Schooling in South Africa: How low-quality education becomes a poverty trap[i]

Nic Spaull (Research on Socio-Economic Policy, Stellenbosch University)

The strong legacy of apartheid and the consequent correlation between education and wealth have meant that, generally speaking, poorer learners in South Africa perform worse academically. Although racial segregation has been abolished for 20 years, schools which served predominantly White learners under apartheid remain functional (although now racially mixed), while the vast majority of those which served Black learners remain dysfunctional and unable to impart the necessary numeracy and literacy skills to learners.

The poor quality of education that learners receive helps drive an intergenerational cycle of poverty where children inherit the social standing of their parents or caregivers, irrespective of their own abilities or effort. Recent assessments show that over the past decade there has been some progress at the grade 9 level, yet performance levels remain extraordinarily low.

This essay provides an overview of educational outcomes in South Africa and discusses school drop-out rates and learning deficits in mathematics. Using this information, it shows the links between the education system and the labour market and illustrates how low-quality education becomes a poverty trap for the majority of learners in South Africa.

The essay addresses the following questions:

- What is the current level of learner achievement in South Africa?
- When do inequalities in learning outcomes begin?
- How many learners drop out of school?
- Why do learners drop out?
- What are the links between education and the labour market?
- What new policy options might address this situation?

What is the current level of learner achievement in South Africa?

Quality education can be defined as the acquisition of the knowledge, skills and values that society deems valuable – usually articulated in the curriculum. While it is difficult to get reliable information on whether learners are acquiring appropriate values at school, there is considerable information on the extent to which they are acquiring the knowledge and skills expressed in the curriculum.

South Africa participates in a number of cross-national assessments of educational achievement, which makes it possible to compare the level of learning and knowledge of learners in South Africa with those from students in other countries. These assessments include PIRLS, SACMEQ and TIMSS.[ii] Although one might be tempted to use either the matric results (grade 12) or the Annual National Assessment (ANA) results (grades 1 – 9) to determine what learners in South Africa know and can do, it is inadvisable. Firstly, the matric results only reflect the performance of half the learners who started schooling 12 years earlier because 50% of learners drop out before reaching matric (primarily in grades 10 and 11).[1] Secondly, the ANAs are still in their infancy. The difficulty levels of these tests differ between years and across grades, yielding different scores that do not necessarily have anything to do with improvements or deteriorations in learner performance.[2] This is in stark contrast to the international assessments that are developed by psychometric experts across the world and are comparable over time.

The latest available SACMEQ[3] data of 2007 highlighted huge geographic inequalities in the country: 41% of rural grade 6 learners were functionally illiterate compared to only 13% of urban learners in the same grade. Furthermore, local grade 6 learners performed worse than learners in many poorer African countries like Kenya and Tanzania, even after accounting for non-enrolment and higher drop-out in those countries.[4] The pre-PIRLS study of 2011 showed that large linguistic inequalities exist: of those children whose language of learning and teaching was Xitsonga, Tshivenda or Sepedi, one in two (50%) could not read by the end of grade 4 compared to one in 10 (11%) English and Afrikaans children.[5] Learners who cannot read fluently by the end of grade 4 cannot engage with the rest of the curriculum in meaningful ways. This is primarily because in grades 1 to 3 the curriculum focuses on "learning to read", whereas from grades 4 onwards it focuses on "reading to learn". Therefore these children fall further and further behind as they are promoted to the next grade in spite of severe learning backlogs.

If one looks specifically at youth aged 15 and above then the only cross-national assessment in which South Africa takes part is TIMSS, which tests mathematics and science at the grade 8/9 level. Given that South Africa participated in the 1995, 1999, 2003 and 2011 TIMSS studies,[6] these datasets allow the most extensive comparison of South Africa's performance since the country's transition to democracy. The TIMSS studies showed no

i The title of this chapter is similar to that of an earlier report by van der Berg et al (2011) – see no. 12 in the references. Some of the findings of that report have been included here.

ii PIRLS stands for the Progress in International Reading and Literacy Study, SACMEQ stands for the Southern and Eastern African Consortium for Monitoring Educational Quality, and TIMSS stands for the Trends in Mathematics and Science Study.

improvement in grade 8 mathematics or science achievement between 1995, 1999 and 2003. Subsequently, it was decided that the international grade 8 tests were too difficult for South Africa's grade 8s; thus, in 2003, both grade 8 and grade 9 learners wrote the grade 8 test, and in 2011 only grade 9 learners wrote the grade 8 test.

The performance of grade 9 learners improved by approximately one-and-a-half grade levels of learning between 2003 and 2011.[7] While this offers hope, it is difficult to celebrate given that we were starting from an extremely low base. For example, in 2011, one-third (32%) of South Africa's learners performed worse than or no better than random guessing on the multiple-choice items. Furthermore, three-quarters (76%) of grade 9 learners in 2011 still had not acquired a basic understanding of whole numbers, decimals, operations or basic graphs. In TIMSS 2003, 90% of learners had failed to acquire these skills.

Even after these improvements South Africa still performed the weakest of all participating countries, with the average grade 9 learner performing between two and three grade levels lower than the average grade 8 learner from other middle-income countries.[8]

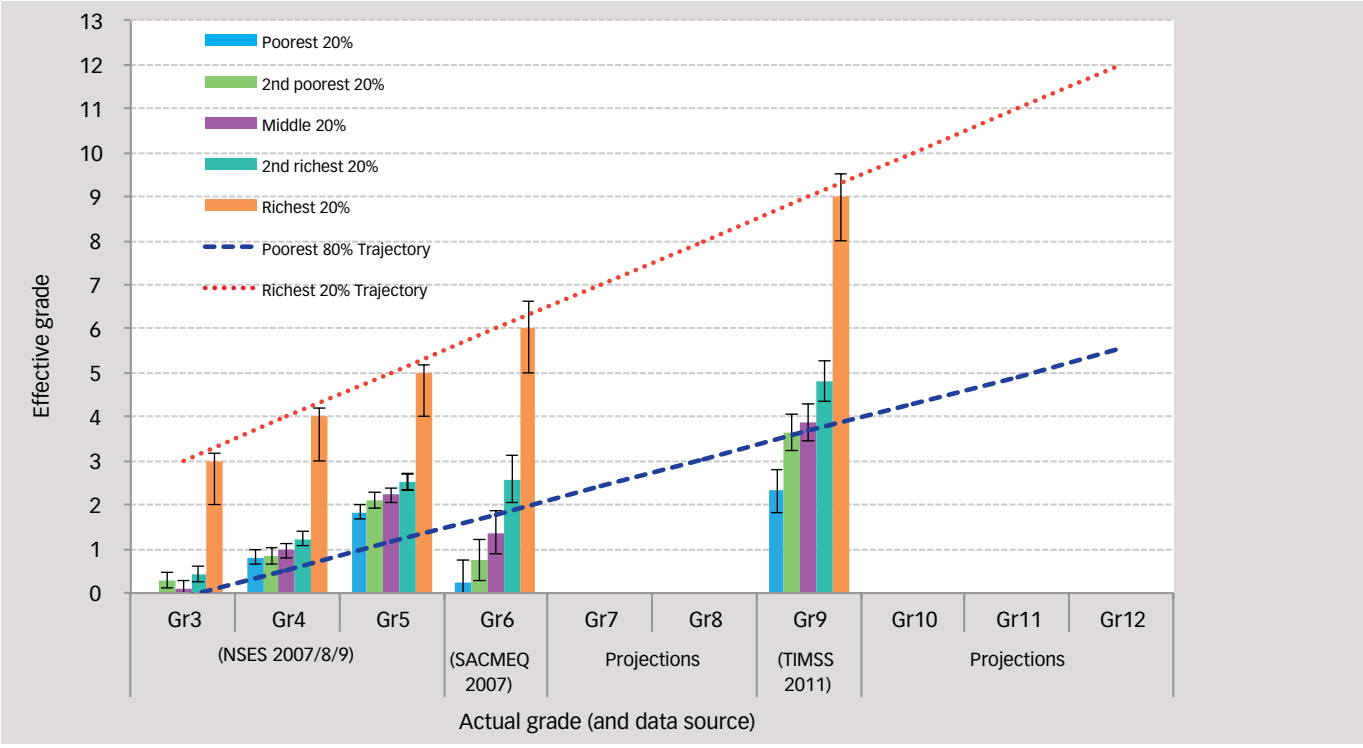
When do inequalities in learning outcomes begin?

A number of studies in South Africa have shown that there are large inequalities in educational inputs, and especially in educational outcomes.[9] The General Household Survey of 2011 showed that there are large racial inequalities in matric attainment: only 44% of Black and Coloured youth aged 23 – 24 had attained matric compared to 83% of Indian youth and 88% of White youth. However these inequalities in educational outcomes between wealthy learners and poorer learners are already large and firmly entrenched by the age of eight. Given that learning is a cumulative process where current learning builds on previous learning (particularly in subjects like mathematics), children who do not master basic concepts in the first few years of primary schooling are at a perpetual disadvantage. The authors of *Getting Schools Working* summarise the debilitating effects of these cumulative learning deficits:

> *At the end of the foundation phase [grades 1 – 3], learners have only a rudimentary grasp of the principles of reading and writing … it is very hard for learners to make up this cumulative deficit in later years … particularly in those subjects that … [have] vertical demarcation requirements [especially mathematics and science], the sequence, pacing, progression and coverage requirements of the high school curriculum make it virtually impossible for learners who have been disadvantaged by their early schooling to "catch up" later sufficiently to do themselves justice at the high school exit level.*[10]

More recent analysis has used multiple nationally-representative surveys at various grades to determine when children fall behind and how this changes over time.[11] Using local and international assessments of mathematics achievement and converting test-

Figure 7: South African mathematics learning trajectories by national socio-economic quintiles



Sources: National School Effectiveness Study (NSES) 2007/2008/2009 for grades 3, 4 and 5;SACMEQ 2007 for grade 6; TIMSS 2011 for grade 9, including 95% confidence interval.
Notes: The confidence intervals shown as a vertical line at the top of each bar represent the range into which the true value may fall. For more information on confidence intervals, see p. 100.
The NSES was nationally representative except for Gauteng, which was excluded from the sample because other testing was being conducted in that province at the same time. Given that Gauteng is one of the more urban and wealthier provinces this exclusion is likely to alter the results. If one compares SACMEQ and includes and excludes Gauteng one sees that both the average score and the standard deviation drop.[13]

score gaps into standard deviations and then into grade-levels of learning, it was possible to estimate empirically and illustrate graphically the learning trajectories of wealthy and poor learners in South Africa. The key finding emerging from this research is that, by grade 3, children in the poorest 60% of schools are already three years' worth of learning behind their wealthier peers and that this gap grows as they progress through school to the extent that, by grade 9, they are five years' worth of learning behind their wealthier peers (see figure 7 on p. 35).

Previous studies have shown that the low quality of education offered to the poor eventually becomes a poverty trap.[12] Thus one can say that poor children in South Africa, who make up the majority, are starting behind and staying behind. This casts doubt on the ability of the South African schooling system to impart the knowledge, skills and values that learners need to become full members of society and to promote social mobility. Given the strong correlations between race, geography and poverty, this means that Black children in rural areas are especially disadvantaged and face few – if any – prospects for upward social mobility.

Given that learners are falling further and further behind the curriculum, it is perhaps unsurprising that many learners drop out in high school. As learners approach the external matric examination it is no longer possible to be pushed into higher grades irrespective of the knowledge and skills they have acquired. This leads to widespread drop-out in grades 10 and 11. For an overview of school attendance by age, see p. 120.

How many learners drop out of school?

There are roughly one million children in each grade up to grade 9; so, for example, there are one million children in grade 1, one million children in grade 2 and so on. However, there are only half a million learners in matric (grade 12), the rest having dropped out mainly in grades 10 and 11. In 2014, only 532,860 learners wrote matric (and 403,874 passed) even though there were 1,085,570 learners[14] in the cohort that started grade 1 twelve years earlier.[iii] This is one of the reasons why many South African commentators do not use the matric pass rate when discussing if the state of education is improving or deteriorating over time – because the matric class refers to only the "best" 50% of learners who remain in the schooling system. More and more policy-makers are now also beginning to recognise that the pass rate seen in isolation is problematic and, in many instances, misleading. To illustrate: of 100 learners who started school in 2003, for example, only 49 made it to matric in 2014; 37 passed; and 14 qualified to go to university. (Importantly, not all of those who qualify to go to university are accepted or enrol, and only half of those that initially enrol will eventually graduate[15].) The matric pass rate is calculated by dividing the number of learners that pass matric (37 of the 100) by those that wrote matric (49 of the 100), yielding 76% in 2014. However, a more appropriate measure would be to calculate what proportion of a cohort that started school 12 years ago, passed matric – which would be about 36% in 2014, down from 40% in 2013.

In South Africa the proportion of a cohort that will graduate from upper-secondary school (grade 12) fluctuates at around 40%. This figure is low by international standards. For example, there are much higher figures in Turkey (53%), Brazil (67%) and Chile (72%). This also explains why South Africa has comparatively few youth who reach and complete post-school education. Fewer than 10% of youths in South Africa attain 15 years of education (for example, completion of a three-year degree), compared with at least 15% in Columbia and Peru and 24% in the Philippines and Egypt.[16]

Given that only 40% of any given cohort of learners go on to pass matric, we can say that 60% of South Africa's youth have no educational qualifications. The Technical and Vocational Education and Training (TVET) system is meant to provide these young people with opportunities to continue their schooling. In many countries, youth who do not complete school often have the option of studying at vocational colleges and learning practical skills to become a plumber, an electrician or a boiler-maker, for example. However, very few young people in South Africa access this kind of education and training after school, as explained in the essay on p 42.

Why do learners drop out?

It seems logical to ask not only how many learners drop out, but also *why* they drop out. Perhaps the most comprehensive analysis of drop-out is the research by Martin Gustafsson,[17] which explains the reasons why South African learners drop out, and in which grades they do so.

Household surveys show that when youth were asked why they dropped out of secondary school, the four most prominent reasons were: (1) lack of financing; (2) wanting to look for a job; (3) failing grades; and (4) pregnancy (for female learners).[iv] Gustafsson highlights that the low quality of primary and lower-secondary education (grades 1 – 9) is also a clear cause of drop-out although this is perhaps not immediately obvious to youth when answering these survey questions. More recent work[18] using the National Income Dynamics Study (NIDS) found that "not keeping pace at school is a fundamental determinant of who drops out"; and that "falling behind at school is strongly correlated with socioeconomic status and school quality in South Africa". Grade repetition is not sufficient to address the problem, and most schools appear to be poorly equipped to help learners who have fallen behind to "negotiate a pathway to school completion."

It is imperative, therefore, to find ways to strengthen the quality of education offered to learners, and to further understand how their socio-economic context may make it difficult for them to continue their education. In addition, it is important to focus on teenage pregnancy as a reason underlying girls' drop-out.

iii Grade 2 figures have been used as a proxy for the true size of the starting grade 1 cohort because there is excess grade repetition in grade 1, leading to an overestimate of cohort size if one uses grade 1 enrolments.

iv These reasons for school drop-out differ slightly from those listed in the Children Count section on p. 120 which focuses on a smaller cohort of children aged 7 – 17 who are not attending school. The two main research articles addressing this topic are Gustafsson (2011) (see no. 1) and Branson et al (2014) (see no. 18) in references.

Pregnancy and drop-out

In 2010, there were 480,157 female learners enrolled in grade 8, but by matric 2014 there were only 289,795 female learners. So 190,362 girls failed, dropped out or were held back between 2010 and 2014.[19] NIDS shows that teen pregnancy and childbearing account for 33% of drop-out amongst female learners. This suggests that 62,819 female learners dropped out of school between 2010 and 2014 because they fell pregnant and gave birth, a figure in agreement with (but slightly lower than) estimates of the Department of Basic Education (DBE).[20]

While teen pregnancy only accounts for a third of drop-out amongst female learners, the fact that it is so well-defined and measurable means that it might be highly actionable from a policy perspective. There need to be better advocacy campaigns directed at youth – about sex, the risks of unprotected sex, contraception, HIV, teenage pregnancy and pregnant learners' constitutional right to education.

As school completion is critical for both the young mother and her child's long-term well-being, there also needs to be tighter enforcement of policies that prevent unfair discrimination against pregnant girls (illustrated in case 2). Current (2007) measures for the prevention and management of learner pregnancies are ambiguous, recommending that mothers stay out of school for up to two years after the birth. DBE is in the process of drafting a new policy that will address discrimination and emphasise learners' rights to remain in school during and after pregnancy. This is especially important as studies have indicated that young mothers indeed return to school: data from the Cape Area Panel Study (2002 – 2006) and from the African Centre Demographic Surveillance Area (2001 – 2009) indicate that about one in four (22%) teenage mothers in urban areas[21] and one in two (58%) teenage mothers in rural areas returned to school after the birth.[22] This indicates the willingness of young women to complete their education and provides an opportunity for interventions to suport them.

Case 2: Teenage pregnancy, exclusion and the law

Despite being against policy, excluding pregnant learners from school is widely practiced in South Africa, both formally and informally. In 2008 and 2009 school governing bodies at Welkom High School and Harmony High School in the Free State adopted pregnancy policies for their respective schools that allowed for the automatic exclusion of pregnant learners. In July 2013 the Constitutional Court ruled that this was unconstitutional and that pregnancy policies which exclude pregnant girls from attending class are *prima facie* a violation of pregnant learners' rights to equality, basic education, human dignity and privacy.[24]

What are the links between education and the labour market?

There is now a widespread consensus in local and international literature that education – and specifically the quality of education – plays a central role in determining which individuals get jobs and how much they earn in the labour market.[23] Expanding access to quality education is also seen as a major strategy for poverty alleviation and including previously marginalised groups:

> *Poverty reduction is seen as unlikely unless knowledge, skill and capabilities are extended to those who are marginalised from value-added economic activity by illiteracy, lack of numeracy, and higher level reasoning that links causes and effects rationally. In most societies, and especially those that are developing rapidly, households and individuals value participation in education and invest substantially in pursuing the benefits it can confer. The rich have few doubts that the investments pay off; the poor generally share the belief and recognise that increasingly mobility out of poverty is education-related, albeit that their aspirations and expectations are less frequently realised.*[25]

Local research confirms these international findings and shows that the quality, duration and type of education an individual receives are directly related to their labour-market prospects.[26] Despite 20 years of democratic rule, most Black children continue to receive a low-quality education, which condemns them to the underclass of South African society where poverty and unemployment are the norm. This substandard education does not develop their capabilities or expand their economic opportunities, but instead denies them dignified employment and undermines their own sense of self-worth.

In short, poor school performance in South Africa reinforces social inequality and leads to a situation where children inherit the social position of their parents, irrespective of their motivation or ability. Low-quality education becomes a poverty trap[27] from which it is almost impossible to escape. What is all the more alarming is that this situation applies to the vast majority of learners.

Figure 8 on the next page visually summarises some of the local research and shows the clear links between an unequal education system and an unequal labour market. On the right of the diagram one can see two sets of cogs – each showing the interlocking relationship between socio-economic status (parental occupation, wealth and education) and the type of early childhood development, primary and secondary schooling received. The majority of learners (roughly 75 – 80%) come from poor households and do not have any exposure to quality pre-school education and therefore enter school unprepared to learn. They attend low-quality primary schools and low-quality secondary schools with high drop-out rates. These schools are characterised by wasted learning time, incomplete coverage of the curriculum,[28] weak subject and content knowledge among teachers,[29] low cognitive demands placed on learners and exceedingly poor educational outcomes.

This picture is in stark contrast to the second set of cogs in the upper part of the diagram. These show the situation for the minority of learners (roughly 20 – 25%) from higher socio-economic backgrounds. Most of these children attend at least one year of quality pre-school education and enter grade 1 mostly ready

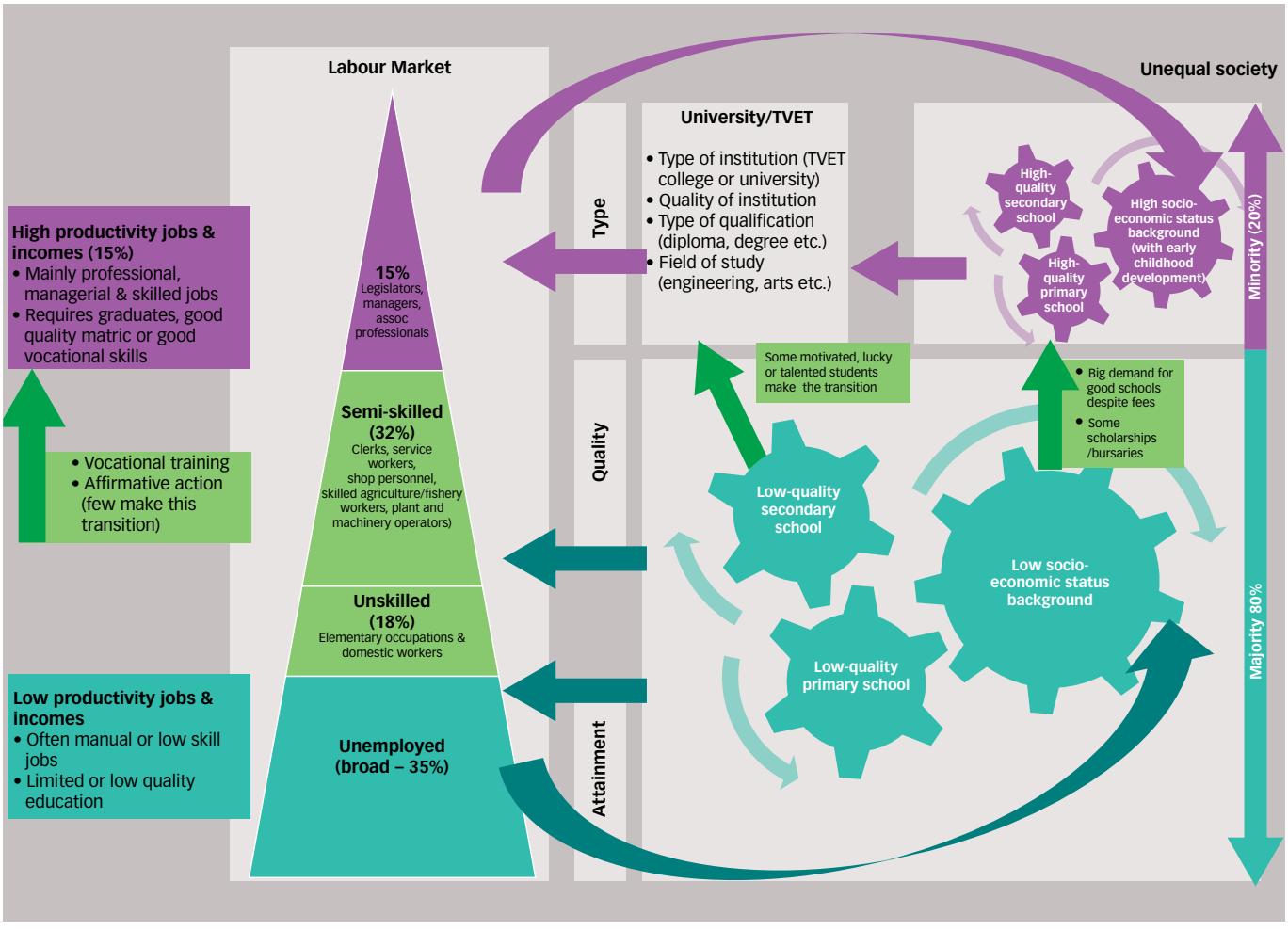
to learn. They attend functional primary and secondary schools where most children attain basic levels of performance, although still below their international peers.[30] Most of these learners go on to attend some form of post-school education or training and are employed in the upper part of the labour market, represented by the top triangle on the left of the diagram. The labour market (large triangle) is divided into four distinct categories, which have been calculated using the Quarterly Labour Force Survey[31] (QLFS) of 2014 and show the state of the South African labour market:

1. More than a third (35%) of the labour force was unemployed, using the broad definition of unemployment (i.e. including those who would accept a job but have stopped looking because they are discouraged).
2. About one in five (18%) people were employed in unskilled occupations (such as elementary occupations and domestic workers).
3. A third (32%) were employed in semi-skilled jobs (such as clerks, service workers, shop personnel, skilled agricultural and fishery workers, plant and machinery operators, and so on).
4. Only 15% of those in the labour market were in highly skilled jobs (legislators, senior officials and managers, professionals, technicians and associated professionals).

The main point of figure 8 is to show how an unequal education system feeds into and perpetuates an unequal labour market. Those children who attend dysfunctional schools and do not attain any higher qualifications are the first ones to fill the ranks of the unemployed and those in low-status jobs. This is in stark contrast with the situation of wealthy children who attend functional (usually fee-charging) schools, attain higher qualifications and occupy the upper end of the labour market.

The tragedy is that these two systems continue to reproduce themselves despite the abolition of apartheid. There are still two very different and clearly differentiable education systems that are attended by the rich and the poor respectively. Although the top part of the education system and the labour market are no longer racially homogenous (White), they are largely split along class lines. Those parents who can afford to pay school fees and send their children to well-functioning government or independent schools ensure that their children can get access to the top part of the labour market. Those parents who cannot afford school fees are excluded from these schools, often in informal ways. As it currently stands the dualistic South African education system is not an engine of social mobility but rather one of the key mechanisms through which an unequal society is replicating itself.

Figure 8: The links between society, the education system and the labour market in South Africa



What new policy and programmatic options might address this situation?

There are a number of possible policy options that the DBE could explore to alleviate some of the problems identified in this essay:

- **Implement a national reading campaign.** Unless learners acquire basic numeracy and literacy skills in the foundation phase, they will battle to engage with the curriculum in higher grades and will fall further and further behind. A national reading campaign with the slogan "Every child must read fluently in the language of learning and teaching of the school (LOLT) by the end of grade 3 (age 9)" should be well advertised and articulated and must involve everyone from parents to the President. Individual reading should be assessed and monitored. Books should be made available to all learners and reading must be portrayed as an important and pleasurable activity. Similar campaigns have showed positive results in other countries, including a national goal of ensuring all children read by age eight in Brazil and the daily "literacy hour" in the United Kingdom.[32]
- **Increase teacher content knowledge and teaching skill.** No education system can go beyond the competencies and quality of its teachers. Research has consistently shown that South Africa's teachers lack the basic content knowledge and pedagogical skill to teach the subjects that they are teaching. The DBE needs to experiment with (and evaluate) different alternatives for teacher training, which is particularly important for mathematics and English – both areas where there are major deficiencies in existing teacher practice. While we ultimately need to identify promising teacher development opportunities in the medium to long term, there are short-term options available that show some promise, including highly-specified, scripted lesson plans and eye-testing to help identify additional barriers to learning among children (as illustrated in case 4 on the next page). These interventions should, however, be piloted and evaluated before being rolled out at scale.
- **Conduct a countrywide audit of district officials and curriculum advisors.** One of the major sources of professional help to teachers across the country are district-level curriculum advisors (subject specialists), yet many of these advisors have been appointed on grounds other than merit or subject expertise.[33] All curriculum advisors should be required to complete a subject-specific test and demonstrate their capacity to help teachers in their subject. The qualifications of these curriculum advisors should also be reviewed or audited since some curriculum advisors have only a matric qualification.[34]
- **Find ways to remediate the learning "backlog" that has accumulated by the time learners reach high school.** Comprehensive, one-on-one interventions such as IkamvaYouth (see the case 3 below) have been shown to have the capacity to remediate some of the learning backlog pupils have accumulated by the time they enter the higher grades of secondary school. It is important to gather further evidence on the impact of this and similar interventions and to consider ways in which they could be scaled up.
- **Reduce drop-out caused by teenage pregnancy and childbearing.** This can be achieved by decreasing the number of unwanted teenage pregnancies, and by finding ways of accommodating and re-integrating new mothers. The first goal could be achieved by widespread campaigns on teenage pregnancy and contraception, and perhaps most importantly, by making contraception widely available to teenage girls (both in schools and clinics). Contraception and other youth-oriented health care services should be discreet, friendly and helpful. The second goal can be achieved by schools' pro-active support for young mothers to return to school after having given birth.

Case 3: IkamvaYouth – Peer-to-peer empowerment

IkamvaYouth was established in 2003 and enables disadvantaged South African youth to pull themselves and each other out of poverty through education. The innovation lies in the model: youth-driven, low cost and high impact programming which achieves academic results and post-school placements in contexts where such achievements are seldom attained. Volunteer tutors (many of whom were previous learners) deliver effective tutoring programmes through an innovative pedagogical approach. Learners drive the agenda themselves, by bringing questions and problems to small groups (IkamvaYouth aims for a tutor to learner ratio of 1:5). Tutors then facilitate peer-to-peer learning, ensuring learners explain concepts to each other, and that shy learners speak up. Tutors constantly check for understanding, and provide direct feedback on written work as learners work through examples. They often need to go back a few grade levels to ensure that fundamentals are understood.

The IkamvaYouth learners' matric pass rate has been between 80 – 100% since its beginnings in 2003. Over 60% of the learners have accessed tertiary education, and return to pay forward the support they received by becoming volunteer tutors themselves. Approximately 5% of township learners have a tertiary qualification, whereas a survey of IkamvaYouth alumni found that "Ikamvanites" are five times more likely than the average Black South African to hold a tertiary-level qualification. IkamvaYouth has replicated its successful model in 10 townships throughout South Africa and is currently working with over 1,400 learners.

For more information, see www.ikamvayouth.org.

Case 4: School X – The state of literacy teaching and learning

The school is situated in a village in Mpumulanga. Mrs P, founder principal since 1988, has a deliberate, understated approach to leadership. The language of learning and teaching (LOLT) in the foundation phase is English, even though the home language of most teachers and learners is siSwati, a situation which it shares with three other poor schools visited by the National Education Evaluation and Development Unit (NEEDU) in the district.

Since discovering some 10 years ago, through referral to the local clinic, that one of the learners at School X had very poor vision, Mrs P has instituted programmes to cater for a variety of learning and physical disabilities. Of 619 learners at the school, 49 are differently abled in some or other way. The largest programme is a separate class for eight hearing-impaired children, who are taught by a tutor employed for the purpose and paid by the province. A4-size posters at key points throughout the school provide a basic sign-language vocabulary, enabling communication between participants in this programme and others in the school.

Reading levels of six of the best grade 2 pupils at the school are above those in the large majority of schools across the country … The three best learners in one class were reading at an average of 100 words per minute and in the other at 75, both well above the median score for all 133 schools in the sample … On a simple comprehension test, however, the results were less impressive, at a mean of 3.2 responses correct out of 5.

A reading lesson was observed in each of two grade 2 classes at the school. Both took the form of a shared reading format using Big Books. Classes contained significantly more books than were seen in most schools visited in 2012 (Kagiso readers, Bridge to English, Benny and Betty and a collection of Big Books in the library). In both lessons, discussion on the illustrations and other features of the book took far more time than was given to learners' engagement with text. Nevertheless, it seemed that at least half of the learners are able to read these simple texts, although there was much chorusing and thus difficult to say how many were actually reading.

It seemed that both teachers were able to take their learners to a basic level of literacy, but not able to launch them into independent reading and levels of textual analysis beyond simple recall. Too much time was spent on repetitive chorusing. In other words, there appeared to be an emphasis on reading as collectively decoding symbols rather than on reading for individual understanding.

The school has a large room available as a library, which contains a reasonable store of books. The library had not been open to learners since the librarian left earlier in the year, although teachers had access. The most interesting acquisition was an extensive set of Ladybird readers consisting of dozens of titles and around 300 volumes in total, none of which had been opened previously, as shown by cracking spines when evaluators did so.

Source: National Education Evaluation & Development Unit (2013) *National Report 2012: The State of Literacy Teaching and Learning in the Foundation Phase.* Pretoria: NEEDU, DBE. P. 23.

References

1 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 No. 09/11.
2 Spaull N (2014) Assessment results don't add up. *Mail & Guardian,* 12 December 2014.
3 SACMEQ (2010) *The Southern African Consortium for Monitoring Educational Quality (SACMEQ).* Viewed 22 July 7 2015: www.sacmeq.org.
4 Spaull N & Taylor S (2015) Access to what? Creating a composite measure of educational quantity and educational quality for 11 African countries. *Comparative Education Review,* 59(1): 133-165;
Taylor S & Spaull N (2015) Measuring access to learning over a period of increased access to schooling: The case of Southern and Eastern Africa since 2000. *International Journal of Educational Development,* 41 (March): 47-59.
5 Howie S & van Staden S (2012) *South African Children's Reading Literacy Achievement – PIRLS and pre-PIRLS 2011 Summary of the Key Results.* Media briefing. Pretoria: Centre for Evaluation and Assessment.
6 TIMSS (2011) *Trends in International Mathematics and Science Study. International Evaluation Association (IEA).* Viewed 22 July 2015: http://timss.bc.edu/timss2011/international-database.html.
7 Reddy V, Prinsloo C, Visser M, Arends F, Winnaar L & Rogers S (2012) *Highlights from TIMSS 2011: The South African Perspective.* Pretoria: HSRC.
8 Spaull N (2013) *South Africa's Education Crisis: The Quality of Education in South Africa 1995 – 2011.* Centre for Development and Enterprise.
9 See no. 8 above;
Fleisch B (2008) *Primary Education in Crisis: Why South African Schoolchildren Underachieve in Reading and Mathematics.* Cape Town: Juta & Co.
10 Taylor N, Muller J & Vinjevold (2003) *Getting Schools Working. Research and Systemic Reform in South Africa.* Cape Town: Maskew Miller Longman. P. 129.
11 Spaull N & Kotze J (2015) Starting behind and staying behind in South Africa: The case of insurmountable learning deficits in mathematics. *International Journal of Educational Development,* 41 (March): 12-24.
12 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 & von Fintel D (2011) *Low Quality Education as a Poverty Trap.* Stellenbosch: University of Stellenbosch.
13 Spaull N (2015) Education Quality in South Africa and Sub-Saharan Africa: An Economic Approach. Doctoral Thesis (Economics). Stellenbosch University. P. 39.
14 Department of Basic Education (2003) *Education Statistics at a Glance.* Pretoria: DBE.
15 Council on Higher Education (2013) *A Proposal for Undergraduate Curriculum Reform in South Africa: The Case for a Flexible Curriculum Structure. Report of the Task Team on Undergraduate Curriculum Structure*, Pretoira: CHE.
16 See no. 1 above.
17 See no. 1 above.
18 Branson N, Hofmeyr C & Lam D (2014) Progress through school and the determinants of school dropout in South Africa. *Development Southern Africa*, 31(1): 106-126.
19 Department of Basic Education (2010 – 2014) *Education Management Information Systems (EMIS)*.
20 Panday S, Makiwane M, Ranchod C & Letsoalo T (2009) *Teenage Pregnancy in South Africa – With a Specific Focus on School-going Learners.* Child, Youth, Family and Social Development programme, Human Sciences Research Council. Pretoria: DBE.
21 Ranchhod V, Lam D, Leibbrandt M & Marteleto L (2011). *Estimating the Effect of Adolescent Fertility on Educational Attainment in Cape Town using a Propensity Score Weighted Regression*. Working Paper No. 59. Cape Town: SALDRU, UCT.
22 Ardington C, Menendez A & Mutevedzi T (2011) *Early Childbearing, Human Capital Attainment and Mortality Risk.* Working Paper No. 56. Cape Town: SALDRU, UCT.
23 Hanushek E & Wößmann L (2008) The role of cognitive skills in economic development. *Journal of Economic Literature*, 46: 607-668.
24 Head of Department, Department of Education Free State Province v Welkom High School and others (Equal Education and Centre for Child Law intervening as amici). CCT 103/12[2013] Zacc 25.
25 Lewin KM (2007) *Transitions and Equity. Improving Access, Equity and Transitions in Education: Creating a Research Agenda*. Project report. Falmer, UK: Consortium for Research on Educational Access, Transitions and Equity (CREATE). P. 2.
26 See no. 12 above.
27 See no. 12 above.
28 Taylor N, van der Berg S & Mabogoane T (2013) *What Makes Schools Effective? Report of the National School Effectiveness Study.* Cape Town: Pearson.
29 Venkat H & 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,* 41: 121-130.
30 See no. 8 above.
31 Statistics South Africa (2014) *Quarterly Labour Force Survey.* Viewed 21 July 2015: www.statssa.gov.za/?page_id=737.
32 Machin S & McNally S (2008) The literacy hour. *Journal of Public Economics*, 92(5): 1441-1462.
33 NEEDU (2013) *National NEEDU Report 2013: Teaching and Learning in Rural Primary Schools.* Pretoria: DBE.
34 See no. 33 above.