level under the supervision of the SMT (School Management Team). All marking is preceded by a discussion of the memoranda, to ensure a common understanding. Teachers have to follow the standardised memoranda that have been adopted centrally for marking learner responses. Heads of specific subject departments moderate the scripts marked by teachers to ensure that the memoranda are accurately followed in evaluating learners' responses. School principals play an oversight role in making sure that all scripts have been marked and that heads of department (HODs) have done satisfactory moderation.

Centralised moderation of marks: To ensure the accuracy and reliability of the results and marking that is done at school level, moderation is conducted of Grades 3, 6 and 9 test scripts at centralised venues under the supervision of the Provincial Education Departments (PEDs) and monitored by the DBE. Centralised moderation focuses on re-marking the sampled scripts at the critical transition grades (Grades 3, 6 and 9). Provinces work with districts to select competent teachers to work under trained chief markers at the central marking venues.

Selection of scripts for moderation: The sampling of scripts for centralised moderation is done carefully to ensure that the selection of scripts for centralised moderation is not biased. From each school, three scripts per class and per subject are sampled for centralised moderation of Grades 3, 6 and 9.

Moderation is conducted in different centres across all nine provinces. In 2013, for example, the number of Grade 3, 6 and 9 sampled scripts that were moderated centrally was about half a million.

Marking and moderation procedures: The chief markers, who must attend the national marking memoranda discussions for each subject, facilitate the training of markers at the centralised moderation venues. The ANA Marking Manual outlines the Norms and Standards as well as detailed processes that are to be followed, thereby ensuring that there is a consistent and standardised approach to the marking and moderation of ANA scripts across the country.

The correlation between the two sets of marks (original teacher marks and moderated marks) has been significantly high over the years. That is, the correlation between the two sets of marks in most cases is higher than 0.9. This indicates marginal differences between original teacher marks and moderated marks and that marking at school level is fairly consistent and in line with the approved memoranda. In 2013, for example, the correlation of the marks given by the teacher and the moderated marks is presented in the table below.

While the DBE has made concerted efforts to control the effect of erratic marking and capturing errors on the accuracy and reliability of ANA final scores, one loophole remains. There is still no credible system at different levels of the system to ensure this is a serious indictment of their ability to administer any other assessments, such as common tests and school-based assessment, which are not moderated externally. Furthermore, schools are expected to mark the tests and analyse their results for diagnostic purposes so that teachers are familiar with the learning gaps and specific learning needs at their school. If the school data are unreliable and schools must wait for the verified data to devise and implement strategies for improving teaching and learning, then interventions are delayed pending the verified data and the formative aspect of assessment, which requires timeous feedback, is undermined. Ensuring that teachers have sufficient subject knowledge to mark reliably is only the first step to using ANA for formative purposes.

It must be emphasised that establishing the reliability of ANA scores awarded by schools falls outside the scope of this study. Further investigation to test the accuracy of scores awarded by schools is recommended. The authenticity of this assumption is put to the test when considering the high correlation between original teacher marks and moderated marks. As illustrated above, there are marginal differences between original teacher marks and moderated marks, at least in Grades 3, 6 and 9.

Management, analysis and use of ANA data

The DBE has issued a set of national guidelines for the analysis of ANA scores (DBE, 2015f). The approach to the analysis varies between provinces, and so too does the development of these processes further downstream at district and school level, even

SUBJECT	GRADE	CORRELATION
Mathematics	3	0.93
Language	3	0.93
Mathematics	6	0.93
Home Language	6	0.92
First Additional Language	6	0.89
Mathematics	9	0.96
Home Language	9	0.91
First Additional Language	9	0.90
Home Language First Additional Language	9	0.91

Table 6: Correlation between original and moderated marks

Source: DBE (2013: 25)

that the centrally moderated ANA scores are communicated to schools. Without such a system, the status quo, where schools keep ANA scores that are different from those in the DBE database, will remain unchanged.

That the scores awarded by schools may be unreliable is problematic on two levels. First, ANA is only one type of assessment carried out at schools. If schools are not capable of marking and moderating the ANA tests correctly then within the same provincial or district system. Three issues are pertinent in this regard: who is responsible, the type of analysis undertaken, and how the analysis is used.

Who is responsible for the analysis differs from province to province. For example, in the Free State provincial officials reported that data analysis of learner performance is carried out at all levels of the system (province, district and school), and educators are expected to use their analyses to identify areas

18

for improvement within their remit. In contrast, in the Northern Cape there is no analysis of the ANAs beyond a comparison of raw scores with moderated scores, and provincial officials rely solely on the National Diagnostic Report from the DBE for formative purposes.

In Mpumalanga a teacher selected from within a cluster of schools in the same area is responsible for analysing ANA tests and disseminating the findings to schools in her cluster. One district reported that the ANA Coordinator analysed the results, but there was no evidence of this; in fact, only the average scores per subject were available at the district.

In some provinces the process of analysis has been centralised and responsibility resides with a specific directorate or directorates, which vary from province to province. For example, in KwaZulu-Natal the Quality Assurance Directorate is responsible for analysing the ANA results and the process is overseen by the Exams Directorate. In the Eastern Cape, the Exams Directorate carries out basic quantitative analysis, such as averages and distribution of levels, while qualitative analysis of common errors and misconceptions is done by subject specialists. In Gauteng, the Assessment Directorate is responsible for analysing test results and for acting on the findings.

The type of analysis undertaken varies from straightforward collation of scores to the generation of summative findings, such as averages and levels of attainment, to rigorous qualitative analysis of learner responses for identifying areas of weakness in teaching and learning. Analysis of summative data is the most common approach throughout the system. Evidence from the sample of schools visited by NEEDU in 2014 shows that the analysis of ANA in the majority schools is limited to calculating levels of performance, with no understanding of the diagnostic potential of the ANA. Meanwhile, in the Northern Cape the only additional analysis carried out in the province is a comparison of raw scores with moderated scores. In contrast, there is rigorous qualitative analysis of the ANAs in the Eastern Cape, KwaZulu-Natal and Gauteng provincial departments. This entails thorough item and error analysis at provincial level, followed by proposed interventions to address common weaknesses. Although most schools do not use ANA for formative purposes, at school level there are pockets of good practice. For example, a group of schools from the NEEDU sample in KwaZulu-Natal provided evaluators with rich data on specific areas of weakness in their schools, based on findings from their item and error analysis of the ANA.

The use of the assessment data, to a large extent, occurs rather haphazardly at different levels of the system. It varies considerably at individual districts and schools - from setting targets for future attainment, to identifying areas in need of remedial work and directing teacher practice. It is common for schools to conduct no analysis at all of the ANA scores: in 13.8% of schools visited by NEEDU, the ANA data were not available, indicating that the schools did not use the analysis of ANA to inform their practice. In these schools, educators did not even know how their learners had fared in the ANA. At one school, NEEDU Evaluators were informed that the completed ANA scripts had been taken to a central point to be marked and the school had not received the results. Anomalously, the teachers interviewed at that school all said they had analysed the ANA results, suggesting either a lack of understanding of what analysis entails or a tendency to pay "lip service" to the practice without actually following it through.

At most schools, teachers could not elaborate on any analysis beyond recording levels of performance. There were cases where it was reported that the results were used to inform intervention programmes, yet members of the SMT at the same schools did not know the areas identified as needing attention. In some districts, where it was reported the analysis had been used to set targets for attainment in the following year, there was disagreement among senior district officials about what the targets were and, in some cases, subject advisors did not know the targets for their subjects. Where the analysis had been centralised at provincial level the findings were not always communicated to schools and districts timeously, resulting in delays with remedial work and interventions in the schools affected. Moreover, the findings were generic, with little or no feedback to schools on their individual school or learner performance. The scope for devising effective strategies to address the specific needs of learners at individual schools was thus severely curtailed.

Conclusion

In conclusion, while most educators have responded to the directive that ANA results be analysed, the approach to managing, analysing and using the ANA data emerges as idiosyncratic throughout the system. Not only does the practice vary from province to province, there is very little consistency between districts in the same province, and schools in the same district. Moreover, there is evidence that, in most cases, the approach espoused at provincial level is not borne out further downstream, as districts and schools are mostly unaware of the provincial policy and therefore have implemented their own practices in an attempt to comply with requirements. As discussed in previous reports (NEEDU, 2013; 2014a), at the base of the pedagogic climate which rules South African schools are low levels of capacity among educators, due in large part to their own poor education. This is not a situation which is confined to teachers: teachers with weak knowledge foundations are promoted to school-level HOD posts, and from there to principalships, and positions in curriculum support or systems management throughout the system. Under these conditions, curriculum officials are, in many cases, unable to assist teachers to make the best use of ANA. Furthermore, to build teacher capacity to use formative assessment effectively, ANA must be integrated into other key elements of the Action Plan; notably, implementation of the Curriculum and Policy Statement (CAPS), the learner workbook programme and the in-service training activities of national and provincial departments, the union training institutes, the higher education sector and NGOs. All of this should be supported by a strong research facility, whose first task should be to collate and evaluate research on existing and past interventions aimed at building educator capacity. We return to this topic in section 6 below.

2.3 The National Senior Certificate

Building up to and following the annual release of the NSC results in January, the national debate tends to focus largely on the pass rate. Placing inordinate emphasis on the pass rate as a measure of performance is a practice which exerts enormous pressure on provinces, districts and schools to cull weaker learners in Grades 10, 11 and 12, and encourage others to take 'easier subjects' in order to improve their scores. While these practices may make the school, district or province look better than they actually are, they are extremely destructive to the future study and career prospects of individual students and to the growth of the human resources so badly needed for the development of the country.

The purpose of the following discussion is to encourage educators throughout the system to adopt a broader set of indicators for measuring the NSC results, which turn attention to the quality of learning outcomes and closing the equity gap between learners from divergent socio-economic backgrounds. It is argued that the following targets will better serve both individual learners and the nation: throughput rates, the quality of passes in English FAL, the proportion of candidates writing and passing mathematics, the quality of mathematics passes, and the proportion of Bachelor level passes (university exemption). The data used in the remainder of this section is discussed in Appendix 2.

Equality of access: Throughput

A large majority of South African children not only have access to primary schooling, but around 95% progress to Grade 9. The country has thus achieved the first of the Millennium Development Goals. However, nearly half the learners entering Grade I do not get to sit the NSC examination at all, let alone in the minimum 12 years. As with most goods and services in South Africa, access to the NSC is differentiated by poverty. It is time that schools give priority to increasing access to Grade 12 and the NSC. This involves increasing the throughput rate, particularly in the last three years of high school.

Throughput from one year to the next may be defined as the percentage of learners in any one grade progressing to the next (higher) grade the following year. However, this is not easy to measure as it is complicated by a number of factors. Learners may be held back in the higher grade thus swelling the numbers beyond the cohort who started the previous grade. Learners may join the higher grade from outside the school, or leave to go to another school without dropping out. For these reasons, the throughput figures discussed below are not a true reflection of the passage of any particular cohort through the school system. Nevertheless, it remains an important, if somewhat crude, indicator of the proportion of children progressing through the grades.

Perfect throughput in the FET Phase is not necessarily desirable, as it will benefit many learners to leave school before reaching Grade 12 to obtain a vocational qualification at a public or private college, or enter an apprenticeship, rather than pursuing the NSC route. However, the number of learners leaving the school system before taking the NSC, which greatly accelerates during the final two years, is so far in excess of those who enter employment or pre-tertiary study, that we must conclude that most are dropping out to join the army of those not in employment, education or training (the so-called NEET youth). Gustafsson (2011) has estimated that in 2009, of young people aged 15-35, 31% or 5.7 million, fell into this category. Figure 3 shows the extent of the problem using one measure of throughput: the number of learners that move from one grade to the next in consecutive years.

Although the graph reflects nine cohorts, who reached Grade 12 from 2006 to 2014, the pattern remains constant. Broadly speaking, the numbers in Grade 12 are approximately half of those in Grade 2 ten years previously, while the patterns of peaks and troughs remain the same across cohorts. The spike in Grade I numbers is undoubtedly caused by the enrolment of under-age children, while the rise in Grade 10 enrolments must reflect large numbers of learners repeating the grade. Between Grades I and 10, enrolments exhibit a very gradual decline, indicating that a large proportion of South African learners remain in school for the first nine grades. Of most concern is the precipitous decline in numbers in Grades II and I2.





Source: S. Taylor, 2014.





Source: Own calculations using data provided by the DBE.

Clearly, the largest share of the throughput problem lies in the FET Phase. For this reason, the discussion which follows examines throughput from Grade 9 to Grade 12, reflecting the percentage of learners who reached Grade 12 compared with those in Grade 9 three years previously. Figure 4 shows the national throughput from Grade 9 to Grade 12 for cohorts matriculating between 2009 and 2014, with the percentage throughput for each year. A breakdown of the enrolment figures per grade and year is detailed in Appendix 3.

The throughput rate for cohorts matriculating between 2009 and 2014 varied between 62.0% and 54.4%, reflecting an overall decline of 7.6 percentage points over the period. In fact, there were 30,000 fewer learners in Grade 12 in 2014 than 2009, despite the increasing learner numbers in South Africa.

Aside from representing only a crude measure of throughput, for the reasons explained above, **it must be emphasised that these figures are not comparable across provinces**. This is because throughput figures are boosted for the provinces which are gaining learners due to inward migration (principally Gauteng andWestern Cape, and to a smaller extent the Northern Cape), while the figures appear worse than they actually are in those provinces losing learners (Eastern Cape and Limpopo). This is even more the case for districts and schools, where inter- and intra-provincial migration to towns and cities results in significant numbers moving from one district or school to another. It is futile, therefore, for institutions (be these schools, districts or provinces) to compete against each other on this metric. The main purpose should be for individual institutions at all levels of the system to increase their efforts to improve throughput in their respective institutions.

While some learners may leave school to pursue studies at a college of further education, enrolment at such colleges is nowhere near the number of learners who do not progress to Grade 12 in the school system. A large number of learners do not complete high school of any kind. Although the South African Constitution guarantees equal access to education for all children, it is likely that throughput is considerably higher in middle class schools than those serving poor children, reflecting inequality of access to the higher levels of schooling. Learners whose parents are working class or unemployed will progress more slowly through school because they possess lower levels of social capital, a disadvantage that will be accentuated by inefficient management and poor quality teaching. Addressing issues affecting quality and efficiency is key to improving throughput and providing equitable access to the higher levels of schooling.

22

Equality of Opportunity to Learn: proficiency in the language of teaching and learning

Quoting the work of Wedekind (2013), the Ministerial Task Team on the NSC concluded that:

Research on student performance at South African universities suggests that learner success in the language used for learning and teaching at school is a good predictor of success in higher education programmes. However, fewer than half of beginning first year students tested on the National Benchmark Test across a range of universities were deemed proficient in terms of academic literacy. This suggests that school-leavers with good results from the National Senior Certificate were nonetheless not well prepared for higher education study.

Department of Basic Education, 2014d: 67

It is one thing to have access to the NSC, but quite another to be adequately equipped to gain a pass in the examinations, let alone to do well enough to achieve success at the tertiary level. The failure of schooling to adequately prepare matriculants for higher education is emphasised in the characterisation of the tertiary sector as a 'low participation, high attrition system' (CHE, 2014: 7). This is starkly illustrated by the fact that only 17% of the population is enrolled in higher education which compares unfavourably with figures of over 30% for other middle-income countries. And for those who do enter higher education progress is generally very slow, or incomplete. For example, it has been estimated that, of the cohort that entered university in 2006, only 35% graduated within 5 years; and only 45% would ever graduate (CHE, 2013:52). The rates for coloured and African youth are of particular concern, with only 5% of young people from these demographic fractions succeeding in higher education.

It is a *sine qua non* or an indispensable condition that, without high levels of proficiency in the language of learning and teaching (LOLT), students cannot access the higher cognitive functions required for degree study. Since English First Additional Language (EFAL) is the LOLT at both school and university levels for some 90% of learners, poor levels of English proficiency are undoubtedly a major – if not the largest single cause – of learners dropping out before reaching Grade 12, failing to pass the NSC, and of not completing their tertiary studies. Without an adequate grasp of English, many opportunities to learn are not available to students. And, since this disproportionately affects poor students, this is another source of inequality in the South African education system.

The Ministerial Task Team characterises many students in the school system as 'semi-lingual' both in the LOLT and their home

language, exhibiting small vocabularies and incorrect grammar, consciously thinking about their language production, being stilted and uncreative with each language and finding it difficult to think and express emotions in either language. These features impact on learners' understanding of all their school subjects. Language issues have their roots in the earliest years and result in the majority of poor learners developing ever-increasing backlogs in their language skills and cognitive development as they progress through the grades. The introduction of English into the Foundation Phase (FP) CAPS curriculum is an attempt to improve standards of LOLT for the majority of children, and is a welcome move to improve the quality of schooling for learners whose home language is not English.At the same time, a partnership between the British Council and the DBE - through which subject advisors and teachers are undergoing training in English (British Council, 2015)² – is an important attempt to raise the English proficiency of educators.

According to the Task Team, reviews of the quality of the 2010 EFAL NSC papers by three international benchmarking authorities – Cambridge International Examinations, the Scottish Qualifications Authority and the Board of Studies, New South Wales – collectively found that:

- The cognitive levels assessed in the examination questions are heavily weighted towards lower-order skills such as literal comprehension and grammar translation tasks, with far fewer questions testing the higher-order cognitive processes of inference, evaluation and appreciation.
- Students are not given sufficient opportunity to explain and analyse the content, purpose and audience of the texts and this reflects the insufficient focus on critical literacy and language analysis skills across papers.
- The majority of questions require short answers and students can avoid writing an essay response in Paper 2 (literature).
- The grammatical activities themselves reflect a drill and practice approach to language learning which does not support the need to develop students' language for work and participation in the broader community.

The Report of the Ministerial Task Team concludes that the level of most learners' and teachers' proficiency in English is too low to use English as the LOLT optimally and so to realise learners' potential. The Report makes a number of recommendations to address this situation, including more careful selection of teachers to mark NSC examination papers, and intensive

² More than 15,000 schools, 200,000 teachers and seven million learners are set to directly benefit from the efforts.

training of teachers in EFAL, both during in-service and preservice training. The recommendations most relevant to the present NEEDU report, which schools can begin to implement immediately, are: performance should be measured against three levels of achievement in EFAL: 40%, 50% and 60%. Performance against these indicators rose very significantly from 2011 to 2013, followed by a decline in 2014 which is most pronounced at the higher levels of achievement (50% and 60% and above), as shown in Figure 5.





Source: Own calculations using data supplied by the DBE.

Increasing the promotion requirements for EFAL

The Task Team recommends that the pass requirements for the basic NSC should remain as currently stipulated (i.e., 30% for EFAL), but for entry to higher certificate study, the LOLT should be passed at 40%; and for entry into both diploma and degree study, the LOLT should be passed at 50%. Wedekind (2013) has calculated that this change would have very little effect on the numbers of students achieving a Bachelor level pass, but would result in a close to 50% drop in those qualifying for Diploma study.

Increasing the standard of EFAL NSC papers

The Task Team proposes that longer texts should be set for EFAL comprehension exercises, while the types of comprehension tasks set should significantly reduce recall and retrieval type items and include increased numbers of questions requiring application and inferential reasoning.

With these goals in view, it is recommended that, whether or not these recommendations find their way into policy, school Three possible explanations may account for the strong upward trend on all three measures in the years 2011-2013. First, the teaching and learning of EFAL may have been dramatically improved. Second, the standard of exam papers may be inconsistent, with fewer items demanding higher cognitive skills in 2011, 2012 and 2013. And third, weaker learners may have been systematically culled from registering for the NSC. While it is tempting to believe that the first possibility is the correct explanation, the rise in scores from 2011 to 2013 have, in all probability, been too large to have been achieved by this factor alone. It seems likely that, to a greater or lesser extent, one or both of the other two mechanisms have contributed to these effects.

The change in these patterns in 2014 should not be surprising, given that the repackaging of the curriculum in the form of CAPS reached Grade 12 in that year. Here too, this trend is accentuated at the higher levels of performance. It seems likely that the drop in all three indicators shown in Figure 5 is due to an increase in the degree of cognitive challenge posed by the exam papers in 2014. Thus, while results appear to have fallen in 2014, this is probably due to an increase in the standard of the

exams, which would be a very positive development, and one in line with the recommendations of the Ministerial Task Team.

It is recommended that instructional leaders focus on the quality of EFAL passes – specifically the indicators for passes at or above 50% and 60%. High levels of proficiency in English are key requirements for success in the workplace and further study, and important indicators of learners' future prospects. Table 7 shows the percentage of passes at 40%, 50% and 60% by province for 2011, 2012, 2013 and 2014. As in the case of 'throughput' rates, it is somewhat misleading to compare provinces with each other: the primary purpose should be for each school, district and province to seek to increase its own scores on these key metrics.

There is an important gender dimension to the EFAL results. In 2014, total female candidates outnumbered males by a ratio of 54% to 46% (Table 8), reflecting a higher proportion of males who drop out of school and/or repeat grades before entering the NSC. The equivalent ratio for African candidates is virtually identical.

While the pass rate (at 30%) closely mirrors the gender ratios in the NSC population, the gender gap in favour of females widens at higher levels of EFAL achievement. Thus, at 50%, females outperform males in the ratio 57.3 to 42.7, and at 60% this gap widens even further to 61.0 to 39.0. Again, these ratios are very similar for African candidates.

Province	Pass EFAL at 40%			Pass EFAL at 50%				Pass EFAL at 60%				
	2011	2012	2013	2014	2011	2012	2013	2014	2011	2012	2013	2014
Eastern Cape	64.9	69.1	78.5	70.4	30.2	33.5	44.0	33.3	9.8	10.9	16.6	10.3
Free State	77.3	81.8	90.4	82.0	41.4	46.0	56.9	42.4	16.1	15.8	23.5	14.4
Gauteng	86.8	90.7	95.4	91.0	54.8	61.1	72.6	58.8	24.6	27.5	36.6	24.2
KwaZulu-Natal	71.3	82.0	85.2	76.9	39.1	53.3	59.3	45.1	15.5	25.6	30.4	17.4
Limpopo	76.8	84.0	89.3	87.4	42.2	51.9	61.1	55.4	16.9	22.6	28.4	23.4
Mpumalanga	72.3	76.2	91.1	84.7	40.2	42.8	64.7	49.7	17.0	16.5	31.7	18.7
Northern Cape	79.3	91.2	92.6	93.4	46.0	63.5	68.6	64.1	19.5	30.0	36.3	29.2
North West	92.2	92.7	96.8	94.9	64.9	65.4	78.4	69.4	31.9	30.2	43.8	33.0
Western Cape	87.4	88.3	93.0	83.8	58.1	61.2	70.0	53.6	29.1	30.5	38.6	25.6
National	76.2	82.3	88.7	82.6	43.5	51.2	61.7	49.8	18.2	22.4	30.2	20.0

Table 7: Performance in EFAL (percentage of EFAL cohort), 2011-2014

Source: Own calculations using data supplied by the DBE

Table 8: Gender distribution of EFAL candidates and pass rates by gender, 2014

	Candan	Total Ca	ndidates	African Candidates		
	Gender	Number	Per cent	Number	Per cent	
Candidatas	Female	231 188	54.0	207 012	54.I	
Candidates	Male	196 746	46.0	175 413	45.9	
D > 200/	Female	226 466	54.1	202 379	54.3	
$rasses \ge 30\%$	Male	191 755	45.9	170 551	45.7	
	Female	121969	57.3	103093	57.7	
$rasses \ge 30\%$	Male	91077	42.7	75642	42.3	
Passes ≥ 60%	Female	52327	61.0	39535	61.8	
	Male	33404	39.0	24423	38.2	

Source: Own calculations using data supplied by the DBE



Figure 6: Mathematics pass rate and proportion of matric candidates taking maths, 2008-2013

Source: Own calculations using data supplied by the DBE.

Equality of opportunity to succeed in mathematics

Success in mathematics is a prerequisite for entry into and success in both vocational and post-school academic studies in the fields of science, technology, engineering and mathematics (STEM), as well as accounting, economics and business economics. The majority of learners are either denied this opportunity, or are offered it but decline to accept it. Thus, the proportion of NSC candidates taking mathematics has dropped from 53.1% in 2008 to 42.0% in 2014. Yet the pass rate for mathematics has risen steadily through this period, from 46.0% in 2008, to 58.6% in 2013. The decline in the pass rate in 2014 to 52.4% does not change this pattern because it is still above the pass rates seen

in the years 2008 to 2012 (Figure 6).

The inverse relation between levels of participation and the pass rate suggest the latter may have been improved at the expense of the former, starkly illustrating the misleading nature of pass rates when considered in isolation from other indicators.

The decline in the proportion of candidates registering for mathematics is most marked among African students, as shown in Figure 7.

Just as disturbing, are figures quoted by the Ministerial Task Team on the numbers of schools which do not offer mathematics as a subject at Grade 12 level (Table 9).







Although they represent less than 5% of all schools which offer the NSC, it is of great concern that their number nearly doubled in five years and, with the exception of the Free State, increased significantly in every province.

It is important that these trends be reversed, by encouraging schools to improve the teaching and learning of mathematics and to enter greater numbers of learners for this key subject. It is therefore recommended that targets are set for improving performance on the proportion of NSC candidates both taking and passing mathematics. Current figures for the provinces from 2011 to 2014 are given in Table 10. Table 10 shows that participation and success rates in mathematics remain low, with below one-quarter of all candidates passing mathematics, and it is important that schools seek to increase performance on both indicators.

Furthermore, it is not sufficient to merely obtain an NSC pass in mathematics: the higher the level of pass the greater the chances of success in further and higher education programmes in science, technology and commerce. Indeed, a number of university faculties, such as engineering, set higher entry requirements in mathematics than a simple pass at 30%. Thus, it is important for instructional leaders throughout the system to set targets and track progress against various levels of pass in mathematics, as shown in Table 11.

Province	2008	2009	2010	2011	2012	Per cent change
Eastern Cape	27	32	33	35	41	51.9
Free State	П	14	13	16	9	-18.2
Gauteng	16	21	22	26	26	62.5
KwaZulu-Natal	31	36	36	49	61	96.8
Limpopo	24	38	48	57	74	208.3
Mpumalanga	8	8	10	9	10	25.0
North West	4	7	8	14	17	325.0
Northern Cape	9	П	7	12	12	33.3
Western Cape	20	23	26	33	36	80.0
National	150	190	203	25	286	90.7

Table 9: Numbers of schools not offering mathematics, by province

Source: Department of Basic Education, 2014d

Table 10: Proportion of candidates taking and passing mathematics, by province, 2011-2014

	Proportion of NSC candidates					Proportion of NSC candidates				
Province	taking mathematics				passing mathematics					
	2011	2012	2013	2014	2011	2012	2013	2014		
Eastern Cape	57.9	55. I	49.9	46.I	19.8	19.9	21.3	18.8		
Free State	38.3	37.1	35.4	38.3	20.9	22.5	24.9	24.8		
Gauteng	38.0	34.7	37.5	35.6	23.7	23.3	27.4	24.4		
KwaZulu-Natal	50. I	48.0	50.2	50.5	20.5	21.6	26.8	20.1		
Limpopo	47.5	45.0	43.0	44.0	21.4	23.0	25.1	24.5		
Mpumalanga	41.1	38.8	38.7	39.3	19.2	20.0	22.3	21.8		
Northern Cape	32.0	29.9	29.9	27.3	16.5	15.1	16.9	16.8		
North West	38.5	36.8	37.3	36.3	20.9	20.5	24.8	21.9		
Western Cape	35.5	32.0	34.8	31.9	24.6	22.5	25.3	23.3		
National	45.0	42.6	42.7	42.0	21.2	21.7	25.0	22.0		

Source: Own calculations using data supplied by DBE.

Province	Mathematics passes at 50%					Mathematics passes at 60%			
	2011	2012	2013	2014	2011	2012	2013	2014	
Eastern Cape	6.3	6.2	7.8	6.9	3.5	3.1	4.3	3.8	
Free State	8.1	8.4	11.7	10.7	4.7	4.6	6.9	6.5	
Gauteng	11.9	11.0	14.2	12.5	7.4	6.5	9.1	7.9	
KwaZulu-Natal	6.6	7.2	11.3	7.3	3.6	3.7	6.6	4.3	
Limpopo	7.4	9.1	10.5	9.4	4.0	5.0	5.9	5.3	
Mpumalanga	7.4	7.6	9.8	8.3	4 . I	4.1	5.6	4.6	
Northern Cape	6.3	5.9	7.4	7.5	3.7	3.1	4.2	4.2	
North West	8.1	7.5	10.7	9.1	4.7	4.0	6.0	5.2	
Western Cape	14.5	12.0	14.8	13.5	10.1	7.8	10.2	9.5	
National	8.4	8.5	11.3	9.4	5.0	4.7	6.8	5.7	

Table 11: Percentage of NSC candidates passing mathematics at 50% and 60%, 2011-2014

Source: Own calculations using data supplied by DBE.

An important item of good news with respect to high quality mathematics passes is that numbers passing at these higher benchmarks increased in 2013; with those achieving 50% rising to 11.3% of all candidates in 2013 and those achieving 60% rising to 6.8% of candidates. With the exception of the Northern Cape, these levels were not maintained in 2014, although this is probably an effect of the repackaging of the curriculum; either because it is more challenging or teachers are not used

to it, or a combination of these two factors. Nonetheless, the proportion passing at the higher benchmarks remains above the 2012 levels, suggesting real systemic improvements. Particularly pleasing is that these trends are most pronounced among African learners, though African learners were the only racial group to drop slightly below the 2012 levels of attainment for the higher benchmarks, as shown in Figure 8 and Figure 9.

Figure 8: Percentage of NSC candidates passing mathematics at 50%, by race



Source: Own calculations using data supplied by DBE.

Figure 9: Percentage of NSC candidates passing mathematics at 60%, by race



Source: Own calculations using data supplied by DBE.

28
The gender gap with respect to language, reflected in Table 8 above, is reversed in mathematics achievement (Table 12).

Equality of access to the labour market and tertiary study

While African female candidates taking mathematics outnumber their male counterparts by 55.5 to 44.5, males pass at 30% in slightly greater numbers than females (50.5 to 49.5). This trend is exaggerated at 50% (where the gender gap in favour of males widens to 57.5 to 42.5) and 60% (where the gap reaches 61.3 to 38.7). The Bachelor level pass requirements constitute an important quality indicator, and instructional leaders are encouraged to aim to improve performance on this metric. Figures for the past four years are shown in Table 13.

It is gratifying to note that the proportion of candidates achieving Bachelor level passes increased in the period 2011–2013, very significantly so in 2013. And, despite the decline in 2014, the proportion achieving Bachelor passes surpasses 2011 and 2012 levels.

	Condou	Total Ca	ndidates	African Candidates		
	Gender	Number	Per cent	Number	Per cent	
Candidataa	Female	121 940	54.6	104 339	55.5	
Candidates	Male	101 595	45.4	83 619	44.5	
Passes > 30%	Female	58 030	49.5	43 271	49.5	
rasses < 30%	Male	59 9	50.5	44 104	50.5	
	Female	22 742	45.3	13 186	42.5	
Fasses 2 30%	Male	27 490	54.7	17 865	57.5	
Passas > 60%	Female	13 158	43.5	6 483	38.7	
Passes 2 00%	Male	17 068	56.5	10 239	61.3	

Table 12: Gender distribution of African candidates and pass rates in mathematics, 2014

Source: Own calculations using data supplied by DBE.

Table 13: Percentage of NSC candidates obtaining Bachelor level passes, by province 2011-2014

Province	Numbers p	bassing at B	achelor leve	1	Proportion passing at Bachelor level (%)			
	2011	2012	2013	2014	2011	2012	2013	2014
Eastern Cape	10 305	10 747	13 778	13 435	15.7	16.4	19.0	20.1
Free State	6 854	5 880	9 008	7 987	26.4	25.8	33.2	30.3
Gauteng	30 285	28 256	38 440	36 843	35.5	33.7	39.2	37.1
KwaZulu-Natal	27 826	31 626	44 834	35 724	22.7	25.8	32.9	25.6
Limpopo	12 997	14 960	18 853	16 325	17.6	19.5	22.8	22.4
Mpumalanga	8 898	9 072	13 009	11 229	18.5	19.2	26.0	24.9
Northern Cape	2 052	I 829	2 450	2 176	20.1	21.1	23.5	24.7
North West	7 224	6 764	10219	8 509	28.4	25.9	35.0	32.6
Western Cape	15 409	14 553	19 740	18 524	38.4	34.5	41.4	38.9
National	121 850	123 687	170 331	150 752	24.5	24.9	30.7	28.3

Source: Own calculations using data supplied by DBE.

Analysis of NSC participation and passes by socioeconomic quintile

The presentation of learner attainment in different subjects as provincial aggregates conceals the extent to which learners from different socio-economic groups perform on each metric. An analysis of achievement in the NSC by socio-economic (quintile) group, focusing on the pass rate, reveals significant differences between provinces on this metric. Nationally, the performance in the NSC of learners from lower quintile groups (Q1-Q3) is more or less proportionate with their share of the learner population overall. However, there are marked differences between the proportionate share of each quintile group and its attainment in the NSC, in each province. A further comparison vis-à-vis the official Poverty Distribution Table³ highlights cases where participation and/or passes in some quintile groups are disproportionately high or low.

Table 14 shows the distribution of poverty, NSC participation and passes by quintile per province in 2014; with a summation of Q1 to Q3, the category with the biggest deficit in education development and therefore targeted for equitable spending in the National Norms and Standards for School Funding (NNSSF)⁴.

The following analysis draws heavily on the published Poverty Distribution Table for 2014 and data on the 2014 NSC provided by the Exams Directorate at the DBE.



- 3 Poverty Distribution Table published in Government Gazette 37230, 17 January 2014
- 4 National Norms and Standards for School Funding (as amended in 2004) in terms of the South African Schools Act, Act no.84 of 1996.

30

Table 14: Distribution of poverty, NSC participation and passes, per province (2014)

	QUINTILE DISTRIBUTION BY PROVINCE (2014)									
EASTERN CAPE	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	27.3	24.7	19.6	17.0	11.4	-	-	100.0		71.6
NSC candidates (%)	22.9	18.9	22.6	13.0	18.6	3.7	0.5	100.0		64.3
NSC passes (%)	20.5	17.5	21.0	13.3	23.4	3.9	0.4	100.0		59.0
FREE STATE	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	20.5	20.9	22.4	20.8	15.4	-	-	100.0		63.8
NSC candidates (%)	27.0	18.9	23.1	7.8	20.3	2.9	0.0	100.0		69.0
NSC passes (%)	26.2	17.5	22.1	8.3	23.0	2.9	0.0	100.0		65.8
GAUTENG	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	14.1	14.7	17.9	21.9	31.4	-	-	100.0		46.7
NSC candidates (%)	6.3	9.7	19.4	25.0	28.3	9.4	2.0	100.0		35.4
NSC passes (%)	5.9	9.3	18.1	23.7	31.4	9.9	1.8	100.0		33.3
KWAZULU-NATAL	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	22.1	23.2	20.2	18.7	15.8	-	-	100.0		65.5
NSC candidates (%)	15.9	22.5	24.5	16.6	17.2	2.5	0.9	100.0		62.8
NSC passes (%)	12.9	20.9	23.3	18.1	21.1	2.8	1.0	100.0		57. I
LIMPOPO	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	28.2	24.6	24.2	14.9	8.0	-	-	100.0		77.0
NSC candidates (%)	33.5	36.2	20.9	1.7	3.2	4.4	0.1	100.0		90.6
NSC passes (%)	30.3	36.6	21.9	2.2	4.2	4.8	0.1	100.0		88.8
MPUMALANGA	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	23.1	24. I	21.5	17.7	13.5	-	-	100.0		68.7
NSC candidates (%)	36.7	34. I	10.2	5.2	8.2	5.6	0.0	100.0		81.0
NSC passes (%)	36.3	32.8	10.0	5.8	9.8	5.4	0.0	100.0		79.0
NORTHERN CAPE	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	21.5	19.3	20.7	21.4	17.1	-	-	100.0		61.5
NSC candidates (%)	11.9	17.9	21.9	23.9	22.1	2.3	0.0	100.0		51.7
NSC passes (%)	10.6	15.7	19.6	24.5	26.9	2.7	0.0	100.0		45.8
NORTH WEST	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	25.6	22.3	20.8	17.6	13.7	-	-	100.0		68.7
NSC candidates (%)	19.0	15.5	34.8	25.3	3.9	1.5	0.0	100.0		69.3
NSC passes (%)	18.8	14.7	33.0	27.4	4.6	1.6	0.0	100.0		66.5
WESTERN CAPE	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	8.6	13.3	18.4	28.0	31.7	-	-	100.0		40.3
NSC candidates (%)	5.9	8.5	18.1	18.8	43.1	5.7	0.0	100.0		32.4
NSC passes (%)	4.7	7.1	15.6	17.8	48.3	6.5	0.0	100.0		27.5
NATIONAL	QI	Q2	Q3	Q4	Q5	99	0			QI-3 (%)
Poverty distribution (%)	20.0	20.0	20.0	20.0	20.0	-	-	100.0		60.0
NSC candidates (%)	18.9	20.7	21.4	15.0	18.6	4.7	0.7	100.0		61.0
NSC passes (%)	17.8	19.9	22.3	14.6	20.2	4.8	0.3	100.0	_	60.1

Source: NSC data from own calculations using data provided by the DBE.

Poverty Distribution Table published in Government Gazette 37230, 17 January 2014

NOTE: Q=socio-economic quintile group

99=independent and special schools

0=information not submitted by school

A high proportion of learners from the lower quintile groups (QI-Q3) sitting the NSC exams and passing signals a positive trend consistent with the transformative goals of the South African education state. On this parameter, Limpopo, Mpumalanga and the Free State stand out for above average performance. In Limpopo, for example, the proportion of NSC candidates from QI and Q2 in 2014 (69.7%) and those passing the NSC (66.9%) far exceeded the overall proportion from these quintiles (52.8%) in the learner population; similarly in Mpumalanga. Meanwhile, gains in the Free State, although commendable, are concentrated in QI; with the proportion of learners from this group constituting 20.5% overall, but accounting for 27.0% of NSC candidates in 2014 and 26.2% of passes. The quality of these passes and the need to improve throughput and passes for learners from Q3 and Q4 in these provinces notwithstanding, these achievements in the bottom two quintiles reflect a positive trend, in line with the intentions of the NNSSF.

In contrast, a low level of participation and passes from Q1-Q3, relative to the proportion of learners in these socio-economic groups, suggests a curtailment of opportunities for completing school; frequently referred to as the bimodal or dual nature of the South African education system, which maintains that access to quality education is determined by socio-economic status (see for example Taylor, Fleisch and Shindler, 2008; Spaull, 2013). This is the case in the affluent and highly urbanised provinces of Gauteng and the Western Cape, and also in the Northern Cape, Eastern Cape and KwaZulu-Natal. In these provinces, there is a significant disparity in the proportion of learners from Q1-Q3 in the learner population as a whole and those progressing to and passing the NSC.

The Western Cape, for example, is a prosperous province where learners from Q1-Q3 constituted a relatively low proportion (40.3%) of the overall learner population in 2014.Yet, in Grade 12 the share of these learners participating in (32.4%) and passing (27.5%) the NSC is considerably below their proportionate

Table 15: Proportion of Quintile 5 learners, Western Cape

representation in that learner population, reflecting serious deficits in efficiency and quality in schools serving the lowest socio-economic groups. Moreover, NSC passes in the Western Cape were very much concentrated among the wealthiest learners (Q5), as illustrated in Table 15 below.

Although learners from Q5 in 2014 comprise just under onethird (31.7%) of the learner population overall, almost half (48.3%) of all NSC passes are attributed to this group. The disproportionately high levels of participation and passes from Q5 reflect above average performance from schools serving this quintile group – unmatched in the rest of the Western Cape system.

Meanwhile, in Gauteng and the Northern Cape the lack of progression and achievement of learners from QI is most stark; with the proportion of learners sitting the NSC and passing less than half their share of the learner population overall. The urban "advantage" often assumed is not yielding benefits for the poorest learners in Gauteng; where QI learners constituted 6.3% of NSC candidates and 5.9% of NSC passes in 2014, way below their proportion of the overall learner population (14.1%) in the province. This reflects very limited access to the higher levels of schooling for the poorest learners in these provinces.

Conclusion

A disaggregation of NSC participation and passes by quintile group, and comparison of proportions relative to poverty distribution in each province reveals significant inter- and intra-provincial variances in the performance of the different quintile groups. Limpopo, Mpumalanga and, to a lesser extent, the Free State emerge as provinces in which learners from the poorest backgrounds have the greatest opportunities for reaching and passing the NSC. As mentioned in the discussion on improvements in TIMSS (section 2 above), this is likely the outcome of the government's pro-poor investment policies targeting the most disadvantaged schools and households.

Western Cape/Quintile 5	2012	2013	2014
Learner population (%)	37.9	31.7	31.7
NSC candidates (%)	43.2	43.9	43.1
NSC passes (%)	47.9	47.6	48.3

Source: Poverty Distribution Table from the Amended NNSSF in government gazettes.¹ NSC data from own calculations, using data provided by the DBE.

1 Government Gazette No.34803 of 2 December 2011 Government Gazette No.36222 of 8 March 2013 Government Gazette No.37320 of 17 January 2014

Meanwhile, Gauteng, the Western Cape, Northern Cape, Eastern Cape and KwaZulu-Natal reflect a very low proportion of learners from Q1-Q3 participating in and passing the NSC, relative to their share of the entire provincial cohort. This is consistent with the view that there are two education systems in South Africa: one that performs well and serves the minority rich; the other, an underperforming system serving the majority poor.

A comparison of NSC achievement across socio-economic groups and provinces shows that, despite the gaping inequalities inherited from Apartheid which resulted in the bi-modal system of education and achievement referred to by many educationalists, there are indications that in some provinces these inequalities are gradually being reversed. In some provinces, learners from Q1-Q3 are well represented in the NSC, suggesting educational achievement is not only a function of socio-economic advantage, consistent with the contours of income inequality in South Africa generally. Meanwhile, there are provinces where educational attainment follows patterns of economic advantage so learners from the wealthiest quintile group are over-represented in the NSC and those from lower socio-economic groups mostly excluded.

The pass rate

The pass rate is an indicator of efficiency and hence remains an important measure of performance.

Table 16 shows that pass rates have increased very significantly between 2009 and 2013. Even though there is a drop in 2014, the pass rate is still higher than in the period 2008 to 2012. Notably, the pass rate in 2014 is the second highest for the period 2008 to 2014, yet the number of learners writing the NSC in 2014 was the third lowest for the period.

Conclusion

Despite steady increases in the pass rate, other indicators of quality – such as throughput, participation in maths and attainment in maths and English at the higher metrics – do not reflect improvements in line with the pass rate. This reveals the limitations of the pass rate as an indicator of quality, if used in isolation. A more comprehensive suite of indicators for gauging systemic performance, as applied in this section, is discussed further under the recommendations in section 7.

Year	Numbers wrote	Number passed	Pass rate (%)
2008	566,615	353,940	62.5
2009	570,792	345,477	60.5
2010	542,523	379,217	69.9
2011	496,870	361,890	72.8
2012	495,831	363,529	73.3
2013	553,952	443,663	80.1
2014	532,629	403,720	75.8

Table 16: NSC enrolments, passes and pass rates 2008-2014

Source: Own calculations using data supplied by DBE.

3. Instructional leadership

nstructional leadership is here defined as the ensemble of processes, which operates at the different levels of schooling, and is directed towards leading the system to optimise teaching and learning. In addition to managing time and resources, these processes include identifying areas of weakness for both learners and teachers and devising interventions to address these. Instructional leaders also monitor the pace and progress of learning, ensuring learning activities are set at the right level of complexity for each grade and that learners are stimulated to achieve their potential.

In this section the state of some instructional leadership processes in two separate samples of schools is discussed. These samples comprise 93 schools offering the FET Phase visited by NEEDU in the first semester of 2014 (hereunder referred to interviews. The coherence of the time management regime of the school was assessed by triangulating the responses of the various interviewees.

Time allocation in the timetable

Examination of the timetables in the FET Phase sample, showed that 16% and 19% of schools allocated less than the stipulated 4.5 hours to mathematics and English, respectively. As reflected in Table 17, similar observations were made in the Senior Phase sample.

Adhering to the minimum time specifications is necessary to ensure the concepts and content of the curriculum are covered at sufficient depth for each grade. But curricula are dense and

	Grade 9	9 maths	Grade 9 LOLT (English)		
Extent of compliance	Number	%	Number	%	
Comply with minimum time allocation (4.5 hours)	39	46.4	44	55.7	
Allocate more than minimum prescribed time	28	33.3	20	25.3	
Allocate less than minimum prescribed time	17	20.2	15	19.0	
TOTAL	84	100.0	79	100.0	

Table 17: Compliance with CAPS requirements for minimum time allocation in the Senior Phase sample

Source: Own calculations from the analysis of timetables provided by schools.

as the "FET Phase sample") and 90 schools offering the Senior Phase visited in the second semester of 2014 (hereunder referred to as the "Senior Phase sample").

3.1 Time management

The use of time in any school is considered one of the most important indicators of good leadership. Monitoring that each subject has been allotted adequate time is a simple matter of examining the timetable, but checking that the time is used optimally is more difficult. Short of paying a number of surprise visits to each school, this is one of the most difficult factors to assess accurately. Absenteeism of teachers and learners was assessed in schools visited by NEEDU in 2014 by looking at attendance registers, while punctuality – both in the morning and after breaks – was assessed through observation and interviews with teachers and SMT members. Information on extra-curricular disruptions to the school day – in the form of sports meetings, music concerts, teacher training courses, union meetings or memorial services – was also derived from the the fact that a quarter (24.7%) of the schools in the FET Phase sample and a third (33.3%) in Senior Phase sample allocated time over the 4.5 hours highlights the perception that the minimum time was deemed insufficient to cover the curriculum properly at those schools. The high number of schools that does not allocate even the minimum time to these key subjects raises two concerns. First, these schools are not complying with the specifications of CAPS, which are mandatory in all public schools. Second, attempting to cover the curriculum in less time suggests only superficial coverage at best. This is borne out by the fact that only two of the schools in the FET Phase sample that allocated fewer than 4.5 hours to both mathematics and English also reported that they had not completed the curriculum the year before.

Meanwhile, among the group that allocated adequate or extra time, 11 schools in the FET Phase sample still reported not having completed the mathematics curriculum and eight did not complete the English curriculum. There may be two reasons for

34

this. First, it may have taken longer than expected for learners to attain sufficient mastery of some areas of the curriculum, leaving other areas unexplored. Although this is not desirable, teaching for mastery and to avoid content gaps reflects good teaching practice. Second, all of the allocated time may not have been available to teachers due to lateness and absence or time taken by extra-curricular activities.

These speculations are not supported by any empirical evidence. It was beyond the scope of this study to establish the reasons for failure to complete the curriculum. The aspect of time management is discussed next.

Teacher and learner absenteeism

Absenteeism of teachers and learners was assessed in schools visited by NEEDU in 2014 through interviews with teachers and SMT members and by looking at attendance registers. Teachers

assessment of teachers' attendance patterns off the top of their heads. At best, they give thumb-suck figures, which must be interpreted with caution.

A close look at the attendance registers for teachers and learners provided more reliable evidence about attendance patterns at schools. Both sources of data (teacher perceptions and attendance records) were triangulated to tell a story about teacher and learner attendance patterns.

The attendance of teachers and learners in the FET Phase sample and the Senior Phase sample based on teacher perceptions are shown in Table 18 and Table 19, respectively.

In the FET Phase sample, teachers perceived teacher attendance to be much lower than learners', with 43.1% of schools reporting that attendance was *often* or *always* a problem with teachers, compared with 22.6% for learners.Teachers' perceptions in the

Table 18: Learner and teacher absenteeism in the FET Phase sample

		Absen	iteeism					
	Teach	ers	Lea	rners				
Extent of problem	No. of schools	%	No. of schools	%				
Never a problem	5	5.4	21	22.6				
Seldom a problem	48	51.6	40	43.0				
Often a problem	26	28.0	16	17.2				
Always a problem	14	15.1	5	5.4				

Table 19: Learner and teacher absenteeism in the Senior Phase sample

		Abser	nteeism					
	Teach	ers	Learners					
Extent of problem	No. of schools*	%	No. of schools	%				
Never a problem	2	2.3	7	8.0				
Seldom a problem	7	8.0	41	47.1				
Often a problem	43	49.4	39	44.8				
Always a problem	35	40.2	0	0.0				

* Using data from schools which kept up-to-date central teacher attendance records

were asked if their schools had a problem with teachers and learners not attending school. Drawing conclusions about the rate of teacher and learner attendance from teacher perceptions was problematic on many fronts. First, while teachers were able to give more accurate information about learner attendance in their own classes, they are not certain about attendance in other classes. Second, if teachers are absent more often from school than learners, as the data on teachers' perceptions seems to suggest (see discussion below), they would not be in a position to describe attendance patterns accurately because they themselves are not at school. And, in schools with large staff, it would be unfair to expect teachers to provide a fair Senior Phase sample painted an even gloomier picture. About 90% of schools reported that attendance was perceived as often or always a problem with teachers, compared with 44.8% for learners. In the Senior Phase sample, the average teacher attendance was often a problem, whereas the average learner attendance was seldom a problem.

The attendance of teachers and learners in the FET Phase sample and the Senior Phase sample using a more reliable measure (i.e., records in attendance registers) is shown in Table 20 and Table 21, respectively. Teacher attendance was based on a 10-day period. In each school, the number of teachers who were absent over a 10-day period prior to the NEEDU visit was counted. Learner attendance is based on the quarterly returns for Term 1 (for the FET Phase sample) and Term 2 (for the Senior Phase sample).

The analysis of teacher and learner attendance records, as illustrated in Table 20 and Table 21 above, corroborates teachers' perceptions that attendance was indeed much lower among teachers than learners. Over a 10-day period, the rate of absenteeism among teachers was 7% or more at 80% of the schools in the FET sample, and 78.2% in the Senior Phase sample; whereas this rate of absenteeism was reflected among learners in only 37.7% and 20.7% of the schools, respectively, in the FET Phase and Senior Phase samples over an entire term.

Similar patterns were observed in the Senior Phase sample. Table 21 shows that in 10.3% of the schools, no teachers were absent in a 10-day period, compared with 23% of the schools having a zero learner absenteeism rate in a 61-day period. In 78.3% of schools, 5% or more of the teachers were absent in a 10-day period, while the same percentage of learners was absent in 37.9% of the schools in 61 days.

Such high levels of teacher absenteeism are a serious matter. Unlike individual learners who can catch up after an absence, if teachers are not at school then their lessons are not delivered as planned and the time is lost entirely for all their learners.

Table 20: Learner and teacher absenteeism in the FET Phase sample (attendance records)

	Teacher Abs	enteeism	Learner Absenteeism			
	Over a 10-da	ay period	Term I			
Extent of problem	No. of schools*	%	No. of schools*	%		
0	6	9	I	1.9		
I-2%	I	I	12	22.6		
3-4%	I	I	9	17.0		
5-6%	6	9	l I	20.8		
7% +	55	80	20	37.7		

* Using data from schools that kept up-to-date central teacher attendance records.

Table 21: Learner and Teacher Absenteeism in the Senior Phase sample (attendance records)

	Teacher Abs	enteeism	Learner Absenteeism			
	Over a 10-da	ay period	Term 2			
Extent of problem	No. of schools*	%	No. of schools	%		
0	9	10.3	20	23.0		
I-2%	5	5.7	17	19.5		
3-4%	4	4.6	17	19.5		
5-6%	I	1.1	15	17.2		
7% +	68	78.2	18	20.7		

* Using data from schools that kept up-to-date central teacher attendance records.

Teacher and learner punctuality

Punctuality of teachers and learners in the morning was assessed through interviews with teachers and SMT members and by examining time registers (for teachers) and observations (for learners). Most schools do not keep records of learner late coming. Thus, NEEDU evaluators observed and recorded the number of learners who arrived late on the day of the school visit. While this does not give a true reflection of learner punctuality in a school, it is indicative of the extent of the problem. Punctuality of teachers and learners after break was assessed through interviews with teachers and SMT members. Punctuality, both with respect to arrival at school in the morning and getting to class after break in the FET Phase sample and the Senior Phase sample, based on teacher perceptions, is shown in Table 22 and Table 23, respectively.

Punctuality in the mornings is also a greater problem among teachers than learners. In the FET Phase sample, teacher punctuality was described as always or often a problem in over half (52.7%) of the schools, compared with 15.1% for learners.

7

36

19

30

Never a problem Seldom a problem

Often a problem

Always a problem

In the Senior Phase sample, teacher punctuality was described as always or often a problem in almost all (98.8%) of the schools, compared with 37.9% for learners.

Getting back to class after break was a problem with both learners and teachers, although teachers did fare slightly worse; with 45.2% of schools in the FET Phase sample reporting this as often or always a problem, compared with 31.2% for learners. In the Senior Phase sample, teachers and SMT members described teachers getting back to class after break as often or always a problem in 89.6% of schools, compared with 55.1% for learners.

Punctuality, both with respect to arrival at school in the morning and getting to class after break in the FET Phase sample and the Senior Phase sample based on records in teacher time registers and observations, are shown in Table 24 and Table 25, respectively.

11.8

40.9

30.1

15.1

20

33

23

6

11

38

28

14

	Pun	ctuality in a	rriving at so	hool	Punctual	ity in gettin	g to class af
	Teac	chers	Lear	ners	Teac	hers	Lear
Extent of problem	No. of schools	%	No. of schools	%	No. of schools	%	No. of schools

25

45

12

2

26.9

48.4

12.9

2.2

Table 22: Punctuality of teachers and learners in the FET Phase (teacher perceptions)

7.5

38.7

20.4

32.3

Table	e 23	: Punctual	ity of	teache	rs and	learners	in the S	Senior	Phase ((teach	er percepti	ons)
-------	------	------------	--------	--------	--------	----------	----------	--------	---------	--------	-------------	------

	Punctuality in arriving at school			Punctuality in getting to class after break				
	Теас	hers	Lear	ners	Teac	hers	Lear	ners
Extent of problem	No. of schools	%	No. of schools	%	No. of schools	%	No. of schools	%
Never a problem	I	1.1	13	14.9	2	2.3	4	4.6
Seldom a problem	0	0.0	41	47.1	7	8.0	35	40.2
Often a problem	41	47.1	30	34.5	43	49.4	39	44.8
Always a problem	45	51.7	3	3.4	35	40.2	9	10.3

ter break ners

%

21.5

35.5

24.7

6.5

Table 24: Punctuality of teachers and learners in the FET Phase (time register and observations)

	Punctuality arriving at school				
	Teac On the day of th [Source:Tim	hers ne NEEDU visit ne Register]	Learı On the day of th [Source: Ob:	n ers ne NEEDU visit servations]	
Extent of problem	No. of schools	%	No. of schools	%	
0	26	32.5	15	20.8	
I-2%	20	25.0	15	20.8	
3-4%	7	8.8	12	16.7	
5-6%	6	7.5	2	2.8	
7% +	21	26.3	28	38.9	

Table 24 and Table 25 show that both teacher and learner punctuality is a cause for concern in both the FET and Senior Phase samples. In one-third (32.5%) of the schools in the FET Phase sample, no teachers were late on the day of the NEEDU visit to school, compared with one-fifth (20.8%) of the schools with no learner coming late on the same day. Meanwhile at half (50.6%) of the schools in the Senior Phase sample, no teachers

In addition to absenteeism and late-coming, much teaching and learning time was perceived to have been lost to extracurricular activities. On average, the 93 schools in the FET Phase sample and the 90 schools in the Senior Phase sample lost 12.6 and 15.7 days, respectively. In both the FET Phase and Senior Phase samples, almost half of the days lost (47.7% in the FET Phase and 47.0% in the Senior Phase) were to teacher training.

Table 25: Punctuality of teachers and learners in the Senior Phase (time register and observations)

	Punctuality arriving at school				
	TeachersLearnersOn the day of the NEEDU visitOn the day of the NEEDU[Source:Time Register][Source: Observations]			ners ne NEEDU visit servations]	
Extent of problem	No. of schools	%	No. of schools	%	
0	44	50.6	15	17.2	
I-2%	4	4.6	15	17.2	
3-4%	7	8.0	7	8.0	
5-6%	3	3.4	8	9.2	
7% +	29	33.3	42	48.3	

were late on the day of the NEEDU visit to school, compared with 17.2% of the schools with no learner coming late on the same day.

While tardiness among learners disadvantages the individual late-comers, teaching and learning can continue for the rest of the group. But if the teacher does not arrive on time, then teaching and learning cannot commence and the whole class is disadvantaged. Teacher late-coming is very serious. Firstly, it negatively impacts entire classes that the teacher must serve. Secondly, as adult role models, it gives a bad example of the importance of time-keeping and wasting lesson time undermines the value of teaching and learning and hence the purpose of school.

Although this is disruptive to lessons, it is constructive in that it is intended to ultimately improve teaching and learning. Meanwhile, sports and music activities provide opportunities for developing, not only the skills needed to participate in these activities, but also team-building, leadership skills and high selfesteem, which are beneficial to learners, although they should be undertaken after school hours. Other activities, such as union meetings and memorial services, which together account for a quarter (24.7%) of the total days lost in the FET Phase sample and 31% in the Senior Phase sample, add no benefit whatsoever to teaching and learning – they are time wasted. Table 26 shows how much teaching time was lost in the Senior Phase, while Table 27 shows the number of schools where learning time was lost.

Table 26: Teacher time lost in the Senior Phase (teacher perceptions)

Reason for time lost	Number	Percentage
Teacher Training	4 672	47
Union Meetings	I 885	19
Memorial Services	88	12
Music Competitions	227	2
Sporting Events	293	13
Other	741	7
TOTAL	10 009	100

Table 27: Learning time lost in the FET and Senior Phases (observations)

	FET Phase n=81		Senior Phase n=87	
Reason for time lost	No.	%	No.	%
Learners left unattended in class	19	23.5	27	31.0
Breaks not beginning and ending on time	14	17.3	20	23.0
Nutrition Programme encroaching on teaching time	15	18.5	12	13.8
Learners not in class during teaching time	13	16.0	38	43.7

Minimising disruption to teaching and learning is an important feature of instructional leadership. The unevenness of days lost at the different schools is a notable finding. For example, there were no days lost to union meetings or memorial services in more than half of the schools (53.8% and 62.4% respectively) in the FET Phase, while two schools reported more than 15 days lost to these activities. One school in the FET Phase reported having lost 13 days to music concerts and another three schools lost more than 15 days to sports events. This is excessive in terms of its impact on curriculum delivery. The consequence is significantly reduced learning opportunities which result in learning gaps that negatively impact attainment and may lead to learning difficulties in later years.

Monitoring progress against the education sector mandate

The basic education sector identified teaching time as the most costly input in the schooling process. Thus, it is vital that it is monitored properly in all schools. Where teachers or learners are late, do not attend school regularly or are at school but are not focusing on what is to be achieved in the available time (lack of time on task), opportunity to learn is curtailed significantly.

Table 28 reflects how schools in the NEEDU sample performed against the sector mandates with respect to time management.

Table 28: Teaching and learning time lost in the NEEDU sample of schools

Protection of teaching and learning time at all cost				
Sector Mandate	Intent	Standard	Target for 2014	Actual in NEEDU Sample
Action Plan to 2030	To reduce the percentage of teachers absent from school on average day (Indicator No. 17)	Percentage of teachers who are absent from school	8% on average day	Percentage of teachers who are absent from school was less than 7%* (n=156 schools)
2014 Manifesto of the Ruling Party	To ensure good discipline and accountability in our schools: that teachers are on time, in class and teaching; and that learners are in class and learning.	To be determined	To be determined	5% or more <i>teachers</i> in each of the 35.2% schools came late in one day ^{***} (n=167 schools)
				5% or more <i>learners</i> in each of the 50.3% schools came late in one day ^{***} (n=159 schools)

* This was only based on a 10-day period.

** Calculated on a day that NEEDU visited individual schools.

Progress in the basic education sector

At the national level: The basic education sector Indicator No. 17 (the percentage of teachers absent from school on an average day) seeks to track and monitor teachers who are absent from school, for whatever reason. Having established the baseline, using the School Monitoring Surveys of the DBE, the sector intends to monitor teacher absenteeism on an annual basis against the annual set targets. 'Teachers in class and on time' is a non-negotiable that all partners in the Quality of Learning and Teaching Campaign (QLTC) have committed themselves to upholding.

At the provincial level: Some provinces have established good and efficient systems to monitor teacher and learner attendance more regularly, e.g., on a daily basis.

At district level: District officials, mostly circuit managers, monitor teacher and learner attendance as part of their responsibilities.

At school level: Many schools keep up-to-date learner and teacher attendance registers as well as time books or registers to record attendance and punctuality.

What remains to be done (gaps):

While the NEEDU sample is relatively small, the findings are indicative of the extent of the problem. Following are issues that need attention of instructional leaders at different levels:

- While schools keep records on teacher attendance and late coming, by and large, these records are not analysed to show individual teacher attendance and patterns of late-coming. Daily attendance registers and time books are completed routinely for compliance and there is no evidence that action is taken to deal with habitual late-coming and absenteeism. The teaching staff must be held accountable for their attendance and punctuality against a set standard, as keeping records on attendance and punctuality is important, but it is not an end in itself.
- There is still a significant number of schools that do not keep up-to-date teacher and learner attendance records. And only a negligible
 number of schools keep records of learner late-coming. In the current NEEDU sample, a quarter of the schools (25.3%) did not keep
 up-to-date teacher attendance records.
- A well-designed school timetable is a key pre-requisite for the management of one of the school's most valuable resources, namely
 time. There are schools that do not comply with the prescribed minimum time allocation for different subjects (see Table 17 above).
- In many schools, the *planned time* (i.e. the time per subject in the timetable) and the *implemented time* or 'time-on-task' vary greatly. While timetables in most schools comply with CAPS requirements in terms of time allocation for every subject, the planned time in the timetable does not always translate into what gets implemented, i.e. the implemented time. Contact time between teachers and learners is often lost due to a variety of factors some legitimate (e.g. attending training workshops) and others not so legitimate (such as attending union meetings and memorial services). Often teachers and learners arrive late to class, and leave early. Breaks become longer than they should be. Examples of these practices in the current report are illustrated in Table 22 and Table 23 above.

3.2 Language of learning and teaching

English is the LOLT) in most schools and other education institutions throughout the country. It is not the first language of most South Africans and, as discussed in section 2.3, the large majority of learners (80% and 83% in the FET and Senior Phases, respectively) study English as a first additional language (EFAL). In addition to coming from backgrounds that are not English-speaking, these learners are generally taught English and other subjects through the medium of English by teachers for whom English is not a home language. Teachers are known to divert from the LOLT during teaching and resort to other languages where the learner, or both learner and teacher, have a better command. This practice, commonly referred to as codeswitching, not only reduces the learners' exposure to the target language, it also minimises the need to engage meaningfully with English, thereby foreclosing on opportunities for language development.

Teachers interviewed at the schools visited were asked about the match between their home language and the LOLT at the school and it was found that three-quarters (74.8%) of the teachers interviewed in the FET Phase sample and 77% in the Senior Phase sample were using a LOLT that was not their home language. Given the primacy of English as the LOLT, it is essential for learners to gain mastery of English in order to engage with the curriculum optimally, especially in the higher phases where concepts are increasingly more complex. Proficiency in the LOLT may therefore be regarded as a proxy for a learner's ability to engage meaningfully with the curriculum. Many learners have limited exposure to English beyond school and, where teachers cannot model the language correctly because they lack proficiency themselves, opportunities for developing English language skills are severely curtailed. It is not surprising therefore that the majority of schools (77.4% in the FET Phase sample and 58% in the Senior Phase sample) cited poor mastery of the LOLT (English) as a serious impediment to teaching and learning. Given that so many of the educators interviewed identified language as a problem, instructional leaders at all levels would be expected to devise and implement interventions to address this area of weakness. However, fewer than half (43.0%) of the schools in the FET Phase sample and only two-thirds (66.2%) in the Senior Phase sample had a school-based programme to address language challenges.

Instructional leadership which endeavours to improve the quality of teaching and learning is a key responsibility at all levels of the system. As instructional leaders, district-level educators should provide support to schools to compensate where these practices are weak. Yet, only three schools (3.2%) in the

FET Phase sample and five (5.8%) in the Senior Phase sample were aware of a district-based support programme for English. Almost half of the schools (48.4%) in the FET Phase sample and 90% in the Senior Phase sample said that there was no district programme while a small but significant proportion in the FET Phase sample (12.9%) and the Senior Phase sample (8.1%) did not know.

The high number of schools not receiving support from the district for language reflects a lack of instructional leadership at district level. Meanwhile, the schools that did not know whether or not their district had a support programme is also cause for concern. That so many educators concede there may be programmes underway of which they are not aware indicates a serious breakdown in communication between these very proximate levels in the education system, which should be working closely together.

3.3 Support programmes for mathematics

Mathematics is a core subject which, like language, forms the basis of much learning beyond the subject itself. It develops skills in logic and deductive reasoning, which contribute to cognitive development, and it is also the cornerstone of subjects such as physical science and accounting. Presently attainment in this subject is poor (see section 2.3 above) and raising learner performance is a key concern in all provinces. Yet, over half the schools in the sample have neither a school-based nor a districtled intervention programme for mathematics.

While in the FET Phase sample a significant proportion (43.0%) of schools had a programme to improve teaching and learning in mathematics, a slightly larger proportion (49.5%) did not. In the Senior Phase sample, only a quarter of schools (25%) had a programme to improve teaching and learning in mathematics, while three-quarters did not. Moreover, only five schools (6%) in the Senior Phase sample claimed there was a district-based support programme for mathematics.

This suggests shortcomings in the instructional leadership practices at the majority of schools sampled, given that prior mathematical knowledge of Grade 8 learners emerged as the most common barrier to learning; with 71.7% of principals citing it as an outright barrier and a further 23.9% mentioning it as a barrier to some extent (see section 4 below).

These shortcomings have become apparent at the national level, and in 2015 the DBE began to implement a comprehensive national intervention for teachers responsible for mathematics in Grades 8 and 9 (see section 6.3, Box 3 below).

3.4 Support provided by districts

The largest proportion of schools (80.1% in the Senior Phase sample and 74.1% in the FET Phase sample) reported having had two or more visits from circuit managers for monitoring and support purposes. While principals in 53.9% of schools in the FET Phase sample and 67.8% of schools in the Senior Phase sample claimed to have been visited more than three times by circuit managers, a small but significant number of schools (5.6% schools in the FET Phase sample and 8.9% in the Senior Phase sample) had not been visited at all in the 12-month period preceding the NEEDU visit to schools.

Principals, HODs and teachers were asked how often mathematics and English subject advisors had visited their school in last 12 months. Figure 10 and Figure 11 below illustrate their responses. As could be expected, principals did not provide accurate information about the number of visits by subject advisors as they did about visits made by circuit managers. Their responses tended to be outliers when compared to those of HODs and teachers, which suggest guessing. Given their many remits, principals cannot, with a high degree of certainty, recall how often subject advisors for different subjects visit their schools. The HODs and teachers, on the other hand, provided more accurate information because they were asked to talk about the support they received specifically from mathematics and English subject advisors.

Figure 10: Schools in the FET Phase sample visited by district officials

Figure 11: Schools in the Senior Phase sample visited by district officials

42

Mathematics and English teachers in the FET Phase were better supported than their counterparts in the Senior Phase. In 37.0% and 47.2% of schools in the FET Phase, mathematics and English teachers respectively were visited two times or more in a 12-month period, compared with 31.1% and 28.9% in the Senior Phase. Of concern are the schools that were not visited: 22.5% of schools in the FET Phase and 34.4% of schools in the Senior Phase were not visited to support mathematics teachers. In addition, 19.1% of schools in the FET Phase and 33.3% of schools in the Senior Phase were not visited to support English teachers. Because of the high ratio of schools to subject advisors, subject advisors have found a variety of alternative ways of providing support to teachers. The most common is cluster workshops. Mathematics teachers in 52.8% of schools in the FET Phase and 33.7% in the Senior Phase rated district support as good or excellent. Meanwhile, English teachers in 47.2% of schools in the FET Phase and 43.8% in the Senior Phase rated district support as good or excellent. Mathematics and English teachers in more schools in the FET Phase than their counterparts in the Senior Phase rated district support favourably, suggesting greater support for the FET Phase. Mathematics teachers in both the FET and Senior Phase samples were more critical of the district support than English teachers: 17.9% and 24.4% of mathematics teachers in the FET Phase and Senior Phase, respectively, rated district support as poor or very poor, compared with FET Phase English teachers in 13.5% of schools and Senior Phase English teachers in 12.4% of schools who rated district support as poor or very poor.

Figure 12: Rating the support services of districts (FET Phase sample)

Figure 13: Rating the support services of districts (Senior Phase sample)

Monitoring progress against the education sector mandate

Table 29 reflects how district offices in the NEEDU sample performed against the sector mandates with respect to the support they provided to schools.

|--|

District support to schools					
Sector Mandate	Intent	Standard	Target for 2014	Actual in NEEDU sample (%)	
Action Plan to 2019	To improve the frequency and quality of the monitoring and support services provided to schools by district offices (Goal No. 27)	Percentage of schools visited at least twice a year by district officials for monitoring and support purposes	93% of schools visited at least twice a year	80.1% of schools in the Senior Phase sample and 74.1% in the FET Phase sample were visited twice or more	
MTSF	To increase the percentage of principals rating the support services of districts as being satisfactory (Indicator No. 27.2)	Percentage of school principals rating the support services of districts as being satisfactory	50% of school principals rating district support favourably	52.8% of schools in the FET Phase and 33.7% in the Senior Phase rated district support as satisfactory English teachers in 47.2% of schools in the FET Phase and 43.8% in the Senior Phase rated district support as satisfactory	

Progress in the basic education sector

At the national level: In recent years, a number of initiatives have been implemented to strengthen the capacity of district officials to support schools within the limits of the current financial constraints.

What remains to be done (gaps):

NEEDU district evaluations in 2013 revealed a high level of vacancies for subject advisors. This, coupled with other challenges, including transport problems facing most districts, means face-to-face interactions between district officials and teachers at individual schools is practically not possible. This calls for innovative approaches to supporting schools, e.g. through the effective use of e-Education and empowering HODs as on-site instructional leaders to support teachers where district officials cannot, and good prioritisation of the work of the districts to focus on the key levers for success. In this regard, most districts were found wanting.

Because district officials have too many schools to support with little time, it is therefore not surprising that the number of teachers and HODs who rate district support less favourably is high. Indicator No. 27.2 (percentage of principals rating the support services of districts as being satisfactory) is problematic. Different district officials visit schools for support and monitoring purposes and deal with different teachers, subject areas and issues.

Circuit managers mostly provide direct support to principals and so principals (as beneficiaries of support provided) are in a better position to rate the quality of this support more accurately. But they are not a reliable source to rate the quality of support provided to teachers by subject advisors where the direct beneficiaries are teachers. In the current NEEDU investigation, principals gave a much more favourable view of support by subject advisors than the HODs—suggesting that they are not familiar with the type of support teachers receive from their interaction with subject advisors (see Figure 12 and Figure 13 above).

Another important dynamic to consider is that the quality of support that teachers get from their subject advisors varies according to the different subjects they teach. For example, in the current NEEDU study, mathematics teachers in the FET Phase rated support from their subject advisors more favourably than English teachers' rating of support from their subject advisors. Reporting on Indicator No. 27.2 without disaggregating data by the type of support and subject gives a false and skewed picture. Thus, the credibility of the rating is questionable.

NEEDU National Report 2014: The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

3.5 Learning outcomes

The quality and quantity of learners' written work is an important factor in attainment. The power of writing comes from its ability to leave a permanent trace. This allows the writer to reflect upon what has been a written, generating and refining ideas in the process. Moreover, it allows ideas and information to be detached from space and time, giving them a capacity to reach a wide audience across continents and generations. Even more important for the development of individual learners, the research literature has firmly established the centrality of writing in shaping the way we think, reason, and learn (De Chaisemartin, 2013).

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. Research 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 indicates that extended writing (of paragraph length or longer) is more effective than shorter forms of writing (words or sentences) in developing the higher cognitive functions of interpretation and analysis.

For this reason an important aspect of NEEDU's evaluation methodology is to examine learner books in order to assess the quantity and quality of writing undertaken both in class and at home. At the schools in the present sample, evaluators examined all the books used by the best learner in each class, as nominated by the teacher, in LOLT and mathematics. As a norm, learners are expected to produce written work on at least four days out of five. This should include a variety of substantial exercises generated by the learner reflecting the level of complexity appropriate to their grade, as specified in CAPS. Schools were visited at different times so, for consistency to enable comparisons, the findings have been standardised to a 20-day period in the FET Phase sample and 106-day period in the Senior Phase sample. Following is a brief discussion on the findings in learning outcomes in LOLT and mathematics in the FET and Senior Phase samples.

Learning outcomes in LOLT

In the FET Phase sample: The number of days on which learners wrote in the English lesson and the number of pages written over a 20-day period in Grades 10-12 are reflected in Figure 14 and Figure 15. According to the norm, learners should have written on at least 16 days over the 20-day period. While all schools had some written work in books, it was generally below the norm. A very small minority of schools (<5%) in the sample had done written work on the required number of days. The Grade 10 classes had the least days of written work, with 15.1% of schools recording only 1 to 3 days of written work altogether for the period, compared with 9.7% of Grade 11 classes and 5.4% of Grade 12 classes. In these schools, writing took place in English less than once a week.

Figure 14: Number of days on which writing took place in English books in the FET Phase sample

The same pattern is evident with the number of pages written, as demonstrated in Figure 15. Grade 10 learners wrote the least; with 12 schools (12.9%) writing between 1 and 4 pages only over the 20-day period. Meanwhile Grade 12 learners wrote the most with 17 schools (18.4%) recording more than 20 pages of writing, compared with only 6 schools (6.6%) reaching that volume in Grade 10.

In the Senior Phase sample: According to the norm, learners in Grades 8 and 9 should have written on at least 85 days over the 106-day period in the English LOLT at the time when they were visited. As reflected in Figure 16, only five schools (5.6%) in Grade 8 and one school (1.2%) in Grade 9 had done written work on the required number of days. One school had written work for 10 days – the least in the sample. Figure 17 shows that Grade 8 learners in only eight schools (9.8%) in the Senior Phase sample wrote 85 pages over the 106day period. During this period, the school with the least amount of written work had 22 pages in Grade 8, and 14 pages in Grade 9. Only eight schools (9.8%) in Grade 8 and nine (11%) in Grade 9 met the minimum writing norm of 85 pages.

The quality of written work is also an important consideration.

Figure 16: Number of days on which writing took place in English books in the Senior Phase sample

NEEDU National Report 2014: The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

Figure 17: Number of pages of writing in English books in the Senior Phase sample

Longer, more complex texts, such as essays, require considerably more skill than shorter transactional texts, for example, postcards, CVs and short newspaper articles. To develop their writing skills, it is important that learners are given sufficient opportunity to compose longer texts. The quality of writing, specifically the number of long transactional texts in the FET Phase sample, is reflected in Figure 18 and Figure 19.

Figure 18: Number of transactional texts written by learners in the FET Phase sample

Given the curriculum requirements of at least two essays and four transactional texts per term, it is reasonable to expect half this number in a 20-day period – that is, one essay and two transactional texts. The vast majority of schools in the FET Phase sample met the requirement of one essay, but very few (<5%) completed the required number of two transactional texts. Even more concerning is the high number of schools without any essay writing. Again, this is most acute in Grade 10 where a quarter of the schools (25.8%) in the sample did not write any essays, compared with 16 schools (17.2%) and 14 schools (15.1%) where Grade 11 and 12 learners, respectively, had not written any essays. The high proportion (around 20%) of schools with no longer transactional texts is also concerning.

The amount of writing with regard to the number of long transactional texts in the Senior Phase sample is illustrated in Figure 20 and Figure 21.

Figure 21: Number of essays written by learners in the Senior Phase sample

In a 106-day period, the schools visited in the second semester of 2014 (the Senior Phase sample) should have written at least four essays and five transactional texts. Fewer than a quarter of schools met the requirement of four essays; 22% in Grade 8 and 21% in Grade 9. Of concern is the high number of schools without any essay writing; 16.1% in Grade 8 and 11.5% in Grade 9.

Grade 8 learners in 43.4% of the schools and Grade 9 in 49.5% of the schools completed the required number of five transactional texts. It was also concerning that in 12% and 9.5% of the schools in Grade 8 and Grade 9, respectively, learners had not written a single transactional text in the 106-day period.

Only eight schools (8.7%) met the minimum requirement for Grade 10 learners, increasing to 12 schools (12.9%) for Grade 11 and 17 schools (18.6%) for Grade 12.

While the amount of writing in mathematics was considerably more than in English, the amount of work in Grade 10 was far less than in Grades 11 and 12, as demonstrated in Figure 23. The best Grade 10 learners in 83 schools (89.2%) had between I and 10 pages of written work only. In Grades 11 and 12 there was far more written work, with a third (32.3%) of Grade 11 learners and over half (53.8%) of Grade 12 learners writing in excess of 40 pages.

Learning outcomes in mathematics

In the FET Phase sample: The number of days on which learners wrote in their books is reflected in Figure 22. Although learners should have written on at least 16 days over the 20-day period, in the vast majority of schools this was not the case.

Figure 23: Number of pages of writing in mathematics in the FET Phase sample

Overall, the quality and amount of writing in both English and mathematics in the majority of schools in the sample was inadequate. Moreover, Grade 12 learners reflected more writing than in the other grades, suggesting greater emphasis on meeting curriculum requirements in Grade 12.

Senior Phase sample: The number of days on which learners wrote in their books is reflected in Figure 24. Although learners should have written on at least 85 days over the 106-day period, in the vast majority of schools this was not the case. Only five schools (6%) met the minimum requirement for Grade 8 learners, increasing to 10 schools (11.9%) for Grade 9.

The amount of writing in mathematics was considerably more than in English; 67.8% in Grade 8 and 74.7% in Grade 9 met the requirement of at least 85 pages in a 106-day period, as demonstrated in Figure 25. During this period, the school with the least amount of written work had 12 pages in Grade 8, and 21 pages in Grade 9.

Figure 24: Number of days on which writing took place in mathematics in the Senior Phase sample

NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

Figure 25: Number of pages of writing in mathematics books in the Senior Phase sample

Monitoring progress against the education sector mandate

Table 30 reflects on how schools in the NEEDU sample performed against the sector mandates with respect to curriculum coverage.

Understanding that if all topics in a subject are not dealt with adequately in any given year and grade, learning becomes difficult in the subsequent years as learners keep progressing with gaps in content knowledge and skill, the basic education sector began to introduce methods and tools to monitor curriculum coverage.

Table 30: Curriculum coverage in the NEEDU sample of schools

Reducing knowledge and skills gaps as learners progress in different grades					
Sector Mandate	Intent	Standard	Target for 2014	Actual in NEEDU Sample	
Action Plan to 2019	To ensure that learners cover all the topics and skills areas that they should cover within their current school year (Goal No. 18)	Percentage of learners who cover everything in the curriculum for their current year (Indicator No. 18)	60% of learners	Grade 12 learners in 88% and 46% of schools wrote <i>adequately</i> in maths and English, respectively* (n=90 schools)	
MTSF	To increase the percentage of learners who complete the whole curriculum			Grade 9 learners in 74% and 11% of schools wrote <i>adequately</i> in maths and English, respectively* (n=90 schools)	
* Calculated as a perce	entage of schools writing ade	quately in mathematics an	d English. Adeauacy wa	s defined as the amount of	

written work produced on at least four days of five in a week over a 10-day period.

Progress in the basic education sector

At the national level: The basic education sector Indicator No. 18 (the percentage of learners who cover everything in the curriculum for their current year on the basis of sample-based evaluations of records kept by teachers and evidence of practical exercises done by learners) seeks to track and monitor programme completion in schools. The baseline against which progress will be judged is 53% of learners meeting the basic minimum level of curriculum coverage. Using the School Monitoring Surveys, the sector monitors curriculum coverage annually against the annual targets. Two significant interventions have been put in place to guide teachers and instructional leaders at different levels of the system: CAPS and the national workbooks. These interventions assist teachers in pacing and sequencing their work; not only do they prescribe the work that must be covered in simple and clear language, they also specify when (terms and weeks) the content and skills must be taught.

At the provincial and district levels: Some provinces and district use nationally developed tools, sometimes customised to suit provincial contexts, to monitor curriculum delivery in schools.

At school level: SMTs use a variety of monitoring tools, with varying degree of usefulness and effectiveness in picking up curriculum coverage challenges in different classes and subjects.

What remains to be done (gaps):

A feature of the schooling system is that in large parts, and with respect to a number of instructional leadership processes, many school leaders and district officials are going through the motions with little impact on the objects of their attention. Take the example of learner writing: NEEDU investigations reveal that instructional leaders agree that this activity is monitored to the satisfaction of all concerned, and the results are recorded and stored for future reference. However, when the actual writing done by learners is examined it is found to be widely different from the kinds of activities and performance levels expected by the curriculum. Clearly the systems managers who 'monitor' writing in this way either do not understand the curriculum or are not looking at learners' work with any degree of attention. They are assuming the forms of monitoring without engaging with the substance of the learning submissions they see.

In all three NEEDU national reports, including the current report, there is one common and persistent finding, without any progress observed over the years; and that is:

The bigger problem regarding monitoring writing is that, while it seems that SMT members [and district officials] go through the motions, it is clear from the quantity and quality of learner writing seen in schools that this task is done in a superficial manner, since the writing seen in learner books is well below curriculum expectations.

NEEDU, 2013: 30

There is need for an efficient system that makes it easier for the SMTs and district officials to effectively and systematically monitor and promote programme completion. A more useful tool would be one that, as far as practically possible, is nationally standardised to allow comparison among and between schools and districts. There is still a plethora of monitoring tools in the system with different foci and emphasis. Schools in the same districts use different monitoring tools, and a multiplicity of tools is used in the same province. Moreover, some projects have their own monitoring tools that are layering on and competing with the already plentiful tools in the system. These uncoordinated tools detract from the possibility of monitoring systematically.

3.6 Learning and teaching support materials

In response to the President's directive that every learner should have a textbook, provincial departments of education have endeavoured to provide each learner with a book in every subject. Funds were set aside and, although the procurement of LTSM differed from province to province, the aim of filling shortages was the same throughout the system. Moreover, with the introduction of CAPS, schools had to be stocked with complete sets of LTSM as required by the restructured curriculum.

During the NEEDU evaluation, the teachers interviewed were asked about the availability of mathematics and English textbooks in their classes. The findings are reflected in Table 31 and Table 32.

of reasons teachers may report not having the necessary LTSM, all of which highlight weaknesses in management processes at various levels of the system. While it is not possible to state with certainty any of the reasons as empirical evidence was not collected in this investigation, possible scenarios are:

- Teachers have been issued with resources, which have been packed away and are never used; so teachers are not familiar with what is actually available.
- Resources are available at the school but they have not been distributed to teachers to use in class.
- A lack of functioning retrieval systems in schools and poor retrieval of resources generally.
- A considerable increase in learner numbers at the start of the year.

How many learners have	Mathematics tex	tbooks in the	Mathematics textbooks in the Senior		
their own book?	FET Pl	nase	Phase		
	No. of schools	%	No. of schools	%	
Less than half	8	8.6	17	19.5	
About half	10	10.8	15	17.2	
More than half	12	12.9	5	5.7	
All learners	53	57.0	48	55.2	
Don't know	4	4.3	0	0.0	
No response	6	6.5	2	2.3	
Total	93	100.0	87	100.0	

Table 31: Availability of mathematics textbooks in the FET Phase and Senior Phase samples

Table 32: Availability of English textbooks in the FET Phase and Senior Phase samples

	English textb	ooks in the	English textbooks in the		
How many learners have their own book?	FET P	hase	Senior Phase		
	No. of schools	%	No. of schools	%	
Less than half	15	16.1	25	28.7	
About half	21	22.6	9	10.3	
More than half	13	14.0	7	8.0	
All learners	32	34.4	34	39.1	
Don't know	6	6.5	I	1.1	
No response	6	6.5	11	12.6	
Total	93	100.0	87	100.0	

The figures shown in Table 31 and Table 32 may come as a surprise to policy makers and systems level officials. This was the case when similar results from NEEDU's visits to schools in 2013 were discussed with provincial leaders in 2014. In recent years, government has placed a high priority on the procurement and distribution of books, and officials expressed great concern when shown these results. There are a number

- Resources prescribed according to the curriculum were not ordered by the school, or they were not ordered in the right quantities.
- Resources were ordered but not supplied to schools in the correct quantities.

Whatever the explanation for the discrepancies between the perceptions of teachers and those of systems level officials, it is concerning that despite the drive to furnish every learner with a textbook, only 57.0% and 55.2% of the schools in the FET Phase and Senior Phase samples, respectively, reported that all learners had a textbook for maths. This was considerably lower in English with only 34.4% and 39.1% of the schools in the FET Phase and Senior Phase samples, respectively, reporting that every learner had a book. This lack of reading material in so many schools is a major contributing factor to the underdevelopment of English language skills discussed in sections 2.3 and 3.2 above.

The widespread shortage of textbooks, as reported by teachers, forecloses on opportunities for assigning homework tasks from the prescribed texts; it means not all learners can use the books for revising at home or simply reading for pleasure in their own time. The acute shortage of textbooks in a significant proportion of schools in the sample is serious, especially in schools that reported fewer than half of the learners had a book for mathematics (8.6% in the FET Phase sample and 19.5% in the Senior Phase sample) and for English (16.1% in the FET Phase sample and 28.7% in the Senior Phase sample). In these schools learners must share books, sometimes with more than one person. This detracts from the focus needed for independent work.

Even more concerning is the finding that some teachers did not know about the availability of books in their classes, as reported by maths teachers in four schools (4.3%) and English teachers in six schools (6.5%) in the FET Phase sample.

Another important aspect in the management of learning and teaching support materials (LTSM) at schools is a functioning retrieval system. Unlike stationery, books are not given to learners, they are loaned with the expectation that they will be returned for the next cohort to use and so on. According to the Ministry of Basic Education, a five-year life-span for a book is a reasonable expectation (DBE, 2014g). It is imperative that schools have a system for ensuring learners return the books they have been loaned in good condition, and that measures are taken when they do not. This is important so that the next cohort is not denied these important learning resources.

The overwhelming majority of the schools in the FET (95.7%) and Senior Phase samples (95.4%) visited reported that they had a book retrieval system; only four schools in each sample did not. How well these retrieval systems were working is not clear given the serious shortage of books reported by so many schools. A functioning system is not limited to attempts at retrieving books; it includes secure, clean and orderly storage of

books not issued to learners in order to prevent pilfering, avoid damage and ensure easy accessibility when needed.

During the school visits, NEEDU evaluators inspected the storage facilities for books. Their findings varied greatly from school to school. At schools where a designated person was responsible for the issuing and safekeeping of LTSM, the books were generally stored neatly and securely and inventories were kept to track the books. Meanwhile, at other schools the books were not stored in a secure place, thereby increasing the possibility of damage and theft. In these cases, the books were usually packed in a disorderly fashion, making it difficult to find specific titles or full sets of books. In one school, there were no appointed areas at all for storing books – they claimed to store books 'everywhere'; at another school there were books being stored in the corridors with no controls whatsoever.

The processes for managing LTSM, from procurement, to storage, issuing and retrieval, must be properly implemented and monitored. Where systems are not in place, measures must be taken to address poor management of LTSM so that learners in these schools are not denied the resources they are entitled to. All members of staff responsible for retrieving books must be held accountable, and measures should be taken where there is non-compliance.

Monitoring progress against the education sector mandate

The DBE is forging ahead with its quest to ensure that the national policy of one textbook per subject is achieved.

Table 32 reflects on how this policy is finding expression in the NEEDU sample.

Table 33: Availability of textbooks in the NEEDU sample of schools

One textbook per subject for every child								
Sector Mandate	Intent	Standard	Target for 2014	Actual in NEEDU Sample				
Action Plan to 2019	To ensure that every learner has access to the minimum set of textbooks and workbooks required according to national policy (Goal No. 19)	Percentage of learners having access to the required textbooks y and workbooks for their entire school year (Indicator No. 19)	69% learners have their copy of textbook per subject	Learners in 57% of schools in the FET Phase had their own copies of maths textbooks, and 55.2 % of schools had their own English textbooks (n=93 teachers)				
53rd Conference of the Ruling Party	To provide all learners across the system with uniform and standardized textbooks		(Indicator No. 19)	(Indicator No. 17)		(indicator No. 17)		Learners in 34.4% of schools had their own copies of maths textbooks, and 39.1% of schools had their own English textbooks
MTSF	To increase the percentage of learners having access to the required textbooks in all grades and in all subjects				(n=87 teachers)			
2014 Manifesto of the Ruling Party	To ensure that every child has a textbook for every learning area, and that the retrieval of textbooks is improve							

Progress:

At the national level: DBE has provided all PEDs with a sector-wide plan to guide the procurement of LTSM. Catalogues for placing orders of text books are provided to schools as early as March the year before, orders are to be finalised by October and 'mop up' or 'top up' takes place from November to February. Principals who do not adhere to this will be held accountable by PEDs (DBE, 2014g).

The State Information Technology Agency (SITA) is currently assisting the DBE to develop a digital system that interfaces with provinces for the specific purpose of ordering, monitoring delivery and retrieval of LTSM. This is over and above similar systems that are already in place in some provinces. It is hoped that the systems will be able to integrate effectively (DBE, 2014g).

LTSM for learners with special needs has long been a priority for DBE to the extent that the definition of LTSM for special needs learners has been broadened to include assistive devices. One of the challenges faced by the department is the capacity of the country to manufacture and deliver Braille materials on time (DBE, 2014g).

The Basic Education Sector Indicator No. 19 (the percentage of learners having access to the required textbooks and workbooks for the entire school year) seeks to track and monitor the number of learners with their own copy of textbooks. The baseline against which progress will be judged is 61% of learners in the system having their own copy of textbooks.

At the provincial level: Seven of the nine provinces have aligned themselves to the sector plan as of 2013, which encompasses the central procurement of LTSM at a provincial level. In those provinces, Section 21 schools have opted to be part of the provincial central procurement due to the savings made from purchasing at economies of scale. The retrieval of textbooks (which should have a five year life span) is also the responsibility of schools and district officials (DBE, 2014g).

What remains to be done (gaps):

In a good number of schools, the books are not stored in a secure place, thereby increasing the possibility of damage and theft. In these cases, the books were usually packed in a disorderly fashion, making it difficult to find specific titles or full sets of books (NEEDU, 2014a).

The processes for managing LTSM, from procurement, to storage, issuing and retrieval, are not properly implemented and monitored. Where systems are not in place, measures must be taken to address poor management of LTSM so that learners in these schools are not denied the resources they are entitled to. All members of staff responsible for retrieving books must be held accountable, and measures should be taken where there is non-compliance.

4. Barriers to learning

Barriers to learning take several forms, from infrastructural inadequacy to unaddressed learning disabilities and social issues affecting the physical and emotional wellbeing of teachers and learners. While some manifest overtly, such as overcrowded classrooms and shortages of LTSM, others may be more insidious and therefore difficult to identify, such as insufficient support given by teachers to learners or bullying among learners.

Principals at the schools in the NEEDU sample were asked to indicate from a list given to them the barriers to learning experienced at their schools. It is important to note that the list was not exhaustive and responses were based on the principals' perceptions. The findings have been collated in Figure 26 to reflect the barriers identified and the extent of the problem in order of frequency with the most commonly occurring appearing first. Interestingly, the overwhelming majority of barriers perceived by principals involved external factors, relating to learners (lack of prior knowledge in mathematics, not at the required level for the grade, poor understanding of the LOLT), their families (inadequate parental support), or the provision of resources (difficulty in recruiting mathematics teachers, overcrowded classrooms). Principals are notably reluctant to take responsibility for the learning difficulties experienced by their students; in psychological terms, they exhibit low levels of personal agency.

A large majority (71.7% in the FET sample and 81.3% in the Senior Phase sample) cited <u>prior mathematical knowledge</u> as a barrier while learners not being at the required level for the grade and <u>poor understanding of the LOLT</u> were identified as significant barriers in the FET Phase sample and Senior Phase sample. <u>Lack of parental support</u> and <u>poor parental involvement</u> also ranked highly in the FET Phase sample, with respectively 54.9% and 61.3% of the schools indicating this as a barrier. Lack of parental support and poor parental involvement ranked even higher in the Senior Phase sample, i.e., 84.4% and 83.3%, respectively.

Despite the acknowledgement of inadequate prior learning in mathematics by such a large majority, with a further 23.9% reporting it as barrier to some extent, half (49.5%) of the schools in the FET Phase sample did not have a school-based intervention programme to support mathematics, as mentioned in section 3.3. In the Senior Phase sample, only a quarter (25%) of the schools had a school-based intervention programme to support mathematics. Similarly, many schools did not have a programme for English although poor understanding of the LOLT was reported by the vast majority of principals in the FET Phase sample and Senior Phase sample either as an outright barrier (44.6% and 58%, respectively) or a barrier to some extent (43.5%). This is corroborated by the finding that proficiency in the LOLT was identified as a problem at 72.0% of the schools in the FET Phase sample and in 78.8% in the Senior Phase sample (see section 3.2). These shortcomings in mathematics and English among so many learners are further compounded by problems in recruiting and retaining good mathematics and English teachers, which were also identified as barriers to learning to a greater or lesser extent. The issue of vacancies in key areas is discussed in section 5 below.

Figure 26: Barriers to learning according to principals

Educators are the most vital resource in any school. Indeed, subject teachers and school leaders working at the socalled "chalk face" are the focal point of teaching and learning. It is imperative that schools function at full capacity because vacancies in any educator posts are extremely unsettling. While South Africa does not have a teacher shortage, there is a dearth of capable instructional leaders, as well as suitably qualified teachers in key subjects such as mathematics and English.

Information on the vacant posts in the present NEEDU sample is reflected in Table 34.

Also concerning were the number of vacancies (52%) which not had been filled for over a year in the FET Phase sample. In the Senior Phase sample, long-term vacancies were not as prevalent (6.9%).

In the main, there were one or two vacancies at each school. However, a small group of five schools in the FET Phase sample reported between 6 and 12 vacant posts. Such a big shortage of permanent teachers is seriously incapacitating, particularly in the higher phases where teachers may be substituting on a temporary basis because they do not have the requisite subject qualifications.

Time vacant	Prin	cipal	Dep Prin	outy cipal	н	DD	Ma Tea	ths cher	Eng Tea	lish cher	Teac of o subj	hers ther ects
	FET	SP	FET	SP	FET	SP	FET	SP	FET	SP	FET	SP
I-6 months		4	6	3	14	4	5	3	5	2	18	9
7-12 months	I		5	3	4	I				2	2	I
I-2 years			3		4	3		I			4	2
2-3 years					4						8	
3-4 years					2						14	
4-5 years			I		I		I		I		5	
5-6 years	I											
Total posts vacant	2	4	15	6	29	8	6	4	6	4	51	12
% of total vacancies	1.8	4.6	13.8	6.9	26.6	9.2	5.5	4.6	5.5	4.6	46.8	13.8

Table 34: Type and duration of vacancies in the FET and Senior Phase (SP) samples

There were vacant positions for educators at 45 (48.4%) of the schools in the FET Phase sample and at 38 (43.7%) of the schools in the Senior Phase sample. Of most concern is the large number of vacancies in key instructional leadership posts: although only two schools in the FET Phase sample and four in the Senior Phase sample were without permanent principals, 15 (13.8%) and six (6.9%) lacked deputies, while there were HOD vacancies in 29 (26.6%) and eight (9.2%) of the schools in the FET and Senior Phase samples, respectively. We have argued previously (NEEDU, 2013; NEEDU 2014a) and continue to advocate below (section 6.3, Box 3) for the critical importance of these positions in supporting teachers to improve the quality of classroom activities, and hence of learning outcomes. Further, principals must delegate leadership tasks to the SMT. Where suitable educators are not available to fill these roles, members of the SMT are too thinly spread and instructional leadership tasks such as those discussed in section 3 are therefore compromised, to the detriment of teaching and learning in those schools.

At two schools in the FET Phase sample the principal post was vacant, in one case for five years. The lack of a leader permanent in post is very unsettling at any institution. Principals in an acting capacity are expected to attend to routine procedures only. The uncertainty of their tenure means they do not devise or implement improvement strategies because they are unlikely to be in post long enough to see these bedded down. Furthermore, acting officials, at whatever level, tend not to have as much respect accorded the few decisions they may take, partly through institutional inertia and fear among subordinates that major decisions are likely to follow the appointment of a permanent incumbent.

While almost half (46.8%) of the vacancies in the FET Phase sample and 13.8% in the Senior Phase sample were for teachers in other subjects, six schools in the FET Phase sample and four in the Senior Phase sample had vacant posts for English teachers. Six schools in the FET Phase sample had vacancies for mathematics teachers, with one school reporting two vacancies

in mathematics. In the Senior Phase sample, four schools had vacant posts for mathematics teachers. This is not unexpected given that recruiting and retaining good mathematics and English teachers was cited by many principals as a barrier to learning. The problem is further compounded if vacancies go unfilled for a long time. In both subjects, 10 of the 12 posts in the FET Phase had been vacant for fewer than six months, while there was one vacancy in each subject that had not been filled for over a year. In the Senior Phase sample, eight posts were vacant (four in each subject). Five posts had been vacant for fewer than six months, while one vacancy in mathematics had not been filled for a year. Such long-term vacancies are concerning, not only because of the negative impact on teaching and learning, but because it does not bode well for the prospects of filling the other vacancies in those subjects.

Finding suitably qualified teachers is a challenge, particularly in critical subjects such as mathematics and science. In many cases, schools may appoint teachers without the requisite qualifications simply because there are no suitably qualified applicants. Ideally, teachers in the FET Phase should have a degree in the subject they teach as well as a teaching qualification covering pedagogy. The qualifications of the mathematics teachers interviewed in the NEEDU sample are detailed in Table 35.

Fewer than one in five (18.9%) of the mathematics teachers interviewed in the FET Phase sample had a degree in mathematics and a teaching qualification – the ideal qualification. In the Senior Phase sample, even fewer teachers (12.7%) possessed the ideal qualification. A further 14.2% and 8.4% in the FET Phase sample

Table 35: Qualification of mathematics teachers

and the Senior Phase sample, respectively, had a degree in mathematics only without any teaching qualification. Although this group has demonstrated subject knowledge, the absence of a teaching qualification may be a serious shortcoming in terms of their pedagogical practice. More than half (57.9%) of the teachers in the FET Phase sample and almost three-quarters (72.3%) in the Senior Phase sample had a Bachelor of Education (BEd) or other teaching qualification specialising in teaching mathematics. Meanwhile, a small but significant minority (6.8% and 6.6% in FET Phase sample and the Senior Phase sample, respectively) were not at all qualified to teach mathematics.

Developing educator capacity in critical areas such as instructional leadership and critical subjects is crucial, not only to improving educational outcomes, but also for ensuring teachers are adequately qualified for the subjects they teach, which is arguably one of the most fundamental entitlements of all learners. The professional development of educators is explored in the next section.

Monitoring progress against the education sector mandate

In the Action Plan to 2019, the basic education sector commits itself to making sure that all allocated teaching posts in schools are filled immediately when they become vacant. Table 36 below reflects the extent to which this policy was implemented in schools in the NEEDU sample.

	FET Fhase			Senior Phase sample		
	san	(Grades 8-9)				
Qualification	(Grade	s 10-12)				
	No. of teachers	%	No. of teachers	%		
Degree in mathematics and a teaching qualification	36	18.9	21	12.7		
Degree in mathematics only	27	14.2	14	8.4		
BEd or other teaching qualification with specialisation in maths	110	57.9	120	72.3		
Not qualified to teach mathematics	13	6.8	11	6.6		
Information incomplete/unclear	4	2.1	0	0		
Total	190	100	166	100		

Note: BEd = Bachelor of Education

Table 36: Filling of vacant teaching posts in the NEEDU sample of schools

Every learner has a teacher who is qualified						
Sector Mandate	Intent	Standard	Target for 2014	Actual in NEEDU Sample		
Action Plan to 2019	To make sure that all allocated teaching posts in schools are filled immediately when they become vacant [Indica- tor No. 15.2]	No allocated teaching posts is vacant for an unreasonable period	92% of schools have no unfilled allocated teach- ing posts	51.6% in the FET Phase sample (n=93 schools) and 56.3% in the Senior Phase sample (n=87 schools) had no unfilled allocated teaching posts*		
MTSF	To increase the per- centage of schools where allocated teaching posts are all filled					
53rd Conference of the Ruling Party	To match teaching skills and competencies with positions to which teachers are appointed	To be determined	To be determined	7.5% of teachers were not qualified to teach maths while 11.5% of teachers had a de- gree in maths but no teaching qualification. Only 16.2% of teachers had the ideal qualifi- cation, i.e., a degree in maths and a teaching qualification (n=356 teachers)		
* The vast majority of so	chools (>95%) had short-to	erm vacancies (i.e., less tha	in 12 months).			

Progress:

The main reason given by principals for not filling vacant mathematics posts is not finding teachers who are qualified. Otherwise, much progress has been made to fill the vacancies within a reasonable time.

What remains to be done (gaps):

Establishing an administrative system envisaged in the Action Plan to 2019, quoted below, needs to be fast-tracked:

It is also important that administrative systems, including the personnel payroll (Persal) system, become better at providing accurate information, down to the school level, on matters such as the number of vacant posts and 'excess' teachers at any point in the year.

DBE, 2015a

6. Professional development for educators

6.1 Educator capacity

The South African school system is beset with many problems, including poor management and leadership in many schools and the inefficient distribution of resources. But even where institutions are well managed and teachers have access to sufficient resources – conditions which affect large parts of the school system – the quality of teaching and learning cannot rise above the ceiling imposed by teachers' capacity to teach and leaders' capacity to provide instructional leadership. In the great majority of schools, teaching is often ineffective and learners fall progressively behind the expectations of the curriculum with each passing year.

Both these problems arise from a lack of capacity – knowledge of the curriculum and how to teach it – on the part of educators. With notable exceptions in schools of all historical types and locations, the low capacity of educators in large parts of the system is not only spread across the country, but also extends vertically up and down the line of leadership and management. Inappropriate promotion procedures result in educators with low capacity being selected for positions in curriculum leadership or institutional management, but being unable to lead effectively, promote better pedagogical practices among teachers, exercise efficient administration and resolve HR issues fairly.

The generally poor state of subject knowledge held by many teachers in primary schools has been in the public eye for some time (see, for example, Taylor and Vinjevold, 1999). More specifically, the results of the 2010 SACMEQ tests conducted among mathematics and English teachers of Grade 6 reveal a generally very poor grasp of the material they are supposed to be teaching their learners (NEEDU, 2013; Taylor, N and Taylor, S, 2013; Venkat and Spaull, 2014).

A recent analysis of the scores of Grade 12 mathematics teachers in response to items based on the mathematics that they teach has brought closer focus to the proficiency of high school teachers (Bansilal, 2015). A sample of 253 teachers' responses to a shortened Grade 12 examination was analysed using the Rasch model. It is expected that the teachers should be located beyond the difficulty level of the items. However, in this study, the teachers' proficiency was located close to the mean of the item locations. Furthermore, the levels of almost one-third of the group was below that of all the Level 3 (complex procedures) and Level 4 (problem solving) items in the test.

Three measures are at the disposal of policy makers to address these capacity constraints. First, strengthen recruitment and promotion procedures, using expertise as the primary criterion for appointments, and adopting more objective selection techniques. Second, ensure that the large but largely ineffective in-service education and training (INSET) system (discussed below in section 6.3) is placed on a scientific, evidence-based trajectory, through allocating adequate resources for evaluation, research and development, and acting on research results. Third, promote measures to improve the quality of initial teacher education (ITE), by paying attention to the size, shape and substance of pre-service education and training.

The first of these measures - recruitment and promotion - was discussed at length in earlier NEEDU reports (NEEDU, 2013; 2014a), and will not occupy much more of the reader's time before we return to it below. But first, we look in more detail at professional development in both its INSET and ITE forms. The problem of generally low educator capacity has been recognised for some time, and efforts to address it through INSET, from both the public and NGO sectors, with support from international and local corporate donors, have a long history. In any profession, continuous professional development remains an important mechanism for keeping professionals up to date with latest developments. But the foundations of professional expertise are built during pre-service training. In the field of education, the ITE sector underwent radical reorganisation in the early- and mid-2000s, as a result of general dissatisfaction with the quality of teacher training under the college system. Nevertheless, now housed in the universities, the ITE sector has generally remained aloof from the rest of the schooling system, both with respect to research - which has generally been focused on micro-scale, practice-based rather than systemic concerns - and INSET which the ITE sector has tended to ignore except for the lucrative but generally ineffective ACE programmes. This all began to change in the late 2000s with a major national attempt to adopt an integrated approach to educator professional development.

6.2 The Integrated Strategic Planning Framework

The Integrated Strategic Planning Framework for Teacher Education and Development in South Africa (ISPFTEDSA) (DBE/ DHET, 2011), which emerged from the Teacher Development Summit held in July 2009, provides a touchstone for building educator capacity, with respect to both INSET and ITE.

In contrast to parallel developments in the United States (National Council on Teacher Quality, 2014) and Australia (Teacher Education Ministerial Advisory Group, 2014), which both propose draconian, regulatory measures to deal with the perceived crisis in ITE in those countries, the ISPFTEDSA envisages a collaborative approach. Driven by the slogan *Together, taking responsibility for teacher education and development*, the Framework makes provision for the roles of the three levels of government, three statutory bodies, the teacher unions, universities, and a number of national programmes.

The ISPFTEDSA places teachers at the centre of efforts to improve their capacity, encouraging them to take responsibility for their own development. The main intended outcome is to improve the quality of teacher education and development in order to improve the quality of teachers and teaching. Four essential requirements are identified: enhanced collaboration among role-players; a coordinated national system for teacher education and development; adequate time for quality teacher development (a 15-year timeframe has been adopted); and sufficient funding. It is within this inclusive and integrated vision that a number of initiatives aimed at improving the knowledge and skills of existing teachers are located.

6.3 In-service professional development

Government's commitment to training educators already in the system cannot be questioned. The DBE and provinces, jointly and severally, provide development opportunities to many thousands of teachers, officials and administrators through a great variety of programmes. This commitment was well captured in Minister Motshekga's statement on 10 August 2014 at the launch of a set of norms and standards to govern the work of 131 Teacher Development Centres across the country. The Minister reported that the Council of Ministers (CEM) had resolved to drastically improve the quality and efficiency of the entire system, with the primary focus on teaching and learning:

In order to achieve this we need to continuously upgrade the content knowledge of our teachers. However, today we are taking a step further – training those in charge of all our Teacher Training

Centres. Moreover, our plan foresees teachers who are supported by knowledgeable district officials, including managers of Teacher Centres.

DBE, 2014e: 1

The South African private sector is also very active in the field of INSET, through school development, teacher training and materials production programmes. These activities are invariably undertaken by NGOs and, taken together, constitute expenditure of the same order of magnitude as the state inservice budget. Private sector initiatives are usually carried out in some sort of partnership with government, and are aimed at one or both of two goals: piloting innovative models and supporting government delivery.

In addition, international donors contribute significant funds and in-kind assistance to INSET. Although the volume of this activity has declined in the last decade, substantial programmes remain, contributing significantly to the volume of activity in the sector.

Government programmes

Size and Shape

Development opportunities for educators at all levels of the system (teachers, school leaders, district, provincial and nationallevel curriculum leaders) are driven by the commitment of the Minister and the DBE to ensuring that every learner is taught by a competent educator. Taking their cue from the ISPFTEDSA, these efforts include the establishment of the Teacher Centres mentioned above, the launch of Subject Committees and Professional Learning Communities in and around schools to promote discussion and inputs by subject specialists on curriculum matters, the funding of union-led Teacher Development Institutes, partnerships with international and local corporate sector donors, and training programmes for subject advisors and teachers. The collective scale of these activities is indicated by the size of public funds allocated annually to teacher development, as reflected in Table 37.

NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

Table 37: Government training budget and actual spending in 2013/14 (millions)

PROVINCE	BUDGET	SPEND: EM-	SPEND: UNEM-	TOTAL	PER CENT SPENT	
	DODGET	PLOYED	PLOYED*	SPEND		
Eastern Cape	R168,7	R48,2	R44,7	R92,9	55%	
Free State	R66,7	R5,2	R26,7	R31,8	48%	
Gauteng	R212.5	R93,3	R0	R93,3	44%	
KwaZulu-Natal	R227,7	RII,I	R32,0	R43, I	19%	
Limpopo	R155,1	R9,5	R40,5	R50,0	32%	
Mpumalanga	R96,4	R33,7	R0	R33,7	35%	
North West	R73,8	R47,I	R686,2	R47,8	65%	
Northern Cape	R26,7	R22,5	R3,5	R260	97%	
Western Cape	R89,6	R53,3	R3,8	R57,0	64%	
Total	RI 117,9	R323,8	R152,0	R475,6	43%	

* Unemployed beneficiaries refer to educators, clerical and support staff who benefited from bursaries, internships and learnership programmes.

Source: DBE, 2015g

While only 43% of budgeted funds were spent, actual rands spent on INSET by DBE and the provinces has been rising in real terms over the last three years (Table 38) (DBE, 2015 g). Government-funded training is offered in three categories (DBE, 2015g):

The number of Post Level I educators who were beneficiaries of government-funded programmes increased from 39 504 in 2010/11 to 120 709 in 2013/14, where they made up 90% of all trainees (Table 39).

Table 38: Trends in training spend, 2010/11 - 2013/14, as reported by PEDs*

Province	2010/11	2011/12	2012/13	2013/14
Total	R 397,907,057	R 113,891,358	R 359,950,448	R 475,635,106

* PEDs: Provincial Education Depts. The DBE report notes inconsistent reporting by PEDs, which would explain wide fluctuations between years.

Source: DBE, 2015g

Table 39: Number of employed beneficiaries of training, 2013/14

Employed beneficiaries								
Province	Managers (princi- pals, deputy princi- pals & HoDs)	Managers (Office-based educators)	Professionals (Post Level I Educators)	Clerical and Support Staff	Total number of beneficiaries			
Eastern Cape	909	740	2,176	431	4,256			
Free State	0	0	23,553	I,400	24,953			
Gauteng	1,410	37	41,850	137	43,434			
KwaZulu-Natal	0	0	4,342	92	4,434			
Limpopo	38	0	19,489	104	19,631			
Mpumalanga	511	113	1,738	0	2,362			
North West	593	400	4,220	694	5,907			
Northern Cape	248	0	11,902	53	12,203			
Western Cape	1,181	2,579	11,439	1,115	16,314			
Total	4,890	3,869	120,709	4,026	133,494			

Source: DBE, 2015g

PIVOTAL interventions are informed by the SETA Grant Regulations, and support learning programmes that result in a qualification or part qualification which are registered on the National Qualifications Framework. Grants for such study may include internships, work integrated learning, apprenticeship and work experience placements.

Critical skills or ("Top up" Skills) refer to qualitative deficiencies that may occur in the skills of people who are already employed in the education sector. It also refers to particular capabilities required within an occupation. These deficiencies may be very specific and occur as a result of changes in the work environment; for example, changes in technology or the curriculum.

Scarce Skills refer to those specific occupations in which there is a scarcity of skilled, qualified and experienced people to fill particular roles or occupations in the labour market, currently or in future, either because such skilled people are not available or they do not meet employment criteria.

School-based educators undergo an appraisal process through the Integrated Quality Management System (IQMS), a process governed by Collective Agreement No.8 of 2003, for purposes of identifying developmental needs (ELRC, 2003). Office-based educators and other categories of employees undergo appraisal processes, governed by relevant sets of agreements. The individual requirements of teachers, school managers, officebased educators and other employees are captured in their Personal Development Plans (PDPs), and the skills needs are collated and captured in provincial Work Skills Plans. The results of this process for 2014/15 are shown in Table 40. consistently, accurately and on time on their spending trends and numbers of educators trained; and to comply with the provisions of the various laws and regulations in order to improve service delivery. The Report recommends that the DBE undertakes regular studies to investigate the efficiency of resource utilization given the wide variance in training expenditure across PEDs. Finally, the Report notes that it is not possible to discern from the data, with any degree of certainty, whether and to what extent PEDs are addressing the challenges of PIVOTAL interventions, critical and scarce skills.

The last point signals a telling gap in the training terrain: although very significant sums are spent annually on training, involving thousands of educators and person hours, little is known about the quality of this activity and the extent to which it is meeting its objectives. This brings us to the issue of substance, and in particular the state of knowledge concerning the impact of training and other intervention programmes on the quality of teaching and learning.

Quality of training

The ANA programme (section 2.2) is part of a larger awareness of the need to raise the quality of schooling. The understanding is growing that standards of teaching and learning are not necessarily raised by simply throwing money at the problem. This realisation is focusing attention on the design of intervention programmes on the part of both government and private sectors. This mood was captured by Minister Naledi Pandor at the opening of the Centre for International Teacher Education at the Cape Provincial University of Technology on 13 Feb 2015:

Province	PIVOTAL Interventions School and Clerical and office based support Intern-ships educators staff			Critical Skills School and office based ed- ucators	Scarce Skills School and office based educators	Total
Eastern Cape	12,484	704	0	3,457	8,111	24,756
Free State	40,020	510	0	0	0	40,530
Gauteng	10,278	167	0	105	225	10,775
Limpopo	3,359	745	120	1,100	6,132	11,456
Mpumalanga	5,057	150	0	624	0	5,83 I
North West	32,365	766	297	2,251	689	36,368
Northern Cape	0	0	0	12,468	4,453	16,921
Total	103,563	3,042	417	20,005	19,610	146,637

Table 40: Number of personnel identified for training, 2014/15

Source: DBE, 2015g

In conclusion to its 2013/14 Annual Report on Training and Work Skills Plans (DBE, 2015g), DBE exhorts PEDs to: utilise the total amount of their skills development budget; to report I think it's fair to say that we have opened up access to schools and universities, but we have been very much less successful in improving the quality of the education that our young people receive.
In particular, we haven't been able to improve the science and mathematics teaching in our schools and this has created a bottle neck in the expansion of our university system and unemployment for many young people.

Pandor, 2014: 1

While a universal research and evaluation culture is still a long way off, there is a dawning awareness that, in order to improve design and delivery bottlenecks, far greater attention needs to be given to assessing the progress and effects of the tide of development activity that washes over the school sector. Growing attention to programme assessment is more discernible among private sector initiatives, although even there programme evaluations remain rather rare. Unfortunately, there still seems little awareness on the part of government of the need to use a research and development approach to the formulation and roll-out of large interventions.

Details concerning government professional development interventions captured in Table 39 and Table 40 would be too numerous to list, even if they were readily available, which they are not. We describe only one, the I+4 Programme, not only as illustrative of such initiatives, but also because it is the largest and most ambitious of current government initiatives.

The I+4 Programme

This programme is part of Operation Phakisa, which started life around mid-2014, when government began exploring the use of the Big Fast Results methodology, successfully applied in Malaysia according to the World Bank, to fast-tracking delivery on priorities set by the NDP. In a set of Briefing Notes to the Ministry in December 2014, the Acting Director-General of DBE called it a collaborative effort aimed at solving priority issues fast. Among a long list of goals for Operation Phakisa, the Acting Director-General detailed the following:

Enhancing the capacity of the system at the Department of Basic Education, Provincial Education Departments, Higher Education Institutions and service provider levels to provide courses and programmes that meet teacher subject content and pedagogical needs through the teacher diagnostic assessment system and course provision; the focus should be on languages and mathematics across the system, science from Intermediate Phase to Further Education and Training (FET), other selected subjects at FET level and Intermediate Phase and Senior Phase as a whole. The 1+4 Programme is specifically targeted at improving the content and pedagogical knowledge of teachers responsible for mathematics in Grades 8 and 9 (Box 3).



DBE, 2014f: 4

1+4 Mathematics teacher development plan to start in earnest in April 2015

The DBE will go ahead with the implementation of the I+4 teacher development plan aimed at boosting performance in the senior phase. Consultation at the Education Labour Relations Council has been completed and teacher unions have expressed support for the initiative... The council further decided as follows:

- Lead Teachers will be remunerated for tuition in accordance to sub paragraph 2.1 of Chapter D of the PAM (Personnel Administration Manual).
- The cost of subsistence and travel (S&T) for all participants in the 1+4 training will be reimbursed.
- Funding referred to above shall be provided for by the Provincial Education Departments.

The '1+4 Model' is based on and supports the concept of the Professional Learning Communities (PLCs) which the Minister of Basic Education, Mrs Motshekga, launched on 07 August 2014. The added benefit of the '1+4 Model' is that teachers meet on pre-determined working days. This methodology works on the assumption that teachers need assistance with the entire curriculum and not just certain sections of the curriculum which they presumably have difficulties teaching. We need to be extremely RADICAL and do the out of the normal in our determination to "SAVE OUR CHILDREN".

The Methodology breaks each week into two parts. One day solely dedicated to thoroughly preparing teachers for the content to be delivered in that particular week. Teachers are presented with CONTENT broken down into daily doses to be delivered in the other remaining four days of the week. They meet at a nearby school one day per week. This translates into a whopping 23 days in a year dedicated to intensive training and discussions on mathematics content and methodology.

The training sessions that we have had up to now, which have yielded unsatisfactory results normally run for 10 days in a year. This RADICAL approach will expose teaches to 30 days of Training, Development and Support on a weekly basis.

This METHODOLOGY turns teachers into learners, promoting the principle of a teacher as a lifelong learner. ONE day of *learning* and FOUR days of *structured*, *effective and guided teaching*. On Day I (e.g. each Monday), on arrival at the venue, teachers are exposed to a pretest to assess their level of content knowledge of the section of the curriculum to be delivered on Tuesday, Wednesday, Thursday and Friday. At the end of the day they are exposed to a post-test to assess how well they have grasped the content they must take to the learners in their respective classes in their schools.

High standards MUST be promoted at all times. It should be expected that teachers will obtain 80% and above in the posttest. Teachers obtaining less than 80% will be identified and support will be provided during the implementation in the week. Subject advisors will be expected to assist these teachers through Classroom Support Visits to deepen their content knowledge to be provided that week.

These teachers will also be placed in Support Teams made up of Lead Teachers and other teachers who have demonstrated better understanding of the concepts. Heads of department, deputy principals and principals in the schools will also have to play a critical role in supporting these teachers.

Removing teachers from their schools for about 23 days in a school year to attend the work sessions implies that they will lose approximately 20 hours of teaching time per class per year (54 minutes per day per class). In order to ensure that the 4.5 hours instructional time allocated for the Senior Phase is covered and utilised fully, SMTs should adapt their time tables to support the model.

Source: DBE, 2015h

NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

1+4 is an 'emergency' programme, with very ambitious goals, aiming to improve ANA Grade 9 mathematics scores by 300% in one year, which would raise them from 13% in 2014 to 52% in 2015 (DBE, 2014g). As we shall see below (Box 4), one programme is claiming to have improved children's mathematics scores in the Intermediate Phase by around one-third of this target (Table 41), and that was with a group of only 20 schools in a highly controlled project environment, using structured materials for teachers and learners.

Against this background, it is difficult to envisage how 1 + 4 will reach even one-tenth of its target in terms of improved learner performance. Be that as it may, what is of crucial importance is that the programme be evaluated, from the beginning, in order to continually improve its design and implementation. A programme of this scale will require a minimum of 5 years, even to bed down across the country and, although local effects in stronger parts of the system may become apparent almost immediately, it is only likely to show discernible systemic impact towards 2020, but only then under conditions of continuous, strong leadership, monitoring, evaluation and support. In this regard, the NDP quotes evidence on reform in education systems around the world to support the view that systemic interventions begin to produce results about six years after being initiated, with sustained dividends emerging over the long term (NDP, 2012).

The two private sector projects described below start with a particular set of materials, designed to address problems observed in classrooms in mathematics (Box 4) and literacy (Box 5), respectively. The central concern of I + 4 is modality of delivery and logistics, as befits a programme designed to be implemented in all Grade 8 and 9 classrooms across the country. It places PLCs at the centre of a national effort to improve instruction in mathematics in the Senior Phase. Research on PLCs has produced some promising results. For example, working with mathematics teachers on learner errors Brodie concludes that:

... a focus on learner errors in professional learning communities can develop powerful conceptual knowledge among teachers at the same time as developing teachers' knowledge for teaching and teaching practices.

Brodie, 2013: 1

However, in conclusion, Brodie adds a rider, a precondition for success:

... absolutely key to the success of the communities are the facilitators. Facilitators need skills and knowledge to design and implement appropriate activities for teachers; to manage the collaborative nature of the process, so that communities are both safe enough to admit weaknesses and challenging enough for growth to occur; and to bring in external knowledge appropriately to help the community grow and learn.

Brodie, 2013: 16-17

Previous NEEDU reports (NEEDU, 2013; 2014a) have argued that the incumbents of curriculum leadership positions in schools (HOD, deputy principal, principal) and districts (subject advisors) are not necessarily the best people for their jobs, in terms of knowledge and skill. This arises from the fact that, in identifying curriculum leaders, expertise competes with other criteria, including expectations of seniority, and what Pattillo (2012) has called the 'quiet corruption' conducted by cabals operating in organised ways to secure promotion and protection for their members.

Given the centrality of quality curriculum leadership provided by PLC leaders, it becomes more important than ever to institute a more efficient system for selecting educators for promotion posts. It is also important to minimise corrupt practices. Both goals will be served by instituting formal procedures for selecting staff for promotion, including psychometric testing and the inclusion of HR and subject experts, with voting authority, in selection committees. These measures will not yield results immediately but will lay the foundations for medium to long term systemic restructuring, and sustainable improvement.

In the short term, it is important that all projects of this kind be subjected to the most rigorous evaluation studies in order to advance the public knowledge base regarding teacher development. Such evaluations are rare, although they are beginning to emerge. Where they have been applied they have more often than not found the intervention to have had little or no effect (see for example, Mouton et al, 2013; Besharati, 2014; De Clercq and Shalem, 2014). Following a meta-evaluation of 34 donor-funded projects operating between 1995 and 2005, Schollar and Roberts conclude that:

... many of the development programmes supported by ... have failed to result in the expected significant impact on the ultimate beneficiaries; this is not inherently a 'bad thing'- it is just as important to know what does not work as it is to know what does!

Schollar and Roberts, 2006: xxiv

In short, without understanding the effects of intervention programmes, we run the danger of simply repeating the same mistakes over and over. Considering the unspent funds in government's INSET budget (see Table 37), there cannot be an

67

argument that no money exists for programme evaluation. Just five per cent of the training budget would amount to R50 million, which could very fruitfully be used for assessing project impact and mechanisms of change. This investment is likely to leverage savings in terms of money spent on more effective programmes and the elimination of those that serve no purpose other than to waste the time of participants and the hard-earned rand of the South African taxpayer. It is recommended that the Department of Planning, Monitoring and Evaluation (DPME), based in the President's Office, takes a lead role in the external evaluation of such programmes, although internal systems for monitoring progress are essential to identify early problems and facilitate implementation.

Private sector initiatives

Donor-funded NGO-driven professional development programmes have been prominent in South Africa for at least the past three decades. A scan of the sector, as part of the National Teacher Education Audit in 1995, found at least 100 INSET programmes of this type (Taylor, 1995). While the scale of the sector has declined somewhat since the heyday of international donor aid to the country in the 1990s and 2000s, INSET activity supported by both international and local corporate agencies remains robust. Following a survey of 99 Corporate Social Investment (CSI) managers and 171 nonprofit organisations, Trialogue concluded that, in 2014, total CSI expenditure by companies in South Africa was estimated at R8.2 billion (Trialogue, 2015). CSI expenditure grew 3% year-on-year between 2001 and 2007, and an impressive 10% year-on-year through the global recession. It is estimated that more than half of these funds go to supporting education initiatives, which means that the CSI contribution to INSET is at least of the same order of magnitude as government spend.

Describing even the broadest parameters of this sector is quite beyond the scope of the present report, and we limit the following discussion to just a single example of a project which has taken evaluation seriously, in the interests of building a knowledge base about successful programme design and implementation.

Primary Mathematics Research Project

The Primary Mathematics Research Project (PMRP) starts with an analysis of over 4 000 sets of learner rough workings, produced by Grade 5 and 7 pupils while performing mathematical tasks. The conclusion of this qualitative dimension of the project was that poor performance in mathematics in the primary grades starts with: ... a national inability of learners to perform calculations. The majority of problems are solved by the use, to one degree or another, of simplistic pre-mathematical counting methods in a sort of 'base-one' number system in which every number is understood only as the addition or subtraction of another unit to the previous. Learners do not understand the base-ten number system or the concept of place value.... Learners are unable to rapidly and accurately retrieve any learned information about numbers.

Counting methods, whether of single units or of whole numbers, typically consume a great deal of time and generally provide correct answers only to very simple questions that typically use single digit numbers without fractions.

Schollar, 2015: 90

The PMRP is an intervention programme designed to provide teachers in rural and township schools with sufficient capacity to teach the foundation concepts and techniques underlying the Number and Operations strand in the national curriculum. At the centre of the PMRP is a 16-week structured programme for teaching and learning this section of the Grade 4-6 mathematics curriculum. The change theory assumed by the intervention is that children learn early mathematics concepts and techniques through direct instruction, which emphasises the memorisation of basic number facts and extensive practice of the four operations, as a foundation for approaching simple word problems. The PMRP is delivered through a set of scripted lessons for teachers and a workbook for learners, which is structured according to four levels of difficulty, depending on where each learner is situated on a continuum of mathematical proficiency. Learners use the same workbook for the three grades covered.

A randomised controlled trial (RCT), using 20 project and 20 control schools in rural schools in Limpopo, produced gain scores (post-test minus pre-test) for the project group of unprecedented magnitude (Table 41).

Taken together, project schools outperformed control schools by 10.5 percentage points, while the high dosage group exceeded the control group by 15.5 percentage points.

68

The study is noteworthy for at least four reasons: the inclusion of a qualitative component to investigate the problem of poor mathematics performance, the use of an RCT evaluation methodology, the use of a follow-up study to test the sustainability of PMRP impact and the presence of Hawthorne effects, and the systematisation of the programme in five circuits in Limpopo (Box 4). Collectively these four elements make up a substantial body of work which adds significantly to our understanding of the teaching and learning of mathematics in South African primary schools.

Table 41: Gain scores of project and control groups, Grades 4 and 6 combined, 2007

Group	Gain: percentage point	Gain: percent increase on baseline
Project: all schools	13.6	77.3
Project: high dosage*	18.6	111.9
Control	3.1	21.2

* In these classes teachers managed to cover at least 11 of the 16 scripted programme weeks

Source: Schollar, 2015

2+(2++)=36 82 ()()

The randomised controlled trial 2007

The number of RCT studies conducted in South African classrooms can be counted on the fingers of one hand. Most qualitative classroom research is microscopic in scale and, while providing insights into isolated knowledge transactions between individuals, contributes little to knowledge of a general pedagogical nature and thus has little use for practitioners or policy makers, except in a very localised sense. Neither have the majority of the few quantitative studies that have been conducted done much better: snapshot evaluations involving a single point of measurement, often performed post-hoc, have great difficulty demonstrating change over time, while most longitudinal studies omit a counterfactual or, at best, use a matching design to control for background variables. All these research designs are greatly inferior to the RCT in, first, establishing whether any change has occurred, and second, eliminating or minimising the effects of confounding variables.

In contrast, the PMRP applied the RCT method to a group of 40 schools, assigned randomly to treatment and control groups, in the Vhembe district of Limpopo Province. Randomisation at the school level was done to minimise intervention contamination of control classes or learners in the same school. The positive gains exhibited by the treatment group exceeded by orders of magnitude any programme effects seen in interventions previously. The large programme effects obtained for the treatment group, together with the increase in impact associated with longer programme dosage, give strong credence to the conclusion that the PMRP is effective as a mathematics instruction programme for Grades 4-6, at least in these rural classrooms.

The qualitative component

The examination of the rough working used by over 4 000 Grade 5 and 7 learners, distributed across the length and breadth of the country, to perform arithmetic operations, was a key factor in the PMRP diagnosis concerning the cause of failure in South African primary school classrooms. The widespread use of 'unit counting' and repeated addition and/or subtraction, is revealed as highly inefficient in working with numbers exceeding 10. Learners clearly have little understanding of the base 10 number system, or of mathematics as an abstract symbol system for condensing numbers and facilitating algorithmic procedures of varying complexity. This is an enormously important insight which has profound implications for policy and practice.

The decline in the proportion of these pre-mathematical methods among PMRP project learners, and the concomitant increase in conventional calculations and rising test scores, provide strong confirmation of the theory underlying PMRP, which predicts that direct instruction of and extended practice in standard algorithms and memorisation of number facts will result in more effective learner performance.

The qualitative component of the PMRP, therefore, provides an understanding of the mechanism behind the changes detected by the RCT. RCTs without accompanying qualitative studies can provide only a blunt yes/no answer to the research question, while qualitative research, on its own, provides useful insights without being able to determine whether and to what extent the programme in question is likely to make a difference at scale. The PMRP places these two elements in productive conversation with one another in a very effective mixed-method design.

The follow-up study 2010

Three years after the RCT, a second post-test was administered on the Grade 4 project and control groups from the original study in 2007, the learners then having reached Grade 7. The motivation for the follow-up was to test to what extent the gain scores in the RCT were due to the Hawthorne effect. The second post-test showed that the relatively better performance of the intervention group was holding, although there was some convergence between project and control schools. The study concludes that the Hawthorne effect was not present to any significant degree, hence confirming the view that the changes were effected by the intervention.

This finding is important for what it says about the lasting impact of the intervention. Evaluation studies in the country have generally struggled to find any impact at all, let alone gains of the magnitude and duration of PMRP. These achievements are both close to unique in South Africa.

The replication study 2010-2012

Intervention programmes such as the PMRP are often conducted by NGOs and donors, usually with the approval of the state sector. A fourth important issue about initiatives of this kind concerns their take-up in schools and classrooms once the initial project has run its course. This is very seldom attempted and, where it has been attempted, it has not been shown to have any effect on learning. Without good research studies, the reasons for this failure are unknown, but essentially two possible reasons present themselves: the state system lacks the capacity or is unwilling to deliver the model, or the programme design is faulty.

Here too, the PMRP demonstrated a strong exception when it was incorporated into the district, circuit and school line functions in 125 schools in the Malamulele Cluster of circuits from 2010 to 2012. Although the evaluation found that government officials did not deliver the programme very well, and while gain scores were not as impressive as those demonstrated in the RCT, gains were nevertheless very significant.

In the face of mediocre programme leadership, monitoring and support from district and circuit officials, the learning gains exhibited by the replication study require explanation. The evaluation concludes that direct instruction pedagogy has been leaking into the system, partly though the PMRP and other projects and partly through a more general acceptance of 'non-OBE (Outcomes Based Education)' teacher-centred pedagogical practices. This is not an entirely convincing explanation, and assessment programmes such as SAMEQ may throw further light on the issue.

While the results from the extended evaluations are very positive and reflect favourably on the PMRP, they were conducted internally, and verification by external studies will further extend the knowledge base about interventions of this kind.

Source: Schollar, 2015.

Government/Private Sector Collaboration

Phase 4 of the PMRP (Replication Study) shows how private sector initiatives may morph into public-private partnerships, and there is often not a lot to distinguish these two INSET types. Here too, the number and variety of programmes are too numerous to mention, and we confine ourselves to a description of just two examples, which are most advanced in terms of adding to the public store of knowledge about teacher development initiatives.

The Gauteng Primary Literacy and Mathematics Strategy

The Gauteng Primary Literacy and Mathematics Strategy (GPLMS) was initiated in 2011 as a partnership between the Gauteng Department of Education and a consortium of NGOs and CSI backers. The early phases of the project were described in the two previous NEEDU reports (Fleisch and Schöer, 2012; NEEDU, 2013; NEEDU 2014a). Essentially the programme relies on a set of structured lesson plans, accompanied by appropriate materials, teacher training and on-site coaching, to assist teachers and learners with literacy and mathematics instruction in the Foundation and Intermediate Phases. One component of the GPLMS implementation, the Reading Catch-Up Programme, has been the subject of a full RCT evaluation (Box 5).

What lessons does the RCUP model hold for the difficult task of improving teacher competence? One lesson that stood out during the first three years of GPLMS implementation in Gauteng was that early formative evaluation is very helpful in refining the project design. Thus, for example, the lesson plans were rewritten more than once, as coaches and an external qualitative evaluation provided feedback on how they were working in classrooms (see NEEDU, 2013).

Another obvious lesson for policy makers is that policy or programme effectiveness claims can and should be tested using robust counterfactual studies prior to system-wide rollout. If this study had used a simple pre-test/post-test design, the conclusion would be a *false positive*, namely that the intervention was highly effective. As things turned out, both treatment and control groups showed significant gains, but the difference between the two groups was not significant. Unfortunately, most programmes, government and otherwise, assume that the good intentions of the project advocates are sufficient to ensure effective designs, and that assessing the actual impact is unnecessary. As we have said, this is a dangerous path, which runs the risk of wasting time, money and effort on repeating routines that have no positive effects. Overall, there is evidence to suggest that, with full programme dosage and strong coaching, interventions such as the RCUP could enable learners to catch up to where the curriculum expects them to be. If this is true, then it has implications for pedagogy, indicating that a scripted approach to literacy instruction, linked to the use of good materials and on-site coaching can be effective in improving the quality of learning.

Finally, the four-year history of the programme indicates just how difficult it is to effect change at the classroom level: there is no magic bullet or 'game changer'; the road to reform in literacy instruction is incremental, if applied systematically and continuously building on lessons learned. From this perspective, short time horizons, over-ambitious targets, staff churn – particularly at higher levels of leadership – and the absence of an evaluation culture are the enemies of systemic reform.

The GPLMS lesson plans have been widely used in Limpopo, after having come to the attention of the Chief Director for Curriculum in the province. The project took a further step forward in 2014, when DBE, in collaboration with North West PED began to plan an RCT evaluation of the GPLMS, with funding from international and local CSI donors (DBE, 2015i). This evaluation will attempt to disaggregate the effects of the three main project elements. Clearly, the jury on the intervention model of the GPLMS is still out, and the results of the RCT in North West are eagerly awaited.

National Education Collaboration Trust

The National Education Collaboration Trust (NECT) is the latest in a serious of high profile collaborations between the public and private sectors over the last three decades, commencing with the Urban Foundation and the Independent Development Trust in the 1980s, the Joint Education Trust and the National Business Initiative in the 1990s, followed by the Business Trust. The NECT is dedicated to strengthening partnerships among business, civil society, government and labour, in order to achieve the education goals of the NDP (NECT, 2015). It strives both to support and influence the agenda for reform of basic education. Programmes of the Trust fall into six themes:

- Professionalisation of the teaching service
- Supporting courageous leadership
- Improving government capacity to deliver
- Improving the resourcing of education
- · Involving parents and communities in education
- Enhancing support for learners and promoting their wellbeing

These themes are translated into action through five broad programmes:

District interventions: The Trust has prioritised 21 school districts and aims to provide intensive support to these districts. The programme commenced in 2013 in eight education districts: Waterberg and Vhembe in Limpopo, Libode and Mount Frere in the Eastern Cape, Pinetown and Uthungulu in KwaZulu-Natal, Bohlabela in Mpumalanga and Bojanala in the North West.

Systemic intervention: The NECT will dedicate resources to interventions that can be applied across the entire public school system and have a widespread impact. The NECT is working with the DBE to define the projects that will comprise the programme of systemic change.

Innovation programme: The NECT will promote the wider adoption of effective new approaches to education and will support the continued testing of innovative methods.

Local projects: NECT envisages that the large number of local projects that are sponsored and implemented by NGOs and CSI programmes will continue. The Trust does not intend to displace these projects or to annexe them.

Education Dialogue SA: This programme creates opportunities for engagement among key education stakeholders such as teacher unions, civil society organisations, business organisations, government departments, and parent and student structures.

Box 5: Evaluation of the Reading Catch-Up Programme

The Programme

The Reading Catch-Up Programme (RCUP) is an eleven-week programme, which focuses on re-teaching Foundation Phase EFAL skills and content to Grade 4 learners in underachieving primary schools. It was designed to replace the curriculum for a single term, to ensure that learners in these schools had an opportunity to master the basics of English language literacy. The catch-up programme contains three key elements: scripted lesson plans, provision of high-quality learning materials, and on-site coaching. The scripted lesson plans divide the term into 11 weeks, with a strict and consistent weekly teaching routine prescribed, to be followed in the same sequence every week. The teaching week is divided into seven half-hour teaching periods, with the content and homework for each period specified.

The scripted lesson plans and learning-and-teaching resources are regarded as a necessary but not sufficient condition for instructional change at scale in this model. The other components – the just-in-time training and the ongoing in-class coaching – are viewed as pivotal in changing habits and routines of daily teaching practice. The coaches play a number of roles: providing training to teachers in small groups; visiting classrooms to model teaching practice and to observe, support, and encourage teachers as they work on the lesson plans; and monitoring compliance.

Theory of change

The theory of change assumed by the programme is that aligning these three interventions acts to disrupt and re-engineer three core elements of practice. First, the lesson plans and the coaching change how time is understood and used. The pace remains the same even if teachers are absent or the day is interrupted for any reason. The responsibility, or burden, shifts to the teacher to keep up with the pre-specified time frames. Second, the lesson plans and the learning resources, complemented by the work of the coaches, expand the teachers' pedagogic techniques and classroom management repertoire. Third, a consistent finding in international literature on large-scale reform is the negative consequences of the overambitious curriculum. By beginning with the average actual reading levels of learners, and moving them systematically along, the intervention aims to provide a large proportion of learners with the opportunity to benefit from reading instruction and reading materials at the appropriate grade level.

Evaluation

The RCT evaluation found that, while both intervention and control groups improved substantially between the pre-test and the post-test, the improvement is only marginally better in the treatment group, and the difference is not statistically significant. However, while there was no significant effect on the overall reading score, there are significant positive effects observed for spelling and language. There were also improved effects shown with increased compliance with the programme (higher dosage) and with the quality of coaching. Thus, there is evidence to suggest that with higher levels of implementation intensity and/or extended duration, and with strong coaching, interventions such as the RCUP could enable learners to narrow the gap between where they are and where the curriculum expects them to be.

The statistically significant findings of gains in two domains, namely spelling and language (grammar), are important. These are clearly the domains most likely to change, as they have the lowest cognitive load associated with them. In contrast, the fact that scores did not change for comprehension, which requires a much wider and more complex range of knowledge and skills to be taught and learnt, is not surprising, given the relative brevity of the intervention.

Source: Fleisch et al., 2015

NECT initiatives are in too early a state of development to have recorded significant impact at this stage. However, they are already too numerous to describe in any degree of detail, and we confine our attention to just one, the Programme to Improve Learning Outcomes (PILO), which aims to develop capacity in schools and districts in two districts prioritised by the NECT (Box 6).

6.4 Initial teacher education

Initial teacher education (ITE) is the link between matriculants exiting Grade 12, on one hand, and newly qualified teachers leaving the universities to take up posts in schools, on the other. It is a key cog in the school system, and a strong case can be made for its primacy as a lever for effecting systemic change. One possible explanation for the poor traction which INSET seems to be gaining is that the knowledge foundations of large numbers of teachers, itself the product of their own inadequate education, are too low to enable them to benefit much from onthe-job training. Strengthening ITE will reduce this problem over the years, slowly building a more strongly educated cadre of teachers. At the same time, it is important to strengthen INSET, along the lines proposed above (section 6.3). But the long-term solution to building educator capacity lies in an improved ITE sector. This represents the node in the system which offers the most propitious point for breaking the vicious cycle of poor skills development and poverty reproduction in which schooling is so heavily implicated.

In this section we examine the current state of ITE, and speculate on ways in which the knowledge and skills of trainee teachers may be raised and made more pertinent to school needs.

The Review of the Higher Education Quality Council

In a keynote address to a conference on teacher education in 2008 Crain Soudien, then Chair of the Higher Education Quality Council (HEQC) Review of ITE, drew attention to the 'desperate state' of literacy and numeracy in the country, citing in support of his argument the recently published SACMEQ test results which placed South Africa eighth out of 14 participating countries.Yet, continued Soudien:

We do not... have a body of empirical work and theoretical engagement that is able to speak to this situation... after almost 50 years of serious research into teaching and learning, we cannot say, without qualification, what works and what does not.

Soudien, 2008: 7

Shortly after the conference addressed by Soudien, the HEQC published its wide-ranging review of programmes in the sector, motivated by concerns about the persistent problems in education, and the critical role of the ITE field in fulfilling the country's education needs (CHE. 2010). Of the 81 programmes reviewed, only 39 (48%) received full accreditation, with 18 (22%) either not accredited at all or 'On Notice of Withdrawal', and the remainder being conditionally accredited. Thus, not quite half the programmes were fully accredited, despite the 'developmental' approach adopted by the HEQC, taking due cognisance of the strategic importance of the provision of teacher education and the fact that closing programmes would have had a serious impact on the supply of teachers. Across all four types of programmes reviewed - Master of Education (MEd), BEd, Post Graduate Certificate (PGCE) in Education and Advanced Certificate in Education (ACE) - the greatest difficulties lay in programme design, raising for the reviewers the critical question as to:

...the extent to which academics responsible for these programmes understand the nature and purpose of each of them and how they are to respond to South Africa's specific needs in the area of teacher education.

CHE, 2010: 147

Clearly, at the time of the HEQC Review, ITE was in rather poor health as a system, although, in the light of the review, parts of it were demonstrably better than others. In mitigation, it must be said that the higher education section cannot bear the brunt of responsibility for this situation alone. Poverty, the very poor literacy and numeracy levels students bring to their university studies from school, and underfunding – including the redirection, by the universities themselves, of subsidies intended for education faculties to other priorities – all contribute.

However, none of these factors can explain the deficiencies of programme design described by the HEQC, which noted that a fundamental difficulty across all programmes lay in the unsolved tension between the knowledge and practice components. The review cited overwhelming evidence; for example, that the majority of ACE programmes fulfilled the upgrading intentions of the qualification without adequately addressing the levels of competence students brought to them. It concluded that many programmes could not provide appropriate levels of training for the practice that was required by their students.

The current state of ITE

The Initial Teacher Education Research Project (ITERP) was initiated in 2012 to take a closer look at ITE curricula of South Africa's higher education institutions and the experience of novice teachers during their first two years of teaching practice (Taylor, 2014). The project is a collaboration of the Education Deans' Forum, DHET, DBE and JET Education Services (JET). The study is intended to contribute to debate on the nature, quality, content and duration of ITE programmes, to help shape policy in this area and to inform discussion on the design and delivery of ITE curricula most suited to reforming the country's school system.

Five higher education institutions (HEIs) were invited to participate. Collectively, these five represent the major institutional types that deliver ITE, and in 2012 produced 49% of all BEd graduates in the country and 61% of PGCE graduates (DHET, 2013). The curricula for English and mathematics offered to BEd students specialising in the Intermediate Phase (IP), together with the instruments used to assess the teaching practice component, were examined. The findings are summarised below under five headings: entrance requirements, English courses, mathematics programmes, the teaching of reading and writing, and teaching practice.

Box 6: Programme to Improve Learning Outcomes

Entrance requirements

ITE programmes have low entrance requirements compared with most other disciplines (Deacon, 2012). Many students are accepted without any reference to what motivates them to become teachers. Teacher educators' low expectations of the academic quality of students (including weak subject content knowledge, lack of proficiency in English and generally poor reading and writing skills) are not always counterbalanced by any structured attempt to transform poor quality entrants into good quality. While measures taken by DHET to increase the numbers of teacher graduates are achieving their goals, rising from 6,000 in 2008 to over 16,000 in 2013 (DHET, 2013), in some institutions the focus seems to be on producing more teachers rather than better teachers. Urgent attention needs to be paid now to the shape of the system (for example, there is a great shortage of teachers specialising in the Foundation Phase) and the quality of ITE, if ITE is to be used as a more effective instrument in reforming the country's school system.

English courses for Intermediate Phase teachers

Given the low levels of academic literacy demanded by EFAL (see section 2.3), and the fact that English is the LOLT in over 90% of the country's schools, one would expect a big focus on improving the English proficiency of aspirant teachers. The

PILO is working in 1,200 schools in the Pinetown and Uthungulu Districts of KZN, where it is the lead agent of the NECT. The PILO model aims to improve learning outcomes at scale by improving curriculum coverage. To this end, tools and training are introduced to support management conversations about curriculum coverage between the HoD and teacher, within the SMT, and between the district and the school. All activities and processes are integrated into the department and all activities are run by the district, with the support of the province.

Curriculum tracking starts at the classroom level with the provision of trackers which assist teachers to plan every day and week of every term on the basis of the textbook they are using (Grades 4 -12); integrate into their daily planning other available resources (such as the DBE workbooks and the Siyafunda materials); track curriculum coverage; reflect on progress; and plan for assessment. For Grades 1- 3, in addition to the Trackers and Planners, the GPLMS lesson plans have been extensively re-versioned and are used to support curriculum planning and tracking. A range of support material is provided including high quality reading texts, posters, and printable resources. The lesson plans and trackers are co-developed with provincial and district officials each term, in order to draw on the classroom experience of participants and give them a sense of ownership of these materials and the processes of their implementation.

School-level HoDs are supported in their existing responsibilities including:

- · Coordination and evaluation of assessment, homework, and written assignments, of all subjects in their department or phase
- Providing guidance on subject content, teaching techniques, methods, evaluation, work schemes, support inexperienced teachers, and overall control of the educator and learner work
- · Conducting all meetings associated with the function and report to the principal and deputy principal on the work done

Circuit managers and the Teacher Development Section lead SMT training, which is supported by on-site coaching and additional resources. Subject advisors lead just-in-time training covering the work for the term ahead.

PILO leadership is currently investigating ways of instituting an impact evaluation of the programme.

Source: Metcalfe, 2015

English courses offered to IP student teachers at the five case study campuses of the ITERP were found to vary substantially in the content and duration of the various components (Reed, 2015). In English subject knowledge for IP students specialising in English, for example, courses range from between five or six semesters at some institutions to four full years at others.

Of most concern, however, is the fact that, for IP student teachers not specialising in English, there is, in three of the five institutions studied, no English subject knowledge offered and in others, no pedagogic knowledge either. Thus, little attention is given to equipping these students to guide IP learners to become proficient readers and writers in English. This, despite the fact that these teachers will be required to use English as the LOLT in the overwhelming majority of schools, and that will likely be called on to teach English at some stage in their careers.

On the closely related topic of EFAL as LOLT, a strong case can be made that all teachers should have a thorough theoretical and practical understanding of how to address the language and literacy needs of second language learners. Yet, only one of the five HEIs in the ITERP study met this requirement.

Another gap is noted in the texts and genres chosen by lecturers where literature for children and adolescents is backgrounded or ignored. Given the importance of developing learners' interest in reading and the contribution reading can make to lexical and syntactic knowledge, this is a cause for concern.

Literacy instruction

An area of major concern is that little or no attention is given to reading pedagogies for IP teachers on any of the five ITERP campuses studied by ITERP. This is a skill for which there is a dire need in the school system, and the failure to teach reading instruction to teachers specialising in the IP flies in the face of the findings of the Progress in Reading Literacy Study (PIRLS), which concluded that 87% of Grade 5 learners in South Africa fail to achieve the low international benchmark (Howie et al, 2008). These figures, revealing the poor state of reading development in primary schools, were corroborated by the NEEDU assessment of reading among Grade 5 learners in 2013 (NEEDU, 2014b). This means that the large majority of South African learners are unable to recognise, locate and reproduce information that is explicitly stated in texts, or to make straightforward inferences from information given. Under these circumstances it would seem obvious that teachers in the IP need to be highly skilled teachers of reading, whichever subject they may be teaching.

Mathematics for IP teachers

The numbers of IP student teachers specialising in mathematics are generally small and highly variable, across and within institutions from one year to the next (Bowie, 2014). The entrance requirements range from achievement of 65% or more on a test given to all first-year students at one institution, to a pass of at least 50% in mathematics in the NSC exam at another, to an allowance for students to specialise as teachers even if they scored as low as 30% in literacy in the NSC. The proportion of courses for specialist mathematics teachers within the BEd degree varies from a low of 13% to as much as 25% across the sample institutions. These wide variances raised the question as to whether students specialising in the subject are sufficiently equipped to lay the firm foundations in number facility, problem modelling and abstract reasoning required by learners for entry study in the field of mathematics, science and technology. Further, however effective they are as teachers, there are far too few of them to make a significant difference in the education system.

For IP student teachers not specialising in mathematics, their exposure – in some cases – to either mathematical literacy or methodology courses is low and varies across the different institutions. For these prospective IP teachers, mathematics courses contribute from as little as 2.5% to a high of 13% to overall credits. This would seem to be woefully inadequate, given that most primary school teachers will, at some stage, be required to teach mathematics.

Teaching practice

One of the main ITERP findings regarding the teaching practice element of ITE programmes is that the content of modules and hence of programmes varies widely among institutions (Rusznyak and Bertram, 2014). Teaching practice is the area with the greatest variation, in factors such as: total time students spend in schools (ranging from 10 to 35 weeks); where teaching practice takes place (mostly in suburban schools); and exposure to diverse teaching experiences (these are generally encouraged but not required). It is also noted that most supervisors are not subject specialists and, in some institutions, it is possible for students to pass teaching practice even if they perform poorly in a classroom, or even without being assessed on their classroom expertise.

Concluding comments on ITE

While there are some excellent practices, it seems that none of the five institutions studied by ITERP is rising fully to the challenge posed by the low quality of South Africa's school system, particularly with respect to those student teachers not specialising in mathematics or English. The research points to a need for urgent and serious discussion among teacher educators in all sub-disciplines and particularly in mathematics and English. The sector needs to reach a much greater degree of convergence concerning the competencies, in both subject knowledge and pedagogy, required by teachers, the curricula most suited to achieve these standards and how the outcomes should be assessed.



NEEDU National Report 2014:The quality of learning outcomes Reducing the inequalities at the higher levels of schooling in South Africa

7. Conclusion and Recommendations

The 183 schools visited by NEEDU in 2014 have all received draft reports, with a set of recommendations, to which they have been requested to respond. A district report for each of the 25 districts visited in 2014 summarises the conditions in the schools visited in the district (usually 8) and makes recommendations for action on the part of the district and province, in the interests of assisting schools to achieve the provincial goals of improved teaching and learning. The present National NEEDU Report 2014 collates the information gathered in provinces, districts and schools, against the background of current developments in the fields of education policy and school research.

This report should be read in conjunction with the NEEDU National Report for 2012 (NEEDU, 2013), and two national reports on the work done in 2013 (NEEDU, 2014a; 2014b). These four documents are complementary to each other, in terms of respectively addressing the four phases of schooling; through the examination of reading and other curriculum topics, the main struts of systemic administrative processes, and several key issues in human resource (HR) development and management. Furthermore, to gain finer grained insights into the findings at provincial, district and school levels, the interested reader may consult the relevant NEEDU school and district reports.

7.1 Furthering the National Development Plan

Under the heading, A capable and Developmental state, Towards better governance, the NDP notes :

A plan is only as credible as its delivery mechanism is viable. There is a real risk that South Africa's developmental agenda could fail because the state is incapable of implementing it.

NDP, 2012: 44

The Plan goes on to explain that in order to build the state capable of delivering the vision of the NDP:

A developmental state needs to be capable, but a capable state does not materialise by decree, nor can it be legislated or waved into existence by declarations. It has to be built, brick by brick, institution by institution, and sustained and rejuvenated over time. It requires leadership, sound policies, skilled managers and workers, clear lines of accountability, appropriate systems, and consistent and fair application of rules. A principle we have followed throughout this report is that institutions are animated by people and it is the quality of the people - as expressed through their inclination to exercise initiative, intelligence, wise judgement and a caring attitude which determines the performance of any institution. Schooling, consisting of teaching, the exercise of instructional leadership and pastoral care, is an expert field of labour. The primary expertise required to deliver schooling is curriculum knowledge, starting with high levels of proficiency in speaking, reading and writing the LOLT, followed by a thorough grasp of the discipline(s) for which the educator is specialised. Strong subject knowledge is the foundation from which effective pedagogy is derived. Yet, it is curriculum knowledge which one research report after the next tells us is in short supply at every institutional level in the South African system. The recommendations which follow are directed toward addressing this situation, and fall into three categories: promoting substantive instructional leadership practices; making the most of the human resources available, through smart deployment; and educator professional development with respect to both INSET and ITE.

7.2 Instructional leadership

The present report has little to add to the recommendations of previous NEEDU work in key areas of instructional leadership with respect to building the SMT and driving a programme of in-school professional development, promoting proficiency among teachers and learners in the LOLT and teaching, the more effective use of time, and emphasising far more strongly the role of reading and writing in developing the cognitive capacities of learners. What the present discussion does add to previous NEEDU reports is a more detailed analysis of the role of assessment, and of the ANA and NSC programmes in particular, in directing and supporting learning. We therefore confine the following recommendations to these two important government initiatives.

The Annual National Assessment

A theme underlying our analysis is that the systemic evaluation purposes of ANA, on one hand, and the pedagogic purposes, on the other, do not sit easily in a single exercise. The former should be administered by external agents, and not released to testees (at least in full) after the event; while the latter, by definition, are realised through verbal and written engagement among educators, between teachers and learners, and among learners. The following recommendations are directed towards

77

NDP, 2012: 44

improving the achievement of both sets of goals.

ANA as systemic evaluation

The systemic and pedagogic uses of ANA should be separated entirely, with different tests servicing the two respective purposes. The good news in this regard is that the DBE has committed itself to a process of reviewing the assessment design of ANA to provide separate instruments for these two distinct purposes (DBE, 2014b: 9). Towards this end, a set of items, not exposed to teachers or other educators in the system, were administered in a sample of schools in 2014 during the ANA exercise, with the intention of using these as anchor items in 2015.

It is also important that the systemic tests be designed, administered and reported by an external agency with the capacity to provide the full suite of psychometric services required. Not only will this provide for more reliable vertical and horizontal comparability, but will also increase public confidence in the results. While the last two ANA reports have contained major contradictions, stating that scores are not comparable from year to year but nevertheless claiming to have achieved major gains, by 2013 the DBE had started a review of the test design so that in future separate tests will be used to serve diagnostic and systemic purposes. In the report on the ANA of 2013, the DBE stated:

On the one hand, tests for systemic assessment will be kept confidential so that the same test can be used over a number of years to track trends in performance. On the other hand, tests designed to provide diagnostic information may be kept open to exemplify best assessment practices. The current design of ANA sets a limitation on the uses to which ANA results may be put, although diagnosis at the level of classroom and school is useful in the South African context. Test design will in future accommodate the need for systemic and diagnostic purposes.

DBE, 2013: 28

ANA as diagnostic instrument

In order to increase the diagnostic power of the systemic instruments, they should be designed to probe the full range of topics and cognitive skills specified in the curriculum. The overall test which meets these requirements should then be apportioned into shorter sub-tests, each of which is administered to a sub-sample of the test population, using a matrix-sampling technique.

To adequately serve government's systemic evaluation purposes

while at the same time providing useful diagnostic information, it is not necessary to test the whole population. Here too, advice from expert statisticians should be sought to select a sample which serves both purposes.

ANA as formative assessment

To best serve formative goals, the stakes of the formative component of ANA need to be kept deliberately low. One way of doing this is not to collect scores for individual teachers at any systemic level higher than the school. They should be left for teachers and SMT members to analyse, debate and address through in-school professional development. This important work should be informed by the diagnostic information derived from the systemic component. The foregoing discussion indicates that this function is not currently being performed with any degree of expertise in a large proportion of schools, and requires extensive support from district offices and professional development mounted by district, provincial and national levels.

Acknowledging that the number and variety of questions that could be included in the ANA tests are limited, and so are the learning outcomes that could be assessed, in 2013, the DBE started exploring more robust designs that will help collect assessment information for systemic and formative purposes using separate specially designed sets of tests. This design was due to begin in 2014 with the implementation of the plan by 2015.

The National Senior Certificate

Pass rate

The pass rate continues to be taken as a measure of success in the NSC, to the virtual exclusion of all other indicators. But, if the pass rate is increased at the expense of access to quality education for many learners, then this constitutes a perversion of the very purpose of schooling. For this reason, the pass rate should be ranked as the last indicator to be taken into account when measuring success of the school system, or any part thereof.

There is an argument which asserts that, with fewer, more successful learners, schools perform better in terms of quality. Counter to this efficiency argument, a rights position asserts that schools should aim to provide greater numbers of students opportunities to sit the NSC exam (by improving the throughput rate); aim high in EFAL; not only take mathematics, but to score highly; and to target a Bachelor level pass. Even if they do not succeed in all or any of these goals, the rights position continues, it is better to aim high for all learners than it is to improve the

78

pass rate while ignoring these important indicators of quality. No school can be proud of 100% pass if this is achieved at the expense of excluding a single student who may have succeeded, or who may have gained access to a university science faculty if greater emphasis had been placed on a set of targets geared to quality. For these reasons, we recommend that the following indicators be adopted to assess the quality of NSC achievement by schools, districts, provinces and the DBE.

Throughput rates

Throughput should be measured by the proportion of Grade 9 learners who register for the NSC. There will be numbers of students who are not suited to academic studies through the NSC, and these should be counselled and assisted to pursue other avenues, through FET colleges or the workplace. This requires career guidance, particularly in Grades 9 and 10, a rigorous system of school-based assessment (which is lacking in many schools), and good judgement on the part of teachers and principals. However, the throughput rate in most schools is far below any level accounted for by learners following alternate routes to academic education, and improving throughput should be a major target for all institutions comprising the school system.

Quality of passes in English FAL

EFAL is the medium through which all school learning occurs for 80% of learners, including the poorest and most marginalised. Strengthening language proficiency, particularly through the development of strong literacy capacities and the higher cognitive processes – inference and deduction, analysis, synthesis and justification – will assist all other learning. This is an indicator that should be tracked at various levels. The lowest benchmarks, scoring 30% and 40% for EFAL in the NSC examination, are reached by 98% and 83% of learners, respectively. This is an important achievement, but one that must be improved if the system is to matriculate students capable of succeeding in higher education and the mid to upper job grades in the workplace.

Improvement needs to be pursued on two fronts. First, the level of cognitive challenge – not only in the NSC exam but in schools and classrooms, through daily written exercises and debates, tests and exams across the grades – needs to be significantly raised. Second, higher targets should be set for measuring success in the NSC, including passes at 50% and 60%. These practices should be maintained in all grades, led by the SMT, while support systems in districts, provinces and the DBE should be directed to assisting teachers to achieve these goals.

Proportion of candidates writing and passing

Without mathematics, students are excluded from careers in commerce, science and technology. It is therefore important to increase the number of schools offering mathematics, and the proportion of NSC candidates taking and passing mathematics in every secondary school.

Quality of mathematics passes

Students entering degree-level study in courses requiring mathematics will improve their chances of success if they score above 50% in this important gateway subject in the NSC. Schools should set targets for obtaining quality passes in mathematics, and the systemic support systems should increase efforts to assist schools in this endeavour.

Proportion of Bachelor level passes

The proportion of NSC candidates obtaining a Bachelor degree entry level pass is another indicator of the quality of teaching and learning, and schools and their support systems should target improvements on this metric.

In summary, NSC performance should be assessed against nine indicators, as shown in Table 42. The balanced approach to assessing the quality of performance described above can assist in reducing three key inequalities in the South African school system: access to the NSC, opportunity to learn through improved proficiency in English, and access to careers in the STEM and commercial fields. While much progress has been made in recent years, inequalities still persist in the school system, limiting the life chances of poorer learners and contributing to sluggish economic development.

All institutions – schools, districts, provinces and the DBE – are recommended to analyse the NSC results according to this scheme and to plan ways of increasing each of the nine indicators over the next five years. Plans should include targeting the same indicators for all grades in the school: preparation for the NSC begins in Grade R, and continues through 13 years of schooling. Schools should be encouraged to generate a set of targets for individual learners, based on past performance and the potential of each learner.

7.3 Human resource deployment: making the most of the talents of current employees

All instructional leadership functions can only be as useful as the leaders are knowledgeable about the curriculum. Thus, in order to optimise the positive effects of instructional leadership on the quality of teaching and learning, leaders should be selected for their knowledge and pedagogical expertise. Given the intellectual demands of the curriculum, it is essential that competence be used in the promotion of personnel, beginning with school-level HODs. We have argued that HODs are in a far better position than district officials to provide substantive on-going support to teachers who are struggling with the knowledge and pedagogic demands of the curriculum. HODs are the only educators who are in a position to offer sustained assistance frequently, and at the depth required, to effect substantive changes in classroom practice. Similarly, strong subject advisors are required at district level to assist HODs and teachers to attain the highest standards of curriculum delivery.

In the area of institutional leadership, principals make an enormous difference to school performance. They establish authority in both the behavioural and curricular domains, set up systems for instructional leadership, and assure the quality of all school level systems.

But these pedagogical and instructional leadership functions can only be carried out effectively if the incumbents have the requisite curriculum knowledge. And the present report echoes what has become common knowledge about South African schooling: the majority of teachers have an insufficient grasp of both the LOLT and the subject matter they are responsible for to ensure that their charges are learning at the pace and depth expected. In the first instance, therefore, what is required is a climate of change its achievement is only possible if expertise is the basis for recognising the worth of educators.

There is much talk among system-level officials of changing the criteria and selection procedures for promotion, taking its cue from the NDP recommendations (NDP, 2012) that are, inter alia: a hybrid system for appointing HODs should be introduced, incorporating both political and administrative elements; a purely administrative approach should be adopted for lower level appointments, with senior officials given full authority to appoint staff in their departments; school principals should be selected purely on merit, be given greater powers over school management and be held accountable for performance; a graduate recruitment programme should be introduced to attract high quality candidates; and the role of the Public Service Commission in championing norms and standards, and monitoring recruitment processes should be strengthened. These proposals have now been in the public domain for five years, and government keeps asserting its belief in the NDP, but the extent to which the recommendations key to building a capable state have gained traction in the civil service is very slim.

It would be superfluous for NEEDU to add to these recommendations. What is needed now is deliberate and systematic implementation of the NDP plan. Small pockets of excellent HR practices are in evidence: previous NEEDU reports have brought attention to the effective management of teachers 'in excess' in the Free State province (NEEDU, 2014a,

Area	Indicator	2011	2012	2013	2014
Throughput	Proportion G9 learner 3 years earlier/G12 candidates	59.2	59.6	59.2	54.4
English FAL	Proportion of EFAL candidates achieving \geq 50%	43.5	51.2	61.7	49.8
	Proportion of EFAL candidates achieving $\geq 60\%$	18.2	22.4	30.2	20.0
Mathematics	Proportion of NSC candidates writing mathematics	45.0	42.6	42.7	42.0
	Proportion of NSC candidates passing (≥ 30%)	21.2	21.7	25.0	22.0
	Proportion of NSC candidates achieving \geq 50%	8.4	8.5	11.3	9.4
	Proportion of NSC candidates achieving $\geq 60\%$	5.0	4.7	6.8	5.7
Bachelor passes	Proportion of NSC candidates qualifying	24.5	24.9	30.7	28.3
Pass rate	Number passed/number wrote x 100	72.8	73.3	80. I	75.8

 Table 42: Progress on nine indicators for assessing NSC performance (%)

Source: Own calculations using data provided by the DBE.

throughout the system: expertise must replace other qualities – feudal notions of seniority such as gender, age, language and family ties, or political, religious or cultural connections – as the primary measure of educator worth and seniority. Schooling is a key mechanism of modernity, but it can only serve as a ladder out of poverty for individuals, families and the nation if it is driven by the principle of expertise. Expertise, as the basis for occupational self-sufficiency, is the telos of schooling, and

80

Box 2, p17); of innovation in the selection of principals in the Western Cape (NEEDU, 2014a, Box 4, p21); and of dramatic district turnaround in Mpumalanga (NEEDU, 2014a, Box 5, p23). These outstanding exceptions provide two key lessons. First, that current legislation provides ample scope for the exercise of fair and effective HR practices, in prioritising expertise and efficient management of resources. Second, that the inertia which besets large parts of the system currently – characterised

by low educator morale, aggressive union activity and a sense of helplessness in the face of the 'silent corruption' through which public resources are appropriated by self-interested cabals – can be overcome through competent management. And competent managers exhibit sound curriculum knowledge, a good grasp of the relevant legislation and HR procedures, and are confident in asserting the priority of learners' needs over the non-curricular demands of educators.

7.4 Educator professional development

In addition to using all available expertise currently in the system, through the use of smart promotions procedures, efforts should be intensified to lift the generally low systemic capacity. Educator development occurs in two forms: INSET for those already working in schools, and ITE for training new teachers. Our analysis in section 6 above indicates that neither sector is operating optimally.

In-service education: increasing the capacity of educators currently in service

Ironically, while the public debate focuses furiously on learner performance, the realisation that this is heavily dependent on educator capacity does not feature prominently in the lexicon of the teacher unions. Plans to make available a web-based system to enable teachers to assess their own curricular needs and development programmes remains a distant dream. In the meantime, billions are allocated annually by government and the private sector to maintaining training programmes which have shown little systemic impact in the past.

Most important, is that the absence of a research and development culture is preventing us from learning about how to improve the design and implementation of such programmes in order to increase their effectiveness. There is little appetite to research the effectiveness of these expensive initiatives. Of those few programmes that have been evaluated rigorously, few have exhibited positive effects on learner performance. In this respect, we are not learning from our mistakes, but repeating them year after year.

In section 6.3 above we describe in detail two INSET programmes that have taken evaluation seriously. One of these, after four years of implementation in various contexts, and continuous redesign in response to close monitoring, is still seeking to discern programme impact on the teaching of literacy in the lower primary school. The other, a mathematics programme implemented in rural primary schools over eight years, makes claims of dramatic gains in test scores. What lessons are these and other INSET initiatives beginning to tell us about how to improve the effectiveness of in-service programmes? One lesson that stands out is that dosage is important (De Chaismartin, 2010), indicating that the current very low levels of teacher knowledge require extended intervention before effects become apparent. But perhaps the most important conclusion at this stage is the realisation of just how difficult it is to effect change at the classroom level. There is no magic bullet or 'game changer': the road to reform in instruction is incremental, if applied systematically and continuously building on lessons learned. From this perspective, short time horizons, over-ambitious targets, staff churn – particularly at higher levels of leadership – and the absence of an evaluation culture are the enemies of systemic reform.

It is strongly recommended that a rigorous evaluation be attached to all major INSET initiatives. In particular, no public funds should be spent on programmes that do not have a mechanism for demonstrating their effects. This is not to imply that punishment should follow a 'no significant effects' conclusion; rather, it is important to understand which programme designs are ineffective, since avoiding these will save money, to say nothing of the time and energy expended by participants. But it is even more important to understand the elements of effective programmes. In order to do this, an experimental evaluation design must be combined with qualitative elements which seek to understand the specific mechanisms of and inhibitions to positive impact.

One initiative that is beginning to build a knowledge base concerning INSET is the Mathematics Chairs Programme, a partnership between the National Research Foundation, the First Rand Foundation and the Department of Science and Technology. The programme has established three research and development professorships for primary and three for the secondary level. The purpose is to develop INSET programmes for teachers in 10 schools each, through research and development over five years. This is a very positive development and it is recommended that the exercise be duplicated in the field of literacy. This is an area of even greater need than mathematics.

A second recommendation regarding pedagogical research is based on the observation that the information emanating from the mathematics chairs, and the wider field in general, is accumulating at a rapid rate and not being adequately digested by the teacher training sector, both public and private. It is important that all research and evaluation information on INSET be collated and its implications for pedagogy and the development of educator capacity spelled out. Perhaps this is

the task that the Teacher Education Chair at the Cape Provincial University of Technology could take on. Alternatively, a dedicated structure could be established for the purpose.

Initial teacher education: increasing the capacity of newly qualified educators

There has been an accumulation of information in the past decade which confirms that the ITE system is not only highly variable in quality across the 21 institutions offering ITE, but it would seem that the majority have lost touch with the needs of schooling. What else could explain the fact that, in the face of the PIRLS findings that 87% of Grade 5 learners do not reach the lowest international benchmark for reading, none of the five BEd programmes studied by ITERP provide literacy instruction to teachers specialising in the IP? Without good reading and writing skills, learners are unable to make much progress in learning any of their subjects. One would therefore expect all primary school teachers to be expert in teaching literacy and diagnosing and remediating learning difficulties. Yet, at least a large part of the ITE sector appears to be oblivious to this logic.

A key step towards the professionalism of any occupational field is that the knowledge and practice standards are maintained and jealously guarded by practitioners within the field, not by government. This is professional quality assurance, as opposed to bureaucratic managerialism. It could not be any different, since only adepts within a complex area of work have the expertise to judge the value of new knowledge claims and to certify novice entrants into the profession. This is one of the most important characteristics of the strong professions. While it is important that government, through the Minimum Requirements for Teacher Education Qualifications (MRTEQ), steers providers towards currently neglected needs of the school system such as reading instruction for IP teachers, and competence in teaching EFAL, to name but the most obvious (DHET, 2011; 2015) - the professional skill required to operationalise these priorities is what determines programme quality.

As we have noted above, the South African ITE policy climate and public mood are noticeably more benign towards a professionalization project than their US (National Council on Teacher Quality, 2014) and Australian (Teacher Education Ministerial Advisory Group, 2014) counterparts, which tend to pit powerful social sectors in opposition to the ITE community. Defensiveness and resistance are inevitable consequences in the case of the latter. However, there is no guarantee that the opportunities offered by the more favourable South African conditions will be exploited to strengthen the quality of ITE, without which any attempts to move the field of teaching towards a greater degree of professionalization are bound to fail. In this respect, adoption of the recommendations of the HEQC Review would seem to provide a good starting point for such a project. The Review ended with two sets of broad-brush recommendations:

What is needed now in the teacher education community is:

- a sustained period of reflection and debate in which the major issues that characterise teaching and learning, the pedagogical and the sociological, and the dynamics that emanate from their combined influence, are examined;
- a systematic evaluation of the major teaching and learning innovations that have been carried out in the last 15 years; and
- a national programme of intervention in both ITE and INSET, based on the outcomes of the work suggested above.

What is required in the system is:

- a sustained period of stability in HEIs as the effects of the incorporations and mergers settle;
- a teacher education qualification policy to create a balance between prescription and flexibility, allowing institutions to adapt resource allocations to the programme design and contextual needs;
- a structured conversation among the academic fraternity on the academic appropriateness and national relevance of the qualifications;
- a concerted campaign by all relevant stakeholders to attract the best possible candidates for the profession.

While these recommendations remain an excellent starting point for strengthening ITE provision, the lack of activity in the sector in response to the HEQC Review is of great concern.

References

ANA Advisory Committee. (2013). *Document for DG*. Unpublished.

Ball, Stephen. (2008). Performativity, privatization, professionals and the state. In C. Cunningham (ed.) *Exploring professionalism*. Bedford Way Papers. London: Institute of Education, University of London.

Bansilal, S. (2015). A Rasch analysis of a Grade 12 test written by teachers. S Afr J Sci. 2015;111(5/6), Art. #2014-0098, 9 pages. http://dx.doi.org/10.17159/sajs.2015/20140098

Beck, J. and Young, M. (2005). The assault on the professions and the restructuring of academic and professional identities: A Bernsteinian analysis. *British Journal of Sociology of Education*, 26, 2, 183 – 197.

Besharati, N. (2014). Platinum & Passes: The Impact of Mining Investments on Education Outcomes in South Africa. Research Report 16. Johannesburg: School of Governance, University of the Witwatersrand.

Black, P. and Wiliam, D. (1996). Inside the Black Box: Raising Standards Through Classroom Assessment. Downloaded from http://weaeducation.typepad.co.uk/files/blackbox-1.pdf, 27 February 2015.

Bowie, L. (2014). Report on courses for Intermediate Phase student teachers at five universities. Johannesburg: JET Education Services.

Black, P. & Wiliam, D. (1998). Inside the Black Box: Raising standards through classroom assessment. King's College, London.

British Council. (2015). Certificate in Primary English Language Teaching (CiPELT). Downloaded from http://www.britishcouncil. org/partner/track-record/certificate-primary-english-languageteaching. 15 March 2015.

Brodie, K. (2013). The power of professional learning communities. *Education As Change, Volume 17, No. 1*, July 2013, pp. 5–18.

CHE. (2010). Report on the National Review of Academic and Professional Programmes in Education. *HE Monitor No. 11*. Pretoria: Council on Higher Education.

CHE. (2013). A Proposal for Undergraduate Curriculum Reform in South Africa: The case for a flexible curriculum structure. Pretoria: Council on Higher Education. CHE. (2014). Framework for Institutional Quality Enhancement in the Second Period of Quality Assurance. Pretoria: Council on Higher Education.

Christie, P., Butler, D. and Potterton, M. (2007). Report to the Minister of Education. Ministerial Committee on Schools that Work. Department of Education.

DBE. (2011a). National Education Evaluation and Development Unit Bill. Government Notice 907 of 2011, Government Gazette No. 34858, 23 December 2011. Pretoria: Department of Basic Education.

DBE. (2011b). Action Plan to 2014: Towards the Realisation of Schooling 2025. Pretoria: Department of Basic Education.

DBE. (2013a). Report on the Annual National Assessment of 2013: Grades 1 to 6 & 9. Pretoria: Department of Basic Education.

DBE. (2013b). Report on the Annual National Assessment of 2013. Pretoria: Department of Basic Education.

DBE. (2014a). Basic Education Sector Plans for 6 priorities in the sector. Presentation of the Acting Director General to the BFR Workshop, 10 December 2014. Unpublished. Pretoria: Department of Basic Education.

DBE. (2014b). Report on the Annual National Assessment of 2013: Diagnostic Report. Pretoria: Department of Basic Education.

DBE. (2014c). Report on the Annual National Assessment of 2014: Grades 1 to 6 & 9. Pretoria: Department of Basic Education.

DBE. (2014d). Ministerial Task Team Report on the National Senior Certificate (NSC). Pretoria: Department of Basic Education.

DBE. (2014e). Teacher centre management training underway. Media statement released by Department of Basic Education, 18 August 2014. Downloaded from <u>http://www.education.gov.</u> za/TeacherCentremanagementtrainingunderway/tabid/1260/ <u>Default.asx</u>18 August 2014.

DBE. (2014f). Briefing Notes: Human Resource Management, Teacher Development. Operation Phakisa Workshop, 10-11 December. Unpublished. Pretoria: Department of Basic Education.

DBE. (2014g). Emergency meeting to focus on the development of a plan to improve learner performance in the intermediate and senior phases. Unpublished PowerPoint presentation. Pretoria:

Department of Basic Education.

DBE. (2014h). Department of Basic Education notes release of SAHRC report on LTSM delivery. Media statement released by Department of Basic Education, 29 May 2014. Downloaded from http://www.gov.za/department-basic-education-notes-releasesahrc-report-ltsm-delivery.

DBE. (2015a). Action Plan to 2019: Towards the Realisation of Schooling 2030. Taking forward South Africa's National Development Plan 2030. Unpublished draft. Pretoria: Department of Basic Education.

DBE. (2015b). Report on the Annual National Assessment of 2014: Grades 1 to 6 & 9. Pretoria: Department of Basic Education.

DBE. (2015c). Annual National Assessment 2014: Diagnostic Report – Intermediate and Senior Phase. Pretoria: Department of Basic Education.

DBE. (2015d). Annual National Assessment 2014: Diagnostic Report – Foundation Phase. Pretoria: Department of Basic Education.

DBE. (2015e). Annual National Assessment 2014: Diagnostic Report – First Additional Language and Home Language. Pretoria: Department of Basic Education.

DBE. (2015f). See <u>http://www.education.gov.</u> za/2014ANAAssessmentGuidelines/tabid/590/ Default. aspx for separate ANA Assessment Guidelines for each subject and grade.

DBE. (2015g). 2013/14 Annual Report on Training Interventions and 2014/15 Work Skills Plan. Unpublished. Pretoria: Department of Basic Education.

DBE. (2015h). 1+4 Mathematics Teacher development plan to start in earnest in April 2015. Media statement issued by Department of Basic Education, 24 March 2015Downloaded from April 2015

DBE. (2015i). Improving early grade reading in South Africa: Summary. Unpublished. Pretoria: Department of Basic Education.

DBE/DHET. (2011). Integrated Strategic Planning Framework for Teacher Education and Development in South Africa. Pretoria: Department of Basic Education and Department of Higher Education and Training.

Deacon, R. (2012). Initial Teacher Education Project: Institutional Case Studies Composite Report. Johannesburg: JET Education Services.

De Chaisemartin, T. (2010). Evaluation of the Cape Teaching and Leadership Institute. Johannesburg: JET Education Services. Available at www.jet.org.za

De Chaisemartin, T. (2013). Writing Matters: The Neglect of Writing in South African schools, in Taylor, N., van der Berg, S. and Mabogoane, T. (Eds) (2013). Creating Effective Schools: Report of South Africa's National School Effectiveness Study. Cape Town: Pearson.

De Clercq, F. and Shalem, Y. (2014). Teacher Knowledge and Professional Development, in Maringe, F. and Prew, M. (Eds) *Twenty Years of Education Transformation in Gauteng 1994 to 2014: An independent review.* Johannesburg: Gauteng Department of Education.

DHET. (2011). The Minimum Requirements for Teacher Education Qualifications. Department of Higher Education and Training. *Government Gazette No* 34467, 15 July 2011.

DHET. (2013). *Trends in Teacher Education 2012*. Unpublished. Pretoria: Department of Higher Education and Training.

DHET. (2015). Revised Policy on the Minimum Requirements for Teacher Education Qualifications. Department of Higher Education and Training. *Government Gazette No. 38487*, 19 February 2015.

DOE. (2009). Ministerial Committee on a National Education Evaluation and Development Unit: Final Report. *Government Gazette No.* 32133, Notice 389 of 2009, 17 April 2009. Pretoria: Department of Education.

Fleisch, B. and Schöer, V. (2012). Large-scale instructional reform in the Global South: insights from the mid-point evaluation of the Gauteng Primary Language and Strategy. South African Journal of Education, Volume 34, Number 3.

Fleisch, B., Taylor, S., Schöer, V. and Mabogoane, T. (2015). Assessing the impact of the RCUP: A report of the findings of the impact evaluation of the Reading Catch-Up Programme. Johannesburg: Zenex Foundation.

Gustafsson, M. (2011). The when and how of leaving school: The policy implications of new evidence on secondary schooling in South Africa. *Stellenbosch Economic Working Papers: 09/11*. Stellenbosch University: Department of Economics.

Gustafsson, M. (2014). A check on item-level data patterns in the 2013 ANA associated with possible cheating. Unpublished draft report, 31 December 2014.

84

Gustafsson, M. (2015). Annual National Assessment details by education district: Analysis presenting new district-level indicator values based on 2012 and 2013 ANA data. Unpublished draft report, January 2015.

Hoadley, U. (2012). What do we know about teaching and learning in South African schools? *Education as Change*, 16:2, pp. 187-202.

Hoadley, U. and Muller, J. (2014). Visibility and agency: investigating the epistemic potential of systemic tests. Paper presented to the *European Educational Research Association Conference*, Porto, Portugal, 2-5 September.

Howie, S., Venter, E., van Staden, S., Zimmerman, L., Long, C., du Toit, C. and Archer, E. (2008). *PIRLS 2006 Summary Report: South African Children's Reading Achievement*. Pretoria: Centre for Evaluation and Assessment, University of Pretoria.

Jacob, B. and Levitt, S. (2003). Rotten apples: an investigation of the prevalence and predictors of teacher cheating. *Quarterly Journal of Economics*, 118(3); 843-77.

Metcalfe, M. (2015)._Programme to Improve Learning Outcomes. Personal communication.

Mouton, J., Wildschut, L., Richter, T. and Pocock, R. (2013). Zenex Review Project: Final Revised Report. Unpublished. Johannesburg: Zenex Foundation.

National Council on Teacher Quality. (2014). 2014 Teacher Prep Review: A review of the nation's teacher preparation programs. Washington DC: National Council on Teacher Quality. Downloaded from www.nctq.org/teacherPrep/review2014, 13 March 2015.

NDP. (2012). Our future - make it work. National Development Plan 2030. Executive Summary. 15 August 2012. http://www. gov.za/sites/www.gov.za/files/Executive%20Summary-NDP%20 2030%20-%20Our%20future%20-%20make%20it%20work.pdf. Downloaded 4 May 2015.

NECT. (2015). *National Education Collaboration Trust*. Downloaded from http://nect.org.za/what-we-do on 22 May 2015.

NEEDU. (2013). NEEDU National Report 2012: The State of Literacy Teaching and Learning in the Foundation Phase. Pretoria: National Education Evaluation and Development Unit.

NEEDU. (2014a). NEEDU National Report 2013: Teaching and learning in rural primary schools. Pretoria: National Education Evaluation and Development Unit.

NEEDU. (2014b). NEEDU Reading Study 2013:The state of reading in grade 5 in selected rural primary schools. Pretoria: National Education Evaluation and Development Unit.

Pandor, N. (2015). Speech by Naledi Pandor MP, Minister of Science and Technology, at the launch of the Centre for International Teacher Education, Granger Bay Hotel School, Cape Town, 12 February 2015: 9h00. Press statement issued by Department of Science and Technology, 13 February 2015, available at http://www.dst.gov.za/index.php/media-room/ media-room-speeches/minister/1259-speech-by-naledi-pandormp-minister-of-science-and-technology-at-the-launch-ofthe-centre-for-international-teacher-education-granger-bayhotel-school-cape-town-12-february-2015-900.

Pattillo, K. (2012). Quiet Corruption: Teachers Unions and Leadership in South African Township Schools. Thesis submitted in partial fulfillment of the requirements for the Degree of Bachelor of Arts with Departmental Honors from the College of Social Studies, Wesleyan University, Newtown, Connecticut.

Ravitch, D. (2010). The death and life of the great American school system: how testing and choice are undermining education. Basic Books.

Reddy, V., Zuze, T., Visser, M., Winnaar, L., Juan, A., Prinsloo, H., Arends, F. and Rogers, S. (2015). *Beyond Benchmarks: What 20 years of TIMSS data tell us about South African education*. Pretoria: Human Sciences Research Council.

Reed, Y. (2014). Report on English courses for Intermediate Phase student teachers at five universities. Johannesburg: JET Education Services.

Rusznyak, L. and Bertram, C. (2014). An Analysis of Teaching Practice Assessment Instruments: A cross-institutional case study of five universities in South Africa. Johannesburg: JET Educational Services.

Schollar, E. and Roberts, J. (2006). Meta-evaluation of 34 evaluations of projects funded by ZF. Unpublished. Johannesburg: Zenex Foundation.

Schollar, E. (2015). The Primary Research Project: 2004-2012: An Evidence-Based Programme of Research into Understanding and Improving the Outcomes of Mathematical Education in South African Primary Schools. Thesis Submitted for the Degree of Doctor of Philosophy, Department of Sociology, University of Cape Town, January 2015. Schollar, E. and Roberts, J. (2006). Meta-evaluation of 34 evaluations of projects funded by ZF. Unpublished. Johannesburg: Zenex Foundation.

Soudien, C. (2008). The implications of the crisis in numeracy and literacy in South Africa for teacher education. Keynote address to the Teacher Education Research and Development Programme (TEP) Conference 2008. *Proceedings of the TEP Concluding Conference*. Johannesburg: Centre for Education Policy Development.

Spaull, N. (2011). Primary School Performance in Botswana, Mozambique, Namibia and South Africa. SACMEQ Working Paper No 8. Paris: International Institute for Educational Planning.

Spaull N. (2013). South Africa's Education Crisis: The quality of education in South Africa 1994-2011. Johannesburg: Centre for Development & Enterprise.

Spaull, N. (2014). Assessment results don't add up. Mail and Guardian, 12 December 2014, http://mg.co.za/article/2014-12-12-assessment-results-dont-add-up/

Taylor, N. C. (1995). Inset, NGOs and evaluation: A review, in Vinjevold, P. *The National Teacher Education Audit: the NGO sector*. Johannesburg: Joint Education Trust.

Taylor, N. (2014). An examination of aspects of the BEd curricula for Intermediate Phase teachers at five higher education institutions: Summary Report. Johannesburg: JET Educational Services.

Taylor N., Fleisch B. and Shindler J. (2008) *Changes in Education* since 1994. Pretoria: The Presidency: Input into the 15 year review process.

Taylor, N. and Taylor, S. (2013b). Teacher knowledge and professional habitus, in Taylor, N., van der Berg, S. and Mabogoane, T. (Eds) (2013). *Creating Effective Schools: Report of South Africa's National School Effectiveness Study.* Cape Town: Pearson.

Taylor, N. and Vinjevold, P. (1999). *Getting Learning Right*. Johannesburg: Joint Education Trust.

Taylor, S. (2014). A Note on Matric Results. Unpublished.

Taylor, S. and Taylor, N. (2013a). Learner Performance in the NSES, in Taylor, N., van der Berg, S. and Mabogoane, T. (Eds) (2013). *Creating Effective Schools: Report of South Africa's National School Effectiveness Study.* Cape Town: Pearson.

Taylor, S. and Yu, D. (2009). The importance of socio-economic status in determining educational achievement in South Africa. *Stellenbosch Working Paper Series No.* WP01/2009. Stellenbosch: Department of Economics, University of Stellenbosch.

Teacher Education Ministerial Advisory Group. (2014). Action Now: Classroom Ready Teachers. Downloaded from: http://www. studentsfirst.gov.au/teacher-education-ministerial-advisorygroup 11 March 2015.

Trialogue. (2015). CSI growth slows in 2014. Downloaded from http://trialogue.co.za/csi-growth-slows-in-2014/, 28 April 2015.

van der Berg, S., Burger, C., Burger, R., de Vos, M., du Rand, G., Gustafsson, M., Moses, E., Shepherd, D., Spaull, N., Taylor, S., van Broekhuizen, H., and von Fintel, D. (2011). *Low quality education as a poverty trap*. Stellenbosch: University of Stellenbosch.

Venkat, H. and Spaull, N. (2015). What do we know about primary teachers' mathematical content knowledge in South Africa? An analysis of SACMEQ 2007. International Journal of Educational Development. Vol. 41 Mar. pp. 121-130.

Wedekind, V. (2013). NSC Pass Requirements: a discussion document for Umalusi on the NSC pass mark. Pretoria: Umalusi.

World Bank. (2013). Review of the Annual National Assessment (ANA) program, South Africa. Washington DC: The World Bank.

Appendix 1: School Sample

CRITERIA 1.

- **INCLUDE ALL 9 PROVINCES** ٠
- 8 or 16 SCHOOLS IN EACH OFTHEABOVE 13 DISTRICTS
- SCHOOL WHICH HAVE AT LEAST GRADES 10-12 (FET)
- MUST OFFER MATHEMATICS (CORE)
- 2. **STRATIFY SAMPLE**

LEARNER ACHIEVEMENT (THROUGHPUT)

Sample schools in each district must include:

- 2 schools in top 25% of achievement
- 4 schools in middle 50% of achievement
- 2 schools in bottom 25% of achievement

3. **EXCLUDE**

SCHOOLS THAT DO NOT HAVE ANY MONOGRADE GRADE 10, 11 OR 12 CLASSES

4. **REPLACEMENT SCHOOLS**

Include at least 2 replacement schools in each district.

PROVINCE	DISTRICT	No. of schools
EC	District I	8
EC	District 2	8
FS	District 3	8
GP	District 4	8
KZN	District 5	8
KZN	District 6	8
LP	District 7	8
LP	District 8	8
MP	District 9	16
NC	District 10	8
NW	District	8
WC	District 12	8
9	12	104

Second Semester (July to November)

PROVINCE	DISTRICT	No. of schools
EC	District 13	8
EC	District 14	8
FS	District 15	16
GP	District 16	8
GP	District 17	8
KZN	District 18	8
KZN	District 19	8
LP	District 20	8
NC	District 21	16
NW	District 22	8
WC	District 23	8
WC	District 24	8
9	12	112

Appendix 2: A note on data

The data for this report were sourced from the Department of Basic Education (DBE). The Directorate for Education Management Information Systems (EMIS) provided school enrolment data, which is based on the Snap Survey carried out on the tenth day of the school year and includes public and independent schools. The data present two main weaknesses. First, the data are incomplete because not all schools submit survey forms. Since a very high proportion (approximately 99.7%) of schools complies and there is a large amount of data, no imputation or updates were necessary because the information is deemed sufficient to discern trends. Second, it is widely recognized that there are some deliberate distortions to the data submitted by schools. Funding allocations are based on learner numbers and schools tend to guard against shortfalls in case of late enrolments by over-stating their intake on the tenth day of school. While this renders many of the enrolment figures inaccurate, it is expected that over-estimations are more or less consistent each year; so this does not detract from the interpretation of trends at different levels of the system over time.

Information on the NSC results was provided by the Exams Directorate, which manages a "live" database that is constantly updated and corrected as additional data are included. The NSC data for 2008 to 2013 reflect performance in the National Curriculum Statement (NCS), prior to the implementation of the Curriculum and Policy Statement (CAPS) in Grade 12, and are based on datasets provided to NEEDU in August 2014. These include results from both initial and supplementary examinations. Since a significant number of candidates write supplementary examinations, the findings are a more accurate reflection of attainment than the figures released in January each year, before the supplementary examinations are written. For candidates doing "rewrites", the final result reflects the highest mark achieved in each subject.

The results for 2014 reflect performance in the first year of CAPS using a dataset sourced in February 2015. This does not contain data for supplementary examinations. Although pass rates may be slightly lower than after the supplementary exams, the vast majority of NSC candidates do not take supplementary exams and trends are clearly distinguishable. The differences of the two curricula notwithstanding, the purpose of this report is not to compare curricula but rather to highlight learning outcomes and patterns of participation in certain key areas. The system does not differentiate public and independent schools, so aggregate analyses in this report are based on all schools participating in the NSC, both public and independent. Because the focus of this report is mainstream learners attending school full-time, results for the following candidates have been excluded: candidates who have not written all seven subjects, usually parttime candidates; learners with special educational needs (LSEN); and candidates with irregularities in their results.



Appendix 3: Throughput Grades 9-12

Year	NATIONAL e		NATIONAL enrolment			
	Grade 9	Grade 10	Grade I I	Grade 12		
2006	971013	1093407	890507	568317		
2007	957262	1116068	919989	625486	Throughput Gr 9-12	
2008	902656	1076527	902752	595216	(%)	
2009	926531	1017341	881661	602278	62.0	
2010	1009085	1039497	841567	579286	60.5	
2011	1049904	1094189	847738	534498	59.2	
2012	1096113	1103495	874331	551837	59.6	
2013	1073060	1146285	834611	597196	59.2	
2014	1033089	1119210	880667	571361	54.4	
		Average throughput, 2009-2014		59.2		



Notes	
90	

The National Education Evaluation and Development Unit 222 Struben Street Private Bag X895, Pretoria, 0001 Telephone: (012) 357-4130/4131 Fax: (012) 323-9186 e-mail: vanstaden.a@dbe.gov.za Website: http://www.education.gov.za/NEEDU/tabid/860/Default.aspx ISBN: 978-1-4315-2716-8