OPINION | Do uniform targets help to improve schooling outcomes?

BALANCED CRITERIA SHOULD REPLACE PERVERSE PASS-RATE INCENTIVES

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Indicators of any activity always serve a dual purpose. On the one hand, they are measures of performance; on the other, they set targets to aim for. The problem with indicators is that they are generally achievable in one of two ways: by improving performance or by taking a short cut. A good example of the latter approach is given by the twin brothers who each ran half the Comrades Marathon and were caught out only when a sharp-eyed official noticed that in one video sequence the runner was wearing his watch on the left arm and in a later sequence the runner with same number had his watch on the right arm.

Indicators of school quality are particularly problematic because schooling is such a complex activity and its quality, consequently, difficult to measure. A simplistic set of indicators is easier to manipulate than a well-designed set. At the same time, increasing the consequences of any set of indicators tends to increase pressure towards manipulation. For example, reports of schools and even whole districts in the United States cheating in the tests used to measure progress on the No Child Left Behind accountability system are increasing, while in South Africa system-wide manipulation of the National Senior Certificate (NSC) examinations is known to have occurred in the years 1999–2003.

Pass rate

The main measure of learning achievement in South Africa is the pass rate in the NSC examination at the end of Grade 12. However, this is an unreliable indicator of quality, which is strongly correlated with the number of candidates writing the examination, with the pass rate increasing when the number of candidates decreases and *vice versa*, as is clearly shown in Figure 3.2.1.

It makes sense that the smaller the numbers in Grade 12 classes the more individual attention teachers can provide and the higher the likelihood that students will pass; this will be particularly apparent if weaker candidates are excluded from progressing to Grade 12 and from writing the exam. One way of manipulating pass rates, therefore, is to screen learners at the end of Grade 11. There is evidence that this is happening on a large scale, with a fall-off in school enrolment between Grades 11 and 12 of around one-third across the country. Take, for example, the cohort of students who entered Grade 10 in 2008 and wrote the NSC in 2010: of the one million Grade 10 students in 2008, only 54 per cent survived to Grade 12, and of the cohort who started Grade 10 in 2009, only 52 per cent made it to Grade 12 two years later (see Table 3.2.1).

Opportunity

A far more appropriate indicator of improvement in NSC results than the ubiquitously quoted pass rate would be the number of passes in absolute terms in relation to the population of 18-year-olds. There has been a steady increase in the number of learners passing in the last decade, growing from 249 831 to 364 513 (an increase of 46 per cent) over the period 1999–2010. The number passing matric as a proportion of 18-year-olds between 1990 and 2008 varies between 25 per cent and 35 per cent, a very low figure by international standards. However, the good news is that this proportion has been increasing steadily since 1999, a fact that cannot be explained by an increase in population, as population growth has remained essentially flat over this period.

Quality

Given the chronic underperformance of the South African system in comparison with many of our poorer neighbours, the highest priority should be given to improving educational quality. The quality of school outcomes depends essentially on learners' ability to analyse, describe and reason in natural and mathematical languages, in verbal and written forms. From this perspective, much obviously stands on how well the learner can speak, read and write in the language used as

medium of instruction. On this issue, the majority of South African learners suffer their greatest educational disadvantage, having to learn all their subjects in English, which for them is a second or even third language. It follows that one of the most important mechanisms for improving the quality of schooling for the greatest number would be to raise the standard of the language curricula and to improve the teaching and learning of all languages, especially the language of instruction. In this regard, the provisions in the new curriculum to be implemented in Grades 1–3 in 2012, which give greater weight to the learning of English as a subject from the very first year of schooling, are to be welcomed. At the high-school level, the fact that those who do not speak English as a home language are schooled in what is known as English First Additional Language (EFAL) is a major disadvantage. EFAL is pitched in a lower academic register than English Home Language (EHL) and, therefore, EFAL learners do not acquire as easily the linguistic resources needed to sustain sophisticated arguments in subjects such as history, biology and chemistry. Perhaps we should strive to move more schools and greater numbers of children onto the EHL curriculum and set the ratio of EHL to EFAL passes as one indicator of matric quality. Given the emotional nature of the language debate, this is likely to be a controversial proposal but, if we are serious about improving quality, one that the country needs to face.

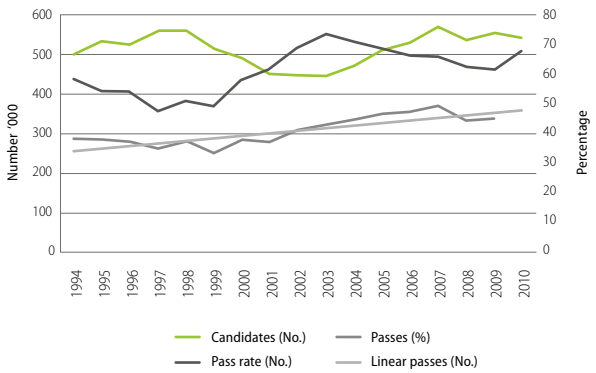
Another indicator of quality is generally taken to be the number of students qualifying to register for a bachelor's degree at university, the highest grade of NSC pass. The number of candidates obtaining a bachelor's pass has shown a marked increase in the last three years, rising from 15 per cent of the cohort in 2007 to over 23 per cent in 2010 (see Table 3.2.2).

However, universities have expressed concern over the quality of bachelor-level passes since the introduction of the new NSC curriculum in 2008. These concerns are supported by the fact that there has been a significant fall-off in numbers taking the 'difficult' subjects of mathematics, science and accounting in the last two years (see Table 3.2.3).

Since all students are required to take either mathematics or mathematics literacy, an important quality indicator for the system would be the ratio of mathematics to mathematics literacy passes. Nearly 36 000 fewer candidates registered to write mathematics in 2010 compared with 2008, and nearly 9 000 fewer passed. Over the last three years, the proportion of students taking mathematics has declined from 56 per cent of the cohort to 49 per cent (see Table 3.2.4). This indicates that principals are directing students away from mathematics towards mathematics literacy, a practice that narrows student options for further study. This is a trick for making it easier to pass and, thereby, to increase the pass rate, but it is a cynical step that disadvantages both the student and the country.

It seems that while the numbers of students qualifying to enter university are increasing, the quality of these passes is declining, certainly in terms of numbers of candidates for

Figure 3.2.1: Enrolment, passes and pass rate, Senior Certificate, 1994–2010



Source: DBE (2011a)

Table 3.2.1: Survival rates, Grades 10–12, 2008–2011

Year	Enrolment			Fall-off Grade 10–12	Percentage lost	Percentage survival
	Grade 10	Grade 11	Grade 12			
2008	1 076 527	902 752	595 216			
2009	1 017 341	881 661	602 278			
2010	1 039 762	841 815	579 384	497 143	46	54
2011	1 094 189	847 738	530 000	487 341	48	52

Source: Constructed from DBE (2010), DBE (2011a) and DBE (2011c)

Note: These figures do not take account of the many students who spend more than one year in any grade, and, therefore, give only a crude idea of survival rates.

Table 3.2.2: Bachelor-level NSC passes, 2003–2010

Year	Bachelor's pass	Bachelor's pass (%)
2003	82 010	18.6
2004	85 117	18.2
2005	86 531	17.0
2006	85 830	16.2
2007	85 454	15.1
2008	107 274	20.1
2009	109 697	19.9
2010	126 371	23.5

Source: DBE (2011a)

courses in mathematics, engineering, basic science, commerce and economics. This does not auger well for the government's plan to increase university enrolment sharply in the next five years. Not only should we be tracking numbers taking and passing mathematics in the NSC as a key systemic indicator, but we should also begin to measure the number of candidates who write the third mathematics paper, which deals with the tougher aspects of the subject and which is presently optional. Here, the universities should take the lead: for example, faculties of mathematics, statistics and engineering could set Paper 3 first as a 'recommendation for entry', and later as a requirement. In parallel, the DBE should measure and annually report on the proportion of students taking Paper 3.

Equity

An analysis of the examination results by race shows that, while Africans constitute nearly 83 per cent of NSC candidates, their low pass rate ensures that they make up only 77 per cent of passes. Furthermore, while two out of every three white children qualify for bachelor's entry, only one in five African children does. Of course, race remains strongly overlain by poverty, and the underlying problem of the figures shown in Table 3.2.5 is that it is poor children who continue to receive inferior schooling.

The same patterns are apparent in enrolments and passes in mathematics (Table 3.2.6). While the proportion of African candidates taking mathematics is surpassed only by Indian candidates, the pass rate in mathematics for Africans is less than half of that for Indians. Again, the underlying problem is poverty and the poor quality of schooling offered to children from poor homes.

The country does a lot better with respect to gender equity, a fact that places us well in advance of all developing countries on this indicator. Nevertheless, there remains room for improvement in increasing female participation and success in mathematics and science. Girl students are more numerous than boys at the top end of high school, because boys fail more frequently. However, although the participation rates of boys and girls in mathematics are comparable, female candidates do not perform as well as their male counterparts (see Table 3.2.7). While 50 per cent of male candidates passed mathematics with an aggregate of 30 per cent or more in 2009, this was the case for only about 42 per cent of females. Similarly, 33 per cent of boys passed at the 40 per cent mark, while only 26 per cent of girls did so.

Table 3.2.3: Candidates taking mathematics, physical science and accountancy, 2009–2010

Subject	Candidates		Difference	Percentage decrease
	2009	2010		
Mathematics	290 630	263 034	-27 596	9.5
Physical science	221 103	205 364	-15 739	7.1
Accounting	174 420	160 991	-13 429	7.7
Total	552 073	537 543	-14 530	2.6

Source: Reply to parliamentary question by Minister of Education, issued by Parliament, 11 May 2011

Table 3.2.4: Students taking mathematics in the NSC, 2008–2010

Year	Total NSC candidates	Mathematics candidates	Mathematics as percentage of total
2008	533 561	298 821	56.0
2009	552 073	290 407	52.6
2010	537 543	263 034	48.9

Source: DBE (2011a)

Table 3.2.5: NSC entry and passes by race

Race	Candidates as percentage of total	Pass rate	Bachelor's pass rate
African	82.7	63.2	18.3
Coloured	7.1	78.4	24.2
Indian	2.6	100.0	57.6
White	7.6	100.0	67.0

Source: DBE (2011a)

One of the most important mechanisms for improving the quality of schooling for the greatest number would be to raise the standard of the language curricula and to improve the teaching and learning of all languages, especially the language of instruction.

Conclusion

The progress of our school system towards providing quality education for all must be measured against a balanced set of indicators. Unfortunately, an exclusive focus on the pass rate provides perverse incentives for officials, principals and teachers to withhold opportunity by failing students in Grade 11 or insisting that they register as part-time candidates, and to compromise quality by moving them onto an easier subject set. We need to set ourselves more sophisticated indicators, in order to incentivise all actors in the system to improve the quality of teaching and learning, rather than to look for ways to play the system, at the expense of individual students and the country as a whole.

Opportunity should be measured by the proportion of 18-year-olds who gain a level-4 qualification. This need not necessarily be the NSC; as the country improves its FET college system and expands enrolment in that sector, the National Certificate (Vocational), which is equivalent to the matric obtained in schools, should grow and add to the proportion of young people with a level-4 qualification.

On the issue of quality, simply measuring the number of students who qualify to enter university can lead to a devaluation of this metric. A far more appropriate measure of quality is the proportion of matriculants with mathematics. More controversially, I would suggest that the proportion who take English at the Home Language level will serve as an even more important indicator of the standard of the NSC.

Regarding equity, we should move increasingly to tracking the performance of poor children in the system, the overwhelming majority of whom attend schools formerly reserved for Africans. As the country slowly deracialises its school system, poverty must replace race as the standard against which equity is measured.

Finally, the pass rate is an effective measure of efficiency, but only once indicators of opportunity, quality and equity have been computed.

Notes

1. This paper draws heavily on DBE (2011a) *Macro-indicator trends in schooling: Summary report 2011*.

Table 3.2.6: NSC entry and passes in mathematics by race

Race	Mathematics candidates as percentage of total candidates	Passed ≥ 30% (percentage)	Passed ≥ 40% (percentage)
African	50.3	41.0	24.0
Coloured	27.9	62.5	42.0
Indian	58.8	86.5	73.7
White	48.4	95.1	85.9

Source: DBE (2011a)

Table 3.2.7: Mathematics participation and success rates by gender, 2009

Gender	Mathematics participation (percentage)	Passed ≥ 30% (percentage)	Passed ≥ 40% (percentage)
Female	48.8	42.4	26.3
Male	49.1	50.2	33.0

Source: DBE (2011a)