South Africa:
A Science Lesson

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JOHANNESBURG, South Africa—Xoliswa, 11 years old, was given a science assignment in class. The worksheet, written in English and handed to her on Monday, was due that Friday. The task was to build a model solar system using paper maché, newspaper, paint, wire, polystyrene, and balloons. Xoliswa's mother, who earns a precarious living through child-care and occasional laundry orders, speaks little English and could offer no assistance. Worse yet, Xoliswa had never heard of paper maché or polystyrene. She arrived with a small packet of water balloons at the Learning Center—an after-school institution in the affordable housing apartment block where she lives—and wondered if the Center could help her complete the task at hand.

The total cost was barely 150 rand ($15), and had to be purchased from a specialty arts and crafts shop in a shopping mall in town. By the time she brought the assignment to the Learning Center, it was Wednesday, and there was little time to finish all that needed to be done. The paper maché wouldn't dry in time, and it took the help of nine friends to complete the painting and wire-mounting. There also wasn't enough polystyrene, so the planets had to be mounted on smaller, separate blocks, rather than together on one big block. The project was a bit of a mess, but, by Thursday evening, there was a painted, glued, and mounted model solar system that Xoliswa could take to school on Friday morning. She was one of only four in her class who managed to arrive with any kind of project.

Still, she failed the assignment, receiving 10 of 30 because the individual polystyrene blocks did not create a solar system "effect." Now, science is Xoliswa's least favorite subject.

Xoliswa's situation is far from unique. She is one of 12 million children in South Africa's schools trying her best to succeed, but failing to beat the odds in a system gone horribly awry. Despite the great gains that South Africa has made in the two decades since becoming a democratic state, the South African education system is in profound crisis.

ACROSS AFRICA

Studies indicate that, in contrast to where it should be, South Africa has one of the worst school systems in the world. The nation ranks at the bottom of all middle-income countries in math, science, and literacy. And even within Africa, the country performs worse than poorer nations, such as Zimbabwe, Tanzania, and Swaziland. For most African countries, improving access to education poses classic development challenges—lack of infrastructure or resources, remoteness, and poor administration. But South Africa suffers from a unique problem: a well-developed education bureaucracy that was designed to fail black South African learners and prepare them only for lives of menial labor.

Ghana provides a powerful contrast. Since its independence from Britain in 1957, successive governments have pursued policies that were intended to improve access to education and ensure that schooling was of a high standard and had

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relevance to the population. Ghana's first president, Dr. Kwame Nkrumah, introduced Free Universal Primary Education in 1961, making it one of the first states on the continent to do so. The government made sure that schooling was compulsory, provided free textbooks, introduced effective management by local municipalities, and provided maintenance grants for primary schools. The content of the subjects adhered quite closely to British standards and norms for secondary schooling, with a number of vocational options for those not yet entering secondary school. The system was largely on par with British schools and served as a model of what was possible in education on the continent.

THE TOP 5 PERCENT OF THE NATION'S SIXTH GRADERS KNOW MORE ABOUT MATHEMATICS THAN 20 PERCENT OF THE COUNTRY'S TEACHERS.

Sadly, the military overthrow of Nkrumah in 1966 led to ongoing instability in the country, which affected all social services. The regime change led to a decline in the quality of the public school system, causing an educational crisis in the 1980s. Since then, a wave of reforms re-introduced free universal primary education as a policy, under a system called FCUBE: Free Compulsory Universal Basic Education. FCUBE also prioritized improving access as well as teacher and curriculum quality. Despite such efforts, though, many Ghanaians consider the current state of their public education system inferior to what prevailed in previous decades.

Nonetheless, the vision initially instilled for quality education in Ghana has ensured that Ghana's educational results are still superior to South Africa's. Ghana's students outperform South African learners on standardized tests to measure levels of math and reading skills. The quality of Ghana's education system even allows its graduates to compete globally. Indeed, the American Embassy in Ghana notes that 3,664 Ghanaians are enrolled in U.S. institutions, with $8 million in financial assistance for study in the United States awarded to Ghanaian students in 2008. The embassy website remarks that Ghana is one of the few countries in Africa whose public school graduates can win admission to the most competitive private universities in the United States. In other African countries, only graduates from elite private or international schools would have such chances.

SOUTH AFRICAN WOES

By the time most South African children complete the first of half their schooling, they are still functionally innumerate and illiterate. And the deficit begins from the day they begin attending school. According to TIMSS (Trends in International Mathematics and Science Study), a 20-year-old international metric, a third of South African school children tested in 2011 performed worse than if they had guessed the multiple choice answers to questions in mathematics. In fact, so wide is the gap that the average South African ninth grader scores two to three grade levels lower than the average eighth grade child from other middle-income countries in mathematics and science. Similar PIRLS (Progress in International Reading Literacy Study) data from 2006 revealed 87 percent of fourth graders and 78 percent of fifth graders in South Africa were scoring below the "Low International Benchmark." Following this study, South Africa opted to use a simpler test due to the poor results from the previous round.

Kathleen Trong, an expert in literacy testing, described implications of this threshold: "Learners who were not able to demonstrate even the basic reading skills of the 'Low International Benchmark' by the fourth grade were considered at serious risk of not learning how to read." There are major long-term consequences to falling behind in the early years. In 2007, McKinsey consultants released a report, pulling together several indicators of successful school systems. Citing research on early deficits in education, they note that in some systems, by age seven, children who score in the top 20 percent on tests of numeracy and literacy are already twice as likely to complete a university degree than children who score in the bottom 20 percent.

All evidence suggests that, even in good systems, students who do not progress quickly during their first years in school stand very little chance of recovering the lost years. Local research suggests why the results are so poor. A recent study by Nicholas Spaull of South Africa's Stellenbosch University analyzed data on the content knowledge of sixth grade teachers in mathematics in disadvantaged schools. Teachers in the nation's worst-performing schools scored an average of 37 percent on the test. He concluded that the top 5 percent of the nation's sixth graders know more about mathematics than 20 percent of the country's teachers. "Teachers cannot teach what they do not know," Spaull concludes. It is the most basic challenge imaginable. But there are other problems as well.

REPORT: FAILURE

Sonwabile hands over his report cards with a sad expression on his face: "I failed math." When he was asked which was the highest unit in the number 589, he replied 9 rather than 500. He had no idea why numbers are sequenced the way they are. He didn't know that 589 is the same as 500 + 80 + 9. Decimals and units had no meaning. This correlates with some of the TIMSS results, which show that three quarters of ninth graders face similar challenges. They have not acquired a basic understanding about whole numbers, decimals, operations, or graphs.

Given this reality, it was hardly surprising that Sonwabile had failed math. There was still a lot of work to be done before he could progress. But then, his face broke out in an enormous smile. "Just kidding, I passed!" This is what his report card actually showed:

SONWABILE NCUBE'S SCORES:		
TERM 1	Math result:	1 (29%)
TERM 2	Math result:	2 (31%)
TERM 3	Math result:	2 (39%)
TERM 4	Math result:	2 (36%)
FINAL MARK		4 (56%) PASS

Sonwabile did not pass math. His average of 34 percent miraculously shot up to 56 percent at the end of the year, going from fail to pass. Pushing children through who have not passed the year is common practice and explains, in part, why so many children only understand a fraction of grade-appropriate content. But there appear to be few other options for a teacher who does not himself understand the curriculum he is expected to teach. Failing his entire class, thereby admitting his own failure, is not a viable option. Simply pass the class onto the next teacher—who will find him or herself in precisely the same position.

By the time Sonwabile reaches the sixth grade, he is unlikely to have any better understanding of concepts that have never been taught to him in the first

place. And if he took the PRILS or TIMSS tests, his results would reflect a boy who, though having been in school for six years, has not come close to mastering the content for his grade.

DESIGNED TO FAIL

The roots of South Africa's educational failures can be found in the nation's apartheid past. "There is no place for [the Bantu] in the European community above the level of certain forms of labor," said Dr. Hendrik Verwoerd, South African Minister for Native Affairs and Prime Minister from 1958-1966, and an architect of apartheid, speaking about his government's education policies. "What is the use of teaching the Bantu child mathematics when it cannot use it in practice? That is quite absurd. Education must train people in accordance with their opportunities in life, according to the sphere in which they live." He was speaking in the 1950s, on the eve of rolling out state administered education for black South Africans—Bantu education. For decades, education for the majority of South Africans was at the mercy of the apartheid state, and ostensibly underpinned by one certainty: non-whites either cannot learn or should not be educated.

EVEN IN THE WORST YEARS OF EDUCATION UNDER APARTHEID, THERE WERE GREAT SCHOOLS AND GREAT TEACHERS WHO SUCCEEDED IN NON-WHITE AREAS.

Still, prior to the roll-out of Bantu education the majority of black South Africans received no schooling. A few independent schools provided 90 percent of education for black school children. These were mostly mission schools built by Catholic, Anglican, or occasionally American churches. Some of these schools, like the prestigious Lovedale College, produced some of the greatest leaders and thinkers of apartheid resistance: Steve Biko (founder of the Black Consciousness Movement), legendary apartheid activist Chris Hani, and former President Thabo Mbeki. But virtually all missionary colleges closed after Bantu education was implemented, as state subsidies to schools outside government control were cut off. These centers of excellence for black learners were largely lost.

Bantu education heralded the first large-scale access to education for black South Africans. Its first iteration—from the 1950s to 1970s—provided a mass, state-administered, centrally controlled education system, and drastically improved access to schooling. It is one reason why South Africa still boasts a very high enrollment rate. It provided mother-tongue instruction and the highest pass rate for graduating non-white students in the nation's history—83.7 percent for African students in 1976.

Yet, it can scarcely be called a success. From 1958 to 1965, the system produced only 431 black graduates who passed mathematics. Bantu education provided access, but not quality. From the early 1970s, matters only deteriorated. The Afrikaans Medium Decree of 1974 forced all black schools to teach in English and Afrikaans, stripping the time spent receiving mother-tongue education and placing students at a serious educational disadvantage. This led to the Soweto Uprising of 1976, when thousands of students from Soweto township conducted a peaceful protest over the language policy and the poor quality of Bantu education. The gov-

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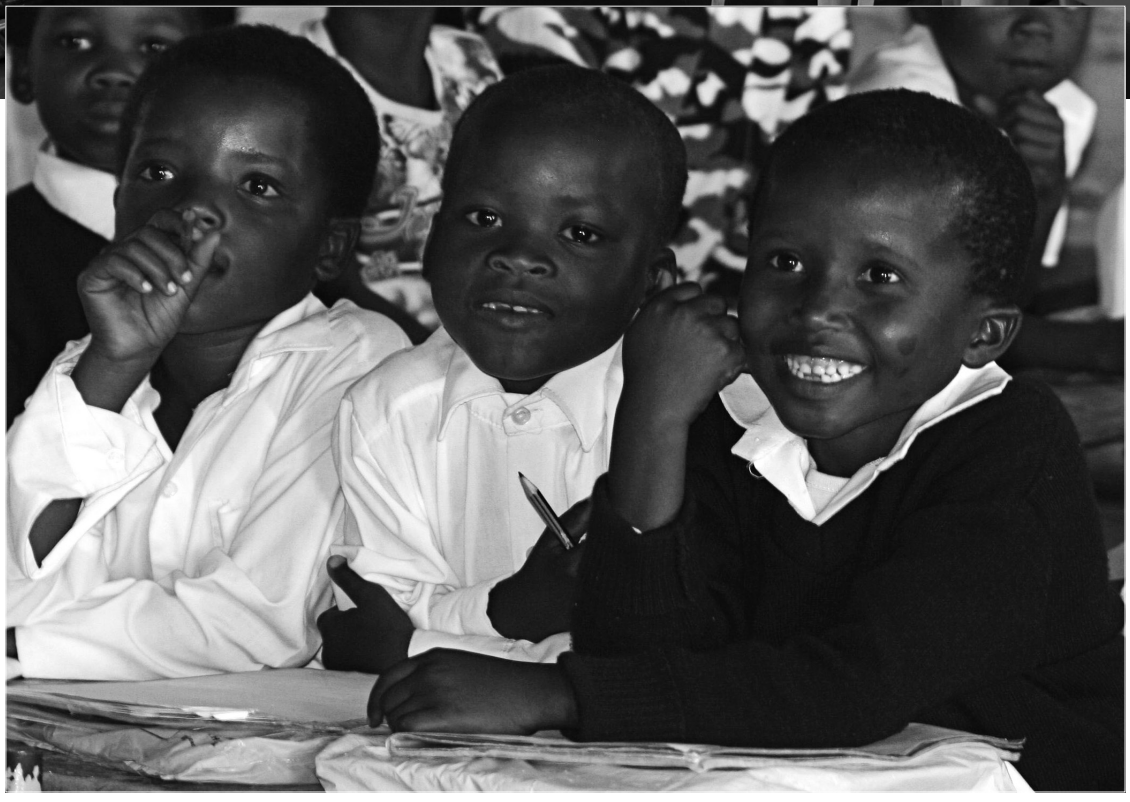

JOHN FLANIGAN

ernment responded by sending in the police, and hundreds of young people died.

But even in the worst years of education under apartheid, there were great schools and great teachers who succeeded in non-white areas. Grant Farred, a student of legendary South African teacher R.O. Dudley, remembers his experience during the difficult years after the Uprising: "He did precisely what the apartheid state intended to foreclose—the imagined possibility, the irrepressible desire for an engagement with the world beyond South Africa's borders. The National Party government wanted us disenfranchise[d] folks to all live in a Bantustan of the mind—to be educated for nothing but barbarism. RO would have none of that. Insistently, sometimes inconspicuously, he opened up the world to me. He made the world available as thought."

BASA HAS THE SAME QUIET HUM THAT GOOD SCHOOLS ALWAYS HAVE—THE SOUND OF ACTIVITY, CONCENTRATION, AND EXCITEMENT.

From 1976 onwards, educational quality, accountability, and credibility declined sharply in black schools in South Africa. Perhaps, this should not be surprising. The correlation between improved education and political resistance to apartheid ideology is quite direct, as demonstrated by a poll conducted in 1981 by Hermann Giliomee and Lawrence Schlemmer of the South African Institute of Race Relations. The percentages of black South Africans accepting segregation correlated quite directly to the level of education they attained.

INTENTIONS VS POLICY

The end of apartheid in 1994 should have ushered in a new era of equal education for all South Africans. But the road to reform has been difficult, and a series of poor policy choices has seen little improvement of educational outcomes. Some of the decisions, which in retrospect have done more harm than good, include closing teacher colleges and merging them with tertiary institutions in the hope that this would professionalize teaching (the effect seems to have been largely the opposite), and the introduction of Outcomes-Based Education which reduced dependence on curriculum content and sought to engage multiple teaching approaches. Both decisions have had to be reversed because they have made the system more difficult to improve and manage.

There is also a titanic battle between the South African Democratic Teacher's Union and the Department of Basic Education (DBE). Calls for greater accountability in schools—from allowing school inspection to testing the content knowledge of teachers to declaring teaching an essential service—are all met with vehement resistance from the union. It is difficult to deduce from the union's behavior that teacher accountability is a serious priority. The reality, already conveyed by the current assessment data and historical reality, is that now teachers are neither qualified nor competent. But, with over 250,000 members of the 390,000 teachers in the country, the teachers' union is a powerful force. Some implications of accountability are simply too massive to face.

The union, in turn, has little or no faith in the government. The relationship is strained and acrimonious. Forming any consensus between government and teachers' union on simple matters can take months or years. Education expert Graeme Bloch, commenting on a recent disagreement between the two parties on school-

ing in the Eastern Cape, said the union and the department "are fighting each other and you will never get schools right in that situation. It's political in the sense that people are fighting each other and not getting on with the job."

But in some instances, the union has good reason to battle the government, as corruption and institutional incompetence are embedded in the education department. In 2012, a widely publicized textbook scandal revealed that poor provincial governance, corrupt contracts, and administrative incompetence led to many of Limpopo province's school children not having textbooks halfway through the year. When the school year started on January 18, 2012, most schools in Limpopo had no textbooks, and none had been ordered for the year. This was met by public outrage, but by the end of April, the textbooks had still not been delivered. Despite repeated deadlines set by Section 27, a public interest organization, and other civil society institutions, schools were still without textbooks by May.

Several months later, organizations continued to track the failings of textbook delivery. The DBE published an Executive Summary Report on Delivery of Textbooks in Limpopo, indicating that delivery of textbooks for 2012 was complete by October 2012. The union played a central role in mobilizing teachers to sustain pressure to acquire the textbooks. Meanwhile, 12 million school-age children still need a place to be educated.

PRIVATE SCHOOLS

Eloff Street used to be the high street in Johannesburg. On old South African Monopoly boards, it was the most expensive card. After the rapid decline of the inner city and the increase of crime in Johannesburg in the 1980s, Eloff Street lost its prestige. Today, it is bustling with peddlers selling everything from home-grown *marog* (a local spinach) to knock-off phones and pet goldfish in little plastic packets filled with water. The street is so full of pedestrians, stalls, and minibus-taxis that cars find it impossible to navigate. The buildings—once headquarters of banks with opulent sandstone facades reminiscent of Viennese apartment blocks—today are plastered with advertisements for faith healers promising to "bring back lost lovers" and "cure bad spirits." From outside, the buildings look desolate—some with rows of broken windows and boarded-up doors.

INDIA IS THE FORERUNNER WITH UPWARDS OF 400,000 AFFORDABLE PRIVATE SCHOOLS.

Yet this street houses one of the most beautiful schools in South Africa. Past the security gates and isolated from the noisy street lies the immaculately restored building of BASA Tutorial's flagship school. The interior is freshly painted, the floors inlaid with tiny mosaic tiles with the school crest. The 1920s dark wood doors and window frames are polished, giving the corridors a pleasant, familiar old library smell. The principal greets a visitor with accommodating warmth— and a dollop of caution. They receive surprise inspections at times, and she's initially suspicious of visitors. This is not a renowned school. She is used to teachers and children, but rarely does anyone else visit.

BASA was started by a group of Seventh Day Adventist teachers who wanted a school with more freedom for their religious values—no sports, for instance, on Saturdays during the years of transition to democracy. Today, 18 years later, they have

moved beyond a desire for greater religious freedom, becoming a remarkable educational story. Their motto, "Quality Makes the Difference," says it all. Nombulelo Mahlangu, the principal of BASA's flagship institute, is in her office early on a Monday morning with teachers constantly milling in and out to ask her a question or offer an update. "We are always close to a 100 percent matriculation pass rate. Some of our students are now studying Accounting at UCT [University of Cape Town]; some have become lawyers. We are very proud of all of our children." BASA is wholly owned, run, and managed by black South African teachers. They charge $54 a month, and are over-subscribed every year. Their pass rate is consistently between 95 and 100 percent (98 percent in 2013). Their 5,000 students are beating the odds in the national standard tests.

PRIVATE SCHOOLS ARE FASTER TO EXPERIMENT WITH NOVEL CLASSROOM TECHNIQUES, INTRODUCTION OF TECHNOLOGY, AND THE LATEST TEACHING RESOURCES.

"Some children come by our bus. They leave at 4:00 in the morning from Diepsloot [a township area some 30 miles out of town] to be here on time," says Mahlangu. The principal takes a visitor through the beautifully restored classrooms full of posters and pictures children have drawn. The large hall, resplendent with marbled busts of ancient Greeks, is full of young, black students writing their last exams for the year. BASA has the same quiet hum that good schools always have—the sound of activity, concentration, and excitement. There is a beautiful symmetry. The old white businessmen who occupied this building during the height of apartheid could hardly have foreseen this transformation. "Many teachers used to work at government schools, but they come back," continues the principal. "They miss the community here. And they aren't treated well at the government schools; the children lack discipline in those schools. They make less money here, but still they come back."

MODEL AND AFFORDABLE

BASA represents a rising phenomenon—affordable private schools, otherwise known as low-fee schools or low-cost private schools. In countries across Africa, such schools may have different learning approaches, but the fundamental principle remains the same. Instead of private schools exclusively open to the elite, non-state players are providing schools for low-income and middle-income families who have grown frustrated with state education. It may take decades to fix a large public education system facing complicated challenges. But parents need to make the best available choice for their children now.

India is the forerunner in the field with upwards of 400,000 affordable private schools. In certain states, like Hyderabad, enrollment can be as high as 70 percent of the total school-age population—with strong evidence indicating these schools outperform government schools. In Pakistan, research shows that from 1983 to 2000, ten times the number of low-cost schools opened their doors. In Africa, Nigeria, Kenya, and Ghana especially have seen a large number of these schools opening and demand increasing.

Because parents contribute financially, affordable schools are directly accountable

to parents. Failure to achieve educational outcomes and deliver value for money has some "voting with their feet" and leaving for cheaper (or free) government alternatives. This dynamic increases the vigilance of school management, improving teacher attendance and performance. Many affordable schools dedicate more time to learning with longer school days and terms. Public schools are only indirectly accountable to parents through their local government officials. If parents are unhappy, they may complain through bureaucratic government structures that are not known for swift response times.

This has important consequences for teacher accountability. Less widespread unionization in private schools, as well as stricter management practices, means teachers in low-fee private schools are in class more, strike less, and stay at school longer. In South Africa, weeks-long strikes orchestrated by the teachers' union in the 2000s left thousands of schools crippled. When one parent was asked why she had moved her child from a government school to a low-fee private school, she observed, "The teachers of government school always like to strike and children are behind, very much behind their lessons, especially the graduating classes. And they have so many overloaded classes. In a class with 40 children, the teacher can't understand that this particular individual needs more attention. Then the teacher goes on strike. When she comes back, it is almost December, and the children know nothing. What I like in private schools is they do not easily go on strike. Since I have been at [the low-fee private school] they never go on strike."

The right to strike is constitutionally protected and crucial to maintaining a healthy tension between competing interests in a democratic society. But accountability and performance in schools in South Africa seem to improve dramatically when the demands of the teachers' union are balanced with the need for educational results, and when parents do not have to address their concerns to local government officials.

Low-fee schools are also generally more cost-effective. In Kenya, the cost per student at affordable independent schools is typically two-thirds of the per capita cost at a government school, and in India one-third the cost (though public school-fees are generally subsidized so parents do not pay or pay less). But private schools have started addressing a crucial issue for education in developing countries more generally—how to make education more cost-effective in resource-constrained states.

The need to compete with government and other private schools promotes innovation. Private schools are faster to experiment with novel classroom techniques, introduction of technology, and the latest teaching resources. Debates surrounding whether such competition is good often fall into classic arguments that are either pro-market or more aligned with a welfare state. The more thoughtful advocates for both sides tend to agree. There is a need for multiple players working on complex problems in education. Private is often more adroit, innovative, cost-effective, and easily accountable. Public is better at inclusion of the poorest of the poor, standardization, and providing mass access.

There is some well-founded criticism of private education for the poor. Kevin Watkins, visiting research fellow at the Center for Universal Education at the Brookings Institution, recently summarized some of these criticisms. He high-

lights, for instance, his conviction that a working public school system is the only way to ensure equitable access to universal education in developing countries. The poorest of the poor cannot pay fees. Affordable private education is often accused of widening the gap between the most needy, impoverished students and those who can afford to go to non-state schools. Privatization, he and others like him argue, almost invariably leads to greater inequality. Debates rage about whether private schools really do provide better results than public, or whether the better outcomes can be linked to "cream-skimming"—recruiting more promising learners from better families who would have done better anyway.

Private educators present their schools as a viable alternative for a broad segment of the community seeking access to quality education today—though rarely do they suggest such a system as an immediate national solution to education. The private school phenomenon is less than 20 years old in most countries. There is simply not enough proof of its scalability without impinging on quality. They also point out that the challenge of supporting the creation of skilled, accountable, and stable government structures is complex. Moreove, after decades of development intervention from multiple angles, progress often remains slow. They question the tacit appeal of public schools—that everyone should sit still and be equally worse off until a state solution that benefits everyone can be found.

PRICE AND VALUE

"We have to sacrifice. You see now I live in a shack. I have got the bricks to start building, but now I have to push for the school first. But it's not that bad because we can pay in installments, so I can at least pay R500 [$50] a month if I do not have the money, so it is not that bad," says a parent living in Orange Farm, a township on the outskirts of Johannesburg. She is a single mother with piecemeal employment but has managed the fees needed to send her child to a low-fee private school. The parents who send their children to low-cost private schools are cleaners, security guards, and grandmothers on state pensions. These are not wealthy families. But they have the power to make choices regarding their children's future.

The choice between the bricks to build a house or a better education for a child is a stark decision to make. And though some proponents will say this is not a choice a poor family ought to make, the reality is that it's a choice many poor families must make. Their sacrifice means a chance at an education in a country where the statistical odds of receiving it in a public school are worse than most places on earth.

It is a choice where few alternatives exist, yet a choice families are prepared to make. While South African government officials, civil society, academics, and international development experts are struggling to fix the collapsing state system, parents and caregivers are seeking a chance for their children's future elsewhere—and finding it in the unlikeliest of places. ●