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Brazil: Encouraging Lessons from a Large Federal System

Brazil has come a long way from its colonial days where education of the local population had not been a priority. This chapter describes how modern Brazil has extended public basic education to over 95% of the population; established assessment systems using an internationally benchmarked index that measures the progress of each school against a baseline; created student-based funding formulas that distribute funds fairly within states; used conditional cash transfers to lift poor families out of poverty through education; and encouraged states and municipalities to take actions to improve education in individual schools. Brazil has enjoyed 15 years of economic and political stability that has enabled it to develop a range of solid industries that now export to the world. Consumption is up among its citizens and this continues to fuel the Brazilian economy.

Average PISA scores for Brazil have improved in all subjects measured over the last ten years. While these scores are well below the OECD average and obviously do not place Brazil among the high-performing countries, such gains do suggest that Brazil has put in place federal policies based on a coherent vision that appear to be generating some consistent improvements. The challenge now is to raise the level of education of its citizens high enough to enable them to take commerce and industry to competitive levels in a global marketplace.

INTRODUCTION

In the early 1990s, Brazil suffered from hyperinflation and many of the other economic problems common to Latin American countries. Over the last 15 years Brazil has put its economic house in order, and has made enormous strides towards becoming a major player on the global economic scene.

But the poor quality of education of its people is holding Brazil back. Not until the 1990s did the people of this developing nation of 193 million inhabitants begin to believe in the importance of high quality public education for more than a small minority of its population.

The logic of economic development has forced the issue. As Brazil's economic position improves, it can no longer depend on cheap labour. Companies can train workers for basic functions, but moving from an economy based on commodities to one based on adding value to raw materials requires a much better educated workforce.

Since 1995, Brazil has developed education policies that have started to produce real improvement in student achievement. It has invested dramatically more resources in education, from 4% of GDP in 2000 to 5.2% of GDP in 2009 (Figure 8.2). And it is spending that money much more equitably than in the past. The addition of federal funds to states with poor resources has given their schools resources more comparable to those available to schools in wealthier states.

Average PISA scores for Brazil have improved in reading from 396 in 2000 to 412 in 2009; mathematics scores improved from 356 in 2003 to 386 in 2009; and science scores improved from 390 in 2006 to 405 in 2009 (Table 8.1, OECD, 2010). While these scores are well below the OECD average of 500 and obviously do not place Brazil among the high-performing countries, such gains do suggest that Brazil has put in place federal policies based on a coherent vision that appear to be generating some consistent improvements.

Table 8.1 Brazil's mean scores on reading, mathematics and science scales in PISA

	PISA 2000	PISA 2003	PISA 2006	PISA 2009
	Mean score	Mean score	Mean score	Mean score
Reading	396	403	393	412
Mathematics		356	370	386
Science			390	405

Source: OECD (2010), *PISA 2009 Results: What Students Know and Can Do: Student Performance in Reading, Mathematics and Science* (Volume I), OECD Publishing. StatLink  <http://dx.doi.org/10.1787/888932366750>

This chapter explores some of the factors contributing to the improvement in Brazil's school system. Not all states are making significant progress, but this report will focus on three of those that are – Acre, Ceará and São Paulo – and look at how they have accomplished that. But first we look back at certain aspects of Brazil's history in order to grasp the scale of the obstacles that are being overcome and the size of the achievement.

BRAZIL'S EDUCATION SYSTEM: A BRIEF HISTORY

Four hundred years of slavery and dictatorship

When Portuguese explorers reached Brazil in 1500, there were around 4 million native Brazilians. Unfortunately, the Portuguese were more interested in extracting value from their conquest than colonising the new country. The new settlers were not accompanied by their families, so the society was run as a business, with little concern for the lives of the workers. Settlers conscripted the indigenous people to cut down trees for sending wood back to Europe and to build their plantations. One hundred years later, half the Indians were dead, so African slaves were imported from Guinea, Nigeria and Angola to work the land and to mine the gold.

When Brazil declared independence from Portugal in 1822, only very limited freedoms were provided to the slaves, and one million additional slaves were brought to Brazil in the 19th century. Brazil did not finally abolish slavery until 1888, the last country in the Americas to do so. Hence Brazil grew out of a slave-based agricultural system that did not require an educated population beyond the elite 10% who ran the country.



During the late 19th and early 20th centuries, five million Europeans from Germany, Japan, Italy, Poland, Portugal, and Spain emigrated to Brazil and settled primarily along the coast. Some had been given free land by large landowners to increase the agricultural workforce in the country after slavery was abolished, and others came as indentured servants to work on the plantations. Of the current population of 193 million, 53% are of European descent; 39% are of mixed European, African and Amerindian descent; 6% are of African descent; 0.5% are of Asian descent; 0.5% are Amerindians; and the remaining 1% are of other descent.

The beginnings of an education system: 1930s to 1980s

Brazil first created a Federal ministry of Education and Culture in 1930. School administration was left to the states and municipalities. At that time, education for children aged 7 to 10 was supposed to be universal and mandatory (Schwartzman, 2004). However, most did not attend school. The first state-owned university was established in São Paulo in 1934. Faculties of law, medicine and engineering had existed since 1822, and in 1937, several of these faculties in Rio de Janeiro came together as the first federal university, hundreds of years later than many other countries. The ministry established a curriculum for high schools as preparation for college, although few students were able to reach high school. In an economy based on raw materials and commodities, few thought there was any need for the majority of students to receive more than a few years of a very limited form of practical education.

In the 1950s, 64% of the population still lived in rural areas and over 50% were illiterate. Over the next 50 years, the population of the country nearly quadrupled, with many moving from rural to urban areas, but the quality of education did not improve much. In 1972, Brazil expanded mandatory education to include children from 7-14 years of age.

The foundations of a democratic system: 1980s to the present day

Throughout the 20th century Brazil has alternated between dictatorships and democracy. A military dictatorship lasting from 1964 to 1985 repressed political dialogue, and many intellectuals left the country. At the end of the dictatorship, the workers and intellectuals joined together with politicians and businessmen to create the constitution of 1988, which re-established a democratic structure with independent executive, legislative and judicial branches. The current minister of Education, Haddad, describes its goal as the establishment of a fair and just society, the eradication of poverty and marginalisation, the reduction of regional inequalities and the well being of all without any form of discrimination. The new constitution ensured the right to a free education for every child from 7 to 15 years of age, establishing 8 years of mandatory education. It called for greater decentralisation of finance and decision making to the school level. In addition, it fixed the minimum to be spent on education as 25% of state and municipal revenues and 18% at the federal level. Nevertheless, the schools still offered only three to four hours of instruction each day, in two or three shifts, to make the most of very limited resources.

The Brazilian economy was closed and highly protected until the early 1990s when globalisation began to have an impact. Government policies to encourage the development of new technologies and new industries required better-educated workers. The model of a small, highly-educated elite and uneducated masses no longer worked once Brazil opened itself to world trade and competition and the demand grew for social mobility through education.

However, Maria Pilar, Brazil's current Secretary of Basic Education, pointed out in interviews for this report that economic problems in the early 1990s led to the education budget being slashed by BRL 11 billion each year, so there was no money to expand educational opportunities. Jobs for the less educated were limited. Some unemployed and uneducated young people emigrated to Japan, Portugal, the United States and England to find better opportunities. She noted that recently many of these emigres returned and started pressuring for the better quality education they had seen in other countries. However, their numbers were too low to have an impact on the system.

President Fernando Henrique Cardoso was elected in 1994 in part because, as minister of Finance in the former administration, he had created an economic plan that curbed the hyperinflation from 2000% down to less than 20%. His first action as president focused on putting the economy back on track. Cardoso privatised state businesses and used some of the funds to implement desperately-needed social reforms, especially in education. By 1995, 90% of all children were enrolled in primary school at age seven, but just half of these completed eighth grade. And it took them on average 12 years to complete grade eight because of high rates of grade repetition and dropout. As a result, in 2000 13.6% of the adult population were still totally illiterate. Nearly 75% were not functionally literate, meaning they were not able to read long texts, follow subtitles, compare two texts, carry out inferences and syntheses, solve mathematics problems, or understand maps and graphics.

Brazil faced enormous challenges after returning to democratic rule. The size of the country and the federal system made national reforms difficult. Repeated grade retentions across Brazil meant that the classes often had students whose ages spanned six years. This made day-to-day teaching more difficult and improving education outcomes more complex. While it was clear that economic development required a better-educated workforce, a focus on quantity of education without an equal focus on improving the quality of education would not enable the country to become competitive with developed countries across the world.

The context for reform: Poverty, poor quality teaching and an irrelevant curriculum

Given this backdrop, education has taken a prominent place in national, state and municipal agendas since the mid 1990s. But, while the country's leaders were making the improvement of education an important priority, simply getting by was a higher priority for many of the nation's households. The desire on the part of parents to provide their children with more education than they had had was competing with the need to put their children to work at an early age to help support the family. Child labour for children under 16 was outlawed in the constitution, but is still an important problem. In 2005, UNESCO reported that 88% of children aged between 5 and 15 were in school and did not work; however, 8.4% were going to school and working too, an average of 19 hours per week. The remainder were only working or staying at home. The northeast, north and south of the country had the highest percentages of working children, mainly in agriculture.

When secondary-aged children were surveyed in 2004 about why they were not in school, large numbers said they simply did not want to go to school (Neri and Buchmann, 2007). Simon Schwartzman, a leading political scientist in Brazil, explains that it is not the lure of jobs, but the poor quality of teaching and irrelevant curriculum that drive students out of school. One of the major problems is the high rate of grade repetition. In the beginning of each year the 7-14 age cohort is fully enrolled, but in the second semester students begin to abandon school when they see they have no chance of being promoted. Maria Helena Guimarães de Castro, former president of the National Institute for Educational Studies and Research Anísio Teixeira (INEP) and former Secretary of Education in São Paulo, noted that grade repetitions are the real problem. Data from *Pesquisa Nacional por Amostra de Domicílios* (PNAD), Brazil's main rural and urban household survey, show that dropouts begin in 6th grade. When students are 14 years old and are not in the grade corresponding to their age, they began to abandon school.

Even when children do go to school, parents who have had little or no education themselves find it hard to know if the quality of education is good or bad. So, while many parents have started to push for entry into schools, they make few demands for quality. Reynaldo Fernandes, former president of INEP, says that in the late 1990s the greatest pressure for improvements in the quality of education came from the elites even though they had no children in public schools. This was because they understood that the future development of the country depended upon a well-educated workforce and citizenry. But Jeffrey Puryear, Director of the Inter-American Dialogue's Partnership for Educational Revitalisation in the Americas, points out that without a broader demand from society for improved quality, policy making will be dominated by the professional educators who make their living in the system. They are more likely to resist changes to the *status quo* than to push for the reform required to lift student performance.

REFORM TAKES SHAPE

The election of Cardoso as President of Brazil in 1994 set the stage for real change in education policy. A number of important reforms were introduced by his federal Education minister Paulo Renato Souza. The 1996 Law of Directives and Bases of National Education (LDB) was developed with the involvement of professional educators and other stakeholders. It clarified the roles of the municipal, state and federal education systems. The federal government had responsibility for oversight of the entire education system and the states were responsible for the quality of education in the state. That said, municipalities were responsible for running schools for grades 1-4 (lower primary) and the state was responsible for grades 5-8 (upper primary) and high school (Figure 8.1). Because principalships were usually a political appointment awarded regardless of educational expertise, the LDB called for the democratisation of school governance, including involvement of the community in the election of principals. The law also provided schools with more autonomy by decentralising funding and decisions, by making curricula more flexible, and by encouraging higher teacher qualifications.

Increasing school funding

In 1996, Constitutional Amendment Number 14 created the Fund for Primary Education Administration and Development and for the Enhancement of Teacher Status, or FUNDEF. This was a major step towards a more equitable



distribution of state and municipal tax funds. It replaced a population density formula that left the majority of funds in large cities, leaving little funding for small municipalities and their schools. With the addition of federal funding for resource-poor states, FUNDEF raised all elementary schools to minimum per-pupil allocations. Many politicians feared that schools would pad their numbers to get more money, so the federal government established a data system to collect and monitor enrolment figures. With the additional funds, poor states in the north and northeast could expand their school offerings and move towards universal elementary education. In addition, the federal government provided BRL 1 billion to support high schools by compensating the poorest states for their contribution to FUNDEF. With assistance from the Inter-American Development Bank, the Cardoso administration created the PROMED, a BRL 850 million fund from which grants were given to states to support high school education.

■ Figure 8.1 ■

Brazil's education system organisation

Age	Brazilian education system		
29	University – PhD		
28			
27			
26			
25	University – Master		
24			
23	Specialisation (optional)		
22			
21			
20	University – Bachelor		Technical Bachelor's
19			
18			Short-cycle higher education
17	University entrance examination		
16	Secondary education		
15			Secondary / Technical secondary
14	Basic education		
13			
12			
11			
10			
9			
8			
7	Preschool (optional)		
6			
5			
4			
3			
2			

A second part of the FUNDEF reforms raised elementary school teachers' salaries by requiring that 60% of the funds going towards elementary education should be for salaries. Salaries rose on average 13%, but in the poor northeast they went up 60%. FUNDEF is therefore credited with increasing the years of teacher preparation and the number of working teachers as well as the enrolments in rural areas.

To address the problem posed by parents who preferred putting their children to work rather than sending them to school, the Cardoso government established a conditional cash transfer programme in 2001 (*Bolsa Escola*) which provided income subsidies to those parents who sent their children to school and got them essential medical checkups. It was limited to children aged 7-14, a fact which many criticised because the vast majority of these children were already in school. In fact, Schwartzman's study showed that *Bolsa Escola* did not increase student enrolment (Schwartzman, 2005). The real impact of this law, which everyone agreed was important, was to raise the poorest families up above subsistence level. This gave them the hope of continued social mobility and added to their interest in their children receiving an education. Teachers also found it a useful tool for enhancing attendance; they could threaten parents with withdrawal of the bonus if their children's attendance slipped.

In 2006, FUNDEF was renewed by the National Congress as the National Fund for the Maintenance and the Development of Basic Education (FUNDEB) which expanded the focus from elementary schools and high schools to include early childhood education and out-of-school youth and adult education. Getting this passed by the legislature involved major public campaigns supported by public-spirited groups. The creation of FUNDEF in 1996 had increased the resources dedicated to education from BRL 35.2 billion to BRL 50.7 billion per year.

The government of Luiz Ignacio Lula da Silva (known as Lula) added increased federal contributions from BRL 314 million in 2006 to BRL 4.5 billion in 2009. That raised total resources for education to BRL 55 billion, 5.2% of GDP (Figure 8.2). According to Fernandes, support for education is so strong that the legislature would have increased funding even further had the Finance minister not warned against the risk of inflation.

In 2004 the Lula presidency amalgamated the *Bolsa Escola* programme and a number of conditional cash transfers for health and nutrition under one programme, *Bolsa Família*, and increased the total amount of funding available. It is estimated that 5.7 million families were participating in the programmes by 2002; today the number has grown to 11 million. In other words, the programme has helped shift 40 million people out of the lowest income level, along with higher minimum wages and better salaries due to economic growth. *Bolsa Família* added stipends for children aged between 15 and 17, which encouraged higher enrolment and attendance in high schools, where attendance is lowest. The combination of *Bolsa Família* and FUNDEB have made high school education a priority on both the supply and the demand sides.

Tackling teacher quality

One of the key problems in Brazilian education is the quality of its 1.5 million teachers. Since free public education for all students has been a recent development in Brazil, the teaching profession has not experienced the long tradition of development that occurred in developed countries over the last two centuries. In many areas of the country, teachers had only a high school education themselves, and that is still the case in some places. Reynaldo Fernandes, former president of INEP, says that it is difficult to attract trainee teachers from middle and upper class backgrounds because of the low pay, low standards and low status of the occupation. Working conditions include teaching two shifts a day, often in two different schools. Teacher absenteeism is high, partly because of the difficulty of getting from one school to the other, either in city traffic or along rural roads.

However, increases in teacher salaries since the introduction of FUNDEF have made teaching more attractive. Teachers now make almost 50% more than the average Brazilian worker, though they still make less than others with a secondary school education or better. The higher salaries, however, created a dual financial problem for states and municipalities: *i*) the increased cost of the salaries themselves; and *ii*) the increases in the cost of teacher pensions, which are generous and start being paid out after 25 years of service for women and 30 for men. It was estimated in 2000 that teacher pensions take up as much as half of some state education budgets.

The public universities saw teaching as a low status subject and buried it in their least competitive colleges. Much of the coursework was theoretical with an ideological focus that convinced teachers that societal problems, not poor teaching, were the primary source of student failure.

The 1996 Law of Directives and Bases of National Education (LDB) mandated that all teachers should have a university qualification by 2006. This law raised the educational requirements to become a teacher, and made both pre-service and in-service teacher training free. Still, much of the in-service teacher training offered is of low quality and done through instructional television and other forms of distance learning sent to the schools or through private colleges funded by the federal government. The options for increased credentials were a way for in-service teachers without degrees to get the additional credits needed, but it is not clear what it added to the teachers' knowledge and skills. The number of lay teachers without post-secondary credentials fell by 40% between 1995 and 2000. São Paulo Secretary of Education Souza says that today (2010) nearly half of the teachers in São Paulo are temporary teachers who have not met the full requirements for contract status.

The quality of teachers remains a major issue and a priority for the ministry. Minister Haddad is now trying to create standards for a career path based on credentials and a new examination that covers both content and pedagogy. Candidate teachers would have to pass it before entering into the teaching profession – a form of accreditation for new teachers. The examination will not be required for current teachers, but will lead to a better teacher corps in the future. The ministry has also collaborated with the federal universities to fund 100 000 teacher places at university, with a focus on mathematics and science teachers. While the federal government cannot dictate classroom-level changes in teacher preparation programmes because of universities' tradition of academic freedom, former INEP President Fernandes expects that the new examinations will influence the programmes to move from a philosophical and ideological focus to an emphasis on the knowledge and skills needed for success in the classroom. De Castro believes that the additional spaces should have been contingent upon changes in the curriculum for teacher training.



Setting curriculum standards

The federal government focused on improving the curriculum in 1996 by recommending curriculum parameters for all eight years of elementary education, as well as early childhood and youth and adult education. The specification of what students should know and be able to do at each grade level is left to states and municipalities. The federal government also provided new academic curriculum standards for 75% of the high school curriculum, leaving the other 25% to be defined locally in non-academic areas. At the high school level, the federal government formalised the trend in states to end the separation between academic and technical education programmes because the technical programme did not prepare students for the workplace and had simply become a home for students deemed unqualified for the academic programme. Instead states were to create comprehensive high schools for all students and provide options for short technical courses during or after high school for students and adults. While this is recommended by the federal government, it is up to states to transform current high schools or build and staff new high schools as needed.

Increasing high school completion

Although the 1996 education amendments called for moving to universal high school education, it was not until 2006 that 11 years of schooling became mandatory (this is now 12, because of the extension of primary school by one additional “year” prior to first grade). Unfortunately, even though many students have nine years of education, they often have only completed the requirements for grade 8 because of having to repeat years. Under the 1996 legislation, the states were encouraged to offer high school education. But given how long it took most students to complete eight grades – between 9 and 12 years – it is not surprising that most had had enough of school. Enrolment in high schools stands at about 70% of the cohort, even with *Bolsa Família* having added stipends to families for students between 15 and 17 years old. About 30% of students never finish basic education, and about half don’t finish the three-year high school programme. A number of foundations in Brazil, notably the Instituto Ayrton Senna and the Roberto Marinho Foundation, have worked with states to create acceleration programmes for middle schools and high schools. These programmes work with over-aged students to ensure they develop basic academic skills, work skills, and citizenship skills before they leave school. Some states have created similar programmes at grade 9 to provide intensive interventions to raise students’ skills to the level required for success in high school.

Focusing on quality

Reynaldo Fernandes, former President of INEP, says that there have been two major movements in education in the last 20 years: the efforts after the 1988 constitution concentrated on putting students in schools and avoiding grade repetition, while in the 2000s the battle was for quality. Participation in the 2000s in international comparative assessments of student achievement in Latin America and in PISA revealed clearly the low performance of Brazil’s students. Maria Helena Guimarães de Castro, President of INEP in the administration of President Cardoso, describes how in 1999 President Cardoso was trying to decide whether to participate in TIMSS or PISA. He suspected that Brazil would come out at the bottom on PISA, but thought the country would benefit from participating in an assessment that tested students’ ability to apply what they had learned in school and out of school. As an astute politician, he also understood the value of coming last for mobilising the country to demand better education.

Cardoso was right. Brazil was the lowest performing country on PISA 2000, coming in below Mexico. Over 50% of the students scored at or below Level One and less than 1% scored at the top level. Because grade repetitions meant that 15 year olds in Brazil might be in any grade from 5 to 11, INEP analysed scores for the 15 year olds who had completed grade 9 (modal grade) to see if student performance looked any better. It still found that only 25% of Brazilian students aged 15 at the end of 9th grade achieved at Level 3 or above on reading, as compared to 76% for South Korea, 59% for Spain and 30% for Mexico. The 2003 results were no better. In mathematics, fewer than 30% scored at Level 2 or above.

A large part of the problem is the absence of full-day schools. While the school year is 200 days long, the daily schedule is four hours long, with many schools holding two or three shifts a day. This does not give teachers sufficient time to teach the curriculum to a highly heterogeneous group of students of varying ages or to provide the individual attention that many students need, especially those who have already repeated one or two grades. FUNDEB provides a 25% increase in the per-student allocation for full-day schools, but that does not pay for the infrastructure costs of doubling the number of school buildings and hiring additional teachers. Some states are trying to move to full-day schools, but as Minister Haddad says, nationwide full-day schools will have to be the focus of the next ten-year plan. Mobilising the infrastructure and human resources will require an investment that is not currently feasible.

Creating accountability and setting targets

One of the most critical pieces of the 1996 reforms was to transform the National Institute for Educational Studies and Research into an independent statistical organisation responsible for national assessment and evaluation of education. It created the quality assurance programme for the country and made the results transparent to educators at the local, state and national levels as well as to parents, community members and the business community. It revised an earlier assessment system to create the Evaluation System for Basic Education (SAEB) for grades 4, 8 and 11 as well as the National Secondary Education Examination (ENEM) in Grade 11, which provides a qualification for further study or entry into the labour market.

The SAEB assessment system changed over time from a sample examination that was given to a representative group of students to a census examination called *Prova Brazil*, taken by all students in grades 4 and 8 in public urban schools. Only a sample of grade 11 students is assessed and so aggregate results for grade 11 in the public schools can be reported at the state, regional and national levels only. The use of promotion rates from grade to grade for each school ensures that students will not be held back or encouraged to drop out so that they don't bring down the average achievement scores. SAEB ensured that schools, municipalities and states would receive data that would tell them how their students fared on an examination of the curriculum standards in Portuguese and mathematics set by the federal government. In some states, such as São Paulo, training was provided to teachers so that they could use the test results to analyse individual classroom as well as grade and school-wide performance and develop strategies to improve teaching and learning.

In 2005 Education Minister Haddad led a national campaign of national and regional conferences and meetings to mobilise educators, governors and municipal officials to improve the quality of student achievement. Minister Haddad described his Education Development Plan as increasing funding for education, creating a base salary for teachers, establishing management guidelines for schools, and putting in place an evaluation system that would provide information on the achievement level of individual schools. Mandatory school attendance requirements were expanded to include 9th grade, but, more important, all municipalities signed on to a synthetic education index created and administered through INEP. The Basic Education Development Index (Box 8.1) tracks achievement on the *Prova Brazil* school results in grades 4 and 8 for public schools, and the SAEB results for private schools in grades 4, 8 and 11 and public schools in grade 11, as well as the promotion rates from grade to grade for each school. Leaders of each school know their targets and discuss strategies for improvement with teachers and the community as well as with their municipal supervisors. It is only after they have developed their strategies that they can effectively use the additional resources to achieve their targets.

Box 8.1 The Basic Education Development Index: A major step forward for accountability

Educators in Brazil see the Basic Education Development Index (IDEB), established in 2005, as a major step in increasing education accountability and providing a strong impetus for improving schools nationwide. Building on the technically well-regarded, sample-based, student assessment system (SAEB) launched in the 1990s (see above), the federal government launched IDEB as a census-based national assessment of Portuguese and mathematics achievement in grades 4 and 8. These data on learning outcomes are combined with assessment data for grade 11 students and student flow data (promotion, repetition and graduation rates) for Brazil's 200 000 schools. Each school's data are scaled as an index score from one to 10, with the levels aligned to scores on PISA. The use of the two factors, achievement and promotion to the next grade, ensures that schools are not given incentives to hold back students from the tested grades or to encourage them to drop out of school. The goal is to reach the average score on PISA in 2021, the year before the 200th anniversary of Brazilian independence.

The beauty of IDEB is that it is set individually for each primary school in the country, and will create a trajectory from a baseline in 2005 to where the school ideally reaches average PISA performance in 2021. For secondary schools, IDEB results are only aggregated at the state level, as the grade 11 assessment is sample-based. Educators accept the system because they believe it is fair to compare a school's performance against its past performance, rather than set one arbitrary score all schools should reach each year. Unlike many other countries, Brazil includes both public and private schools in the SAEB/*Prova Brazil* testing and the IDEB targets. The national performance has risen from 3.8 to 4.6 for primary schools (grades 1-4) between 2005 and 2009, outperforming the target of 4.2; from 3.5 to 4.0 in intermediate schools (grades 5-8), outperforming the target of 3.7; and from 3.4 to 3.6 in high school (grades 9-11), outperforming the target of 3.5. Further information on IDEB results is available from INEP.



According to Joaquim José Soares Neto, President of INEP, the real catalyst for school improvement in Brazil has been the setting of targets for each school through IDEB. Using IDEB, the federal government set targets for every two years for schools based on each school's trajectory, which begins where the school was in 2005 and ends at its expected arrival at OECD PISA average performance by 2021 (Box 8.1). The targets are the product of the rate of promotion and the average Portuguese and mathematics scores on SAEB/*Prova Brazil*. It results in a number from 1 to 10. It is the responsibility of each school, working with the municipality and monitored by the state, to develop a strategic improvement plan for progressing at the rate required by the trajectory which addresses the challenges the school currently faces.

The results of IDEB are published broadly, by school, by municipality, by state and for the nation as a whole, and parents and community members are aware of their school's ratings. The target and the actual performance are compared to see which schools are outperforming their targets. This has added public pressure to the push for improved school performance. Maria Pilar, Secretary of Basic Education at the ministry, recounted a visit to a school in a difficult area of Rio de Janeiro where 1 000 parents and community members were celebrating the release of the IDEB scores. Schools that show great progress are given more autonomy, while schools that remain low performers are given additional attention and assistance. In 2008, the ministry of Education prioritised work with the 1 827 lowest-performing municipalities, providing resources and technology.

The use of IDEB has changed the relationship between the ministry and municipalities and states, explained Jose Henrique Paim, Executive Secretary at the ministry. States have to diagnose the problems in low-performing schools and develop an improvement plan to send to the ministry. The plans organise the needs of the municipalities and identify the technical and financial resources needed from the ministry. In many cases, the focus of technical assistance is on improved management of the school and teacher training.

At the request of the ministry and in return for additional resources, the federal universities work with low-performing schools in their municipalities to assess the needs of individual schools and provide teacher training and assistance. The ministry also assists rural schools by providing equipment and materials, transportation services and technology to assure teacher training through the Open University. While the Open University courses are open to anyone with limited access to tertiary education, primary teachers have priority.

Rural schools account for 15% of the students in the country. Currently the one and two-classroom rural schools – those that have fewer than 30 students in all grades combined – are not included in the testing and accountability programmes. However, according to Paim, some were included in the 2009 testing to give the federal government some indication of the quality of the smallest rural schools.

Paim believes that for the first time IDEB allows the ministry to have a national map of performance from which to identify vulnerabilities and provide technical and monetary assistance. The ministry tracks the progress of the states to identify best practices that can be shared with other states. As in the United States, the argument is made that the states are laboratories of innovation in policies and practices. Monthly meetings of the state secretaries of education with the minister of Education provide a forum in which common issues and innovative solutions are discussed. Accountability extends to the secretaries as well, who are called in to talk with the federal ministry when the IDEB, SAEB and *Prova Brazil* results in their states are not improving.

The public nature of IDEB provides a real incentive for states to use effective strategies and improve student achievement. And it makes clear to parents where education is succeeding and where it is not. And since there is no choice of public schools in Brazil, parents in low-performing schools have an incentive to pressure the school to improve.

Given the low levels of achievement documented through IDEB and the lack of choice of public schools, most parents in the upper middle and elite classes opt for private schools. Overall 12% of Brazilian students attend private schools, with the largest numbers in the high schools, where they prepare for the university entrance examinations. The percentage of students in private high schools rises in wealthy areas and stands at over 20% in Brasilia, the federal district where average per capita incomes are highest.

To meet demand, private universities continue to grow and now represent nearly 90% of the higher education institutions and 75% of the higher education enrolment in Brazil. Even with that expansion, the limited number of university spaces enables only 15% of students to attend university; only 10% graduate because of their poor preparation in basic and secondary education. This is one more reason why it is difficult to motivate young people to strive for education excellence in high school.



INDUSTRY PERSPECTIVES ON EDUCATION IN BRAZIL

In Brazil's economy today, the most innovative and internationally-competitive companies are in aeronauticals, petro-chemicals, natural gas, mining, steel, paper and pulp, ethanol and meats. They have a workforce that averages nine years of education, with on-the-job education provided for the workers. For less competitive companies that do not export products or innovate, the workforce averages less than seven years of education. In the pharmaceutical industry, according to Cristalia's President, Ogari Pacheco, the production line workers can function with the training provided by the company; however, the challenge is finding the scientists who can create the compounds the company currently imports from China and India.

The Embraer corporation (Empresa Brasileira de Aeronáutica S.A.), a manufacturer of jet aircraft and Brazil's largest exporter from 1999 to 2001 and the second largest in 2002, 2003 and 2004, employed more than 16 000 people in 2009 of whom nearly 95% are based in Brazil. Eunice Rios, from Embraer's Human Resources Department, is more optimistic about recent graduates joining the firm:

Employees who are newly hired bring a broader and more solid background as well as technical training and a more comprehensive world view. They are more connected to global trends and demonstrate a greater concern towards a job that makes sense for them and for their careers. They demonstrate a high level of ambition as well as energy and determination to achieve their goals. (Interview conducted for this report)

Embraer has created internal training programmes for employees at all levels of the organisation. For engineering graduates it has an 18-month specialisation programme to prepare aeronautical engineers. Since 2001, 1 100 engineers have completed the programme. When asked if universities are preparing graduates to be able to lead innovation efforts, she indicated that this was an area that needed improvement although it was at least on the universities' agendas. Finally, Rios noted that the link between education and development is critical to Brazil's future in a competitive global environment, and the *status quo* cannot get the country where it needs to go.

CASE STUDIES OF STATE EDUCATION REFORM

The states of Acre, Ceará, and São Paulo have seen significant growth in their IDEB scores in the last five years because they have built upon the federal mandates with their own state policies and services. While the funding from FUNDEF, and especially FUNDEB, had given them the required resources, each state recognised that it had to create instructional systems, teacher training and accountability systems with school support if it was going to improve student achievement. All three states have had highly effective leaders in key positions in the state secretariats. In some cases, they followed political appointees who had previously just maintained the *status quo*. All three states have had the benefit of consistent educational policies and leadership for a number of years: 11 years for Acre, 16 years for Ceará and 8 years for São Paulo. Not all states have professionalised their education systems. Many still select secretaries of education on a patronage basis and leave municipalities and state schools to their own devices. Since states have the legal authority to run their education systems as they see fit, the federal government cannot interfere. It can and does offer assistance to individual municipalities whose IDEB scores are the lowest in the country, but it cannot create effective state secretariats from the federal level.

State of Acre

Acre is one of the smallest states in Brazil, located in the far northwest in the Amazon forest. Over half of the population of 690 000 lives in two cities, Rio Branco and Cruzeiro do Sul. The rest of the population lives in small cities and isolated areas. Acre was initially part of the Bolivian territory, and the annexation to Brazil was accomplished through diplomatic means in 1903. In the early 1900s immigrants fleeing droughts in northeastern Brazil settled in Acre. It owes its initial development to Goodyear's discovery of the process for making rubber into tyres and that remains one of its main areas of commerce. As competition from other countries reduced demand for rubber, development slowed. Acre finally became a Brazilian state in 1962. For the last 48 years, Acre has worked to establish itself economically with sustainable development projects and appreciation of the Amazon forest, one of its major assets.

The Secretary of Education in Acre, Maria Correa da Silva, has been in the secretariat since 1999 and says that education became a priority when she joined the new government team as director of basic education. In 1999, Acre ranked last in the country for education, there were no school improvement plans, school buildings were dilapidated, only 14 out of the 22 municipalities offered high school education, and only 27% of the teachers had a college education.



The education team started with teacher quality: working with teachers, they created a career plan and raised teacher salaries to a starting salary of BRL 1 200 per month (USD 680), which is 26% above the national minimum starting salary. They developed a teacher education programme with the federal university in Acre and provided training for teachers in the urban districts first and then the small cities and towns. FUNDEF funds were used to raise the level of teacher education for those without university education. Next they focused on infrastructure. They did not have the funds to renovate or rebuild all schools, but they defined standards for buildings and equipment for schools in urban, rural and indigenous areas so that they could develop cost estimates and create a budget for the work. Finally they guaranteed the opportunity for students in all municipalities to participate in high school education as well as youth and adult education. The illiteracy rate in Acre was nearly 25% in 2000; it is now under 14%.

In 2004, the team restructured the secretariat to be more responsive to schools, creating three functional areas: teaching and learning, resources, and management. The state decentralised supply budgets on a per-pupil basis and required school plans on how the funds would be spent. Some of the municipalities responsible for grades 1-5 decentralised funds at the same time, but the state could only mandate actions for the schools it runs, *i.e.* grades 6-9 and high school. It developed a partnership with the city of Rio Branco to focus on teacher education, with a non-governmental organisation providing training for teachers in both municipal and state schools. That took the improvement efforts a long way, since half of the students in the state are in Rio Branco. With teacher training underway, the state focused on quality of instruction in the classroom. It added co-ordinators for administration and pedagogy to the staffs of larger schools so the principal could lead the instructional team at the schools. Working with teachers, it developed a curriculum, “It’s Time to Learn”, for grades 1-5, and focused on literacy development for grades 1-2. One purpose of the new curriculum was to give students a strong start and reduce grade repetitions. This curriculum became part of the teacher training as well as the monitoring done by state supervisors. Since the secretariat worked with teachers from the beginning, there was little resistance. The results of external assessments, which showed that the students were learning more, provided the strongest argument for the changes.

Acre worked in partnership with the Roberto Marinho Foundation on two special programmes to accelerate the learning of students in grades 5-8 and high school who had experienced multiple grade repetitions. The PORANGA project provided curriculum and teaching materials focused on basic skills, work skills and citizenship skills. In addition, the state created the Book of Culture of Acre, which uses historical texts, poetry and photos of the inhabitants of that state to connect students to their culture. For students in isolated rural areas, it developed “Wings of the Forestinzenhip” which provides relevant instructional materials for early childhood through high school.

Acre raised its IDEB index from 3.4 in 2005 to 4.3 in 2009 (for grade 4); from 3.5 in 2005 to 4.1 in 2009 (for grade 8); and from 3.2 in 2005 to 3.5 in 2009 (for grade 11). The secretary of education credits improvement to the continuity of policies since 1999, the close co-ordination with municipalities, and a consistent focus on classrooms, teachers and curriculum.

State of Ceará

Ceará is the 8th largest state in Brazil by population (8 million), although it is 17th by area. It is a poor state located on the northeast coast. The economy of Ceará was primarily cattle ranching, to provide plough animals for agriculture, and salt production from its northern beaches. By the 1980s, new investments enabled the state to start developing its 350 miles of Atlantic coast beaches and sand dunes as well as its mountains and valleys into one of Brazil’s major eco-tourism attractions. Today over three-quarters of its population work in urban areas, with industry accounting for more than 35% of the jobs; and services, including tourism, for more than 55%. It also produces and exports leather products globally. While its economy is growing, the state still has few resources for development.

In terms of education, Ceará has been one of the lowest-performing states in the country. While it has been moving forward for the last 16 years in pursuit of a unified vision of what needed to be done, it was not achieving its goals until it received additional federal funding through FUNDEB in 2005. It is one of seven states whose resources were not sufficient prior to 2005 to bring per pupil funding to the federal minimum level. The education secretary for 1994-2002 became governor in 2003 and appointed his former deputy, Maria Izolda Cela de Arruda Coelho, as education secretary. Secretary of Education Coelho brought expertise in assessments and accountability as well as curriculum and professional development. She says that Ceará was one of the pioneering states working with the ministry of Education in 1993 to develop student assessment systems, but without integrating them into management reforms, they had little impact. Since 2005, she has used federal test results to guide management reforms by setting improvement goals for schools and providing required support services.

Coelho has established five axes for her work to support schools. Working with the federal university's centre for assessment and education development, she prepared and certified 100 professionals to work with teachers and principals in their improvement efforts. Coelho recognised that the problem with grade repetitions started in first grade, so she worked with municipalities to establish "Learning at the Right Age", an instructional programme to ensure students gained literacy and numeracy skills in grades 1 and 2. All municipalities signed on and worked with teachers to use curriculum, lesson plans and assessments structured for effective teaching in these grades. The state contracted an external assessment company to create a reading examination for every 2nd grader in the state, starting with benchmark testing in 2007 and repeated annually. In addition, 1st grade teachers received instruction in the use of formative assessments aligned to the grade 2 assessments. The state also established a matching funds programme for constructing early childhood centres. For every centre a municipality funded, the state funded one more. For poorer municipalities, the match required was much lower.

Following on from that experience, the state formed a partnership with the municipalities to expand the curriculum and training efforts. These included incentives to improve teacher salaries, a fair process for selecting principals based on expertise rather than political patronage, and support for more effective school organisation, including the use of multi-age classrooms in small schools. Coelho stressed that this was a partnership that did not encroach upon the autonomy of the municipalities in their grade 1-4 schools.

Coelho said that high schools have been historically low performing in Ceará, and they have been getting worse. Students arrive in 9th grade without the skills in Portuguese to read and interpret texts, so Coelho started an initiative to train 9th grade teachers in all subject areas to focus on reading comprehension and vocabulary development. While some teachers believe that students should not go to grade 9 until they have those skills, they recognise that the students will not make progress without them. For low-performing high schools, Coelho hired new principals and gave them a portfolio of data on the schools' past performance. The new principal then works with the instructional team at the school to develop a plan to submit to the secretary for approval. Superintendents from the secretariat monitor the plans on a bi-monthly basis.

Coelho established the Learning First initiative to address the high rates of dropout and repetition in the first year of high school. The secretariat worked with professors from the federal universities to develop interdisciplinary curriculum materials to close gaps in student background knowledge and improve reading and mathematics skills. These resources help students build the basic skills of reading comprehension, abstraction and problem solving. All high schools in Ceará received teachers' guides and student units for different disciplines, produced with funding from the ministry of Education.

Recognising that working conditions for teachers and students were problematic in many high schools, Coelho also used funds to focus on infrastructure, including establishing laboratories and sports areas where none had been available. She also ended centralised in-service teacher training in favour of offering it in the schools themselves so that it could more effectively meet the needs of individual schools.

Although high schools are still on double shifts, since 2008 Coelho has established 59 full-time (7:30 am to 5:00 pm) vocational schools across the state. They offer an integrated curriculum, both academic and technical, and students can choose which vocational fields to pursue. She plans to build an additional 52 of these as a way to motivate and prepare high-school aged students to stay in school. Students who get acceptable grades are also given computers as an incentive to stay in school. Coelho believes this is a way to close the technology gap for poor students and keep them motivated. The first participants graduate this year and will move into six-month internships in industry funded by the government at half the minimum wage. This gives employers a good opportunity to add to their staff at low cost and provide on-the-job training to future full-time employees. At the end of the internships, students will have the option to work full-time or to move onto higher education if they wish to do so.

To encourage improved performance, Coelho established an incentive programme for the 150 highest-performing schools in the state based on their IDEB scores. The high-performing schools get additional funds that can be used by the school for any purpose in the secretary's guidelines. The school submits a plan for how it will use the funds. In addition, the schools have to partner with a low-performing school and help it improve in order to get the last third of the incentive funds. She also created an assistance programme for the 150 lowest-performing schools. The low performing school also receives additional training, technical assistance and instructional resources from the state.

Many of the changes put in place in the last decade required legislative approval, but with the strong backing of the governor, there was little resistance. Coelho says that the teachers' union has not been active at the state level,



and unions have not been a problem in the municipal areas either. Quality had not been at the centre of discussion before, but the education improvement measures changed that. She expanded assessments to cover all students in all grades in 2008, and the 2009 results at both the state and national levels have registered improvements. However, Secretary Coelho believes that with the resources they have in Brazil and Ceará, they should be in a better situation than they are. Their problems are still very much linked to management process and accountability. The state raised its IDEB index from 3.2 in 2005 to 4.4 in 2009 (for grade 4); from 3.2 in 2005 to 3.9 in 2009 (for grade 8); and from 3.3 in 2005 to 3.6 in 2009 (for grade 11). In fact, the state's national results have outpaced those in many states, moving Ceará out of the lowest performing group to rank 14th among Brazil's 27 states.

State of São Paulo

São Paulo is the most populous state in Brazil and one of the wealthiest. It moved from early coffee bean cultivation and export to industrialisation, and today it is the regional financial hub. São Paulo's capital is São Paulo, a city of 11 million inhabitants with a metropolitan area of almost 20 million, the largest in the Americas. Half of the state's population resides in the capital.

In education, the State of São Paulo has enjoyed continuity of vision for the last decade. The last three secretaries of education were either in the cabinet of the Brazilian minister of Education, Paulo Renato Souza or else Souza himself, who has been secretary since 2009. Secretary Souza was an economist by training who had been secretary in São Paulo in 1984-86 and was asked by the current governor, José Serra, to return for the rest of the governor's term. He says that although the office and its furnishings are the same, the opportunities are greatly expanded by public demand for better education and the federal actions in his term as minister of Education. He and his two predecessors in São Paulo shared a common vision for educational improvement that was forged in their eight years together at the ministry. Rather than sweep away what had been done by their predecessors, they each built upon each other's accomplishments.

The first order of business in 2003 was to provide opportunities for all students to enrol in school. Because attendance was mandatory through to grade 9 and the *Bolsa Família* added 15-17 year olds, there was suddenly a greater demand for high school education, but not enough schools to house them. Many students had to attend high school at night in one of the elementary schools until schools could be built – they became the third shift at the school. Over the last 15 years, São Paulo has been one of the few states that has created sufficient numbers of schools to accommodate all interested high school students.

The second priority was to take the IDEB concept one step further and to create a São Paulo system of assessment and indicators that provided a school-by-school target on a biennial basis based on PISA and international standards. While the national goal is to get to the PISA average performance by 2021, the targets in São Paulo are more rigorous in that they look at a school's performance by the percentage of students in each category: below basic, basic, adequate and advanced. This provides better information to parents and the public about the quality of school performance, but it also gives the districts and the state better information on where the school needs to improve. If the average looks great but there is a sizable group of student at the below basic level, the state knows how to customise its technical assistance to the school.

In 2007, Maria Helena Guimarães de Castro became secretary and initiated a number of reforms that built on the base already established. She was the President of INEP during the Cardoso Presidency. Governor Serra was very concerned about the quality of education, particularly because each school was creating its own curriculum without evaluating its impact on student achievement. That made it very difficult to scale better results across schools. De Castro's theory of action was based in part on the instructional management systems that have enabled other countries to move their education systems forward: curriculum standards, aligned instructional materials, teacher training on the system, and curriculum-based assessments that measure how well students are progressing. In addition, de Castro consulted the effective schools research done in the United States which found that the school should be the unit of improvement and that effective schools must have a principal who is an instructional leader.

De Castro worked with teachers and university professors to develop a clearly-defined common curriculum for every grade and subject to form the basis of student assessments; teachers were trained in its effective implementation. She hired 12 000 pedagogical assistant principals so that each school would have a coach to work with teachers on improving their practice. She revised the Evaluation System of Educational Achievement of São Paulo (SARESP) to reflect the curriculum so that teachers would know that the focus on curriculum would indeed prepare students for

the exams. And through the São Paulo assessment and indicator system, she gave the schools the data on student achievement to enable them to gauge the impact of their efforts and to identify the areas of weakness that they needed to ameliorate. Training in analysing the data was a critical part of the programme.

De Castro also focused on school management. She knew schools had to be well-managed, which required principals selected for expertise rather than political affiliations. In addition, to keep families and the public informed so that they could knowledgeably participate in their children's education, schools produced report cards every two months on how students were doing.

Finally, believing that teachers needed to accept responsibility for their school's results, de Castro created a school-wide incentive system that rewarded everyone at the schools that met their improvement targets. The better a school's performance, the more autonomy it was provided. Schools that did not reach their targets were given additional technical assistance, infrastructure resources and teacher professional development. In 2007, she identified the 1 000 lowest-performing schools and provided them with technical assistance, targeted teacher development and additional learning resources. One year later, 95% of these schools had met their targets, and after two years, 98% had met them.

The curriculum project was not without its critics. The curriculum was not just a set of general statements about what should be taught and learned. Each school was given instructional resources: teacher guides that detailed the curriculum units, with specific strategies for teachers; notebooks of lesson plans for teachers for each week; and notebooks of activities for students. While the materials were recommended to teachers, their use was not mandated. However, the curriculum standards for what students should have learned by the end of grades 4, 8 and 11 were required. They were the basis for the SARESP assessments in Portuguese, geography, history, mathematics, and science for students. De Castro said that the Teachers' Union of Education of the State of São Paulo (*Sindicato dos Professores do Ensino Oficial do Estado de São Paulo*) opposed this, but the majority of teachers and staff, as well as civil society, supported the programme. However, the São Paulo Union president, Maria Izabel Azevedo Noronha, countered in an interview for this report that the lesson plans were so specific in both what to teach and how to teach it, that it removed teacher autonomy in pedagogic strategies. Noronha says that it devalued teachers as professionals. This is a classic battle in systems where management believes it has weak teachers who need structured assistance to perform adequately, while the union argues that scripted, "teacher-proof" materials devalue teachers and make teaching even less attractive. Certainly more effective teachers might not need or want such materials, but 40% of the teachers in São Paulo were on temporary licenses.

De Castro's second battle with the union was over teacher absenteeism. She was very concerned that on any given day, 12 000 out of 230 000 teachers were absent. Each teacher was allowed 40 absent days per 200-day year without prior permission or a medical reason. Despite being opposed by the union, de Castro was able to get the state legislature to reduce allowable absences to six days per year without a medical reason.

She increased teacher training, upgraded the qualifications and salaries of teachers, and provided school-wide incentives for schools meeting their targets with improved performance. Everyone at the school shared in the bonuses, which ranged from one to three months of salary. As with the federal system, the targets were set individually for each school so that schools were competing against their past record, not against other schools. However, the union believes the targets punish teachers for circumstances outside their control. De Castro disagrees, noting that low-performing schools received intensive support and interventions and therefore improved.

Secretaries de Castro and Souza, and Mrs Noronha, president of the union, all agree that the quality of teachers is too low. Their differences lie in terms of the solutions. Mrs Noronha points out that 40% of São Paulo's teachers are temporary and lack permanent contracts. Recent efforts by the ministry to improve the quality of new teachers by requiring them to pass an examination based on content and pedagogy produced 56 000 qualified teachers, but only 10 000 places were identified for them because of budget limitations. If all 100 000 positions currently filled by temporary teachers had been made available and 56 000 of them were filled by those teachers who did well in the exams, Mrs Noronha believes the state would have dramatically improved the quality of teaching.

Souza has continued to focus on teacher quality. He was concerned that the differential between starting salaries of BRL 1 830 per month (about USD 1 000 per month) and top salaries after 32 years of BRL 3 270 per month was much too low to attract and retain teachers. He therefore worked with the legislature to pass the Teacher Career Law which created a logical career ladder. To move up the career ladder teachers must earn specific grades on teacher



assessments in content and pedagogy, as well as have better than average attendance and continuity of employment at a single school – at least three years. The ladder has five levels with 25% higher salaries at each step, resulting in a 100% increase in salaries for teachers at the top level. The plan allows teachers to apply annually for promotion to the next step, but each teacher can only be promoted once every three years. The examination grades required for promotion rise from 60% for level two to 90% for level five. This is intended to encourage teachers to improve their knowledge and skills in content areas as well as their pedagogic strategies.

When asked about the role of unions, Secretary Souza said they are a political force in São Paulo. He explained that he meets frequently with them to discuss issues, but when he presented the Teacher Career proposal to the union, it refused to support him. The union president, Mrs Noronha, explains that there is a ceiling limiting the number of teachers who pass the promotion threshold to no more than 44 000 per year (20% of the overall teaching force). This denies access to the other qualified teachers who deserve promotion. Souza realistically has no choice but to phase in the higher salaries.

The bottom line is that the state raised its IDEB index from 4.7 in 2005 to 5.5 in 2009 (for grade 4); from 4.2 in 2005 to 4.5 in 2009 (for grade 8); and from 3.6 in 2005 to 3.9 in 2009 (for grade 11). These significant improvements place São Paulo ahead of most other states.

LESSONS FROM BRAZIL

▪ Commitment to education and children

The federal government and some state governments have begun the journey towards quality education. Consistent vision throughout the last two presidencies and the increases in resources during this period have enabled under-resourced states to make great strides. However, the low quality of education is still preventing the country from moving to the next level of economic development. Minister Haddad recognises the connection between education and development and is working to align education policies and plans to produce a better educated workforce. The minister expects that in the next 10 years, investments in education will need to rise to 7% of GDP and focus on expanding full-time education to all schools.

▪ Cultural support for universal high achievement

Brazil has come a long way from the country that assumed that there was no need to educate the natives and imported slaves. Presidents Cardoso and Lula have focused on the need to educate everyone. But the low level of performance of students in both private and public schools demonstrates that high achievement is still problematic. It is clear that support for improving education must come from the top and both Cardoso and Lula have provided that. However a nation must guard against giving mixed messages to its population. Lula himself was only educated to 4th grade – he is a living example for the lower classes that anything is possible. On the other hand, he is also an example that education is not always necessary to succeed. This is reinforced when he reminds the well-educated elites of his ability to become president and run the country without their advanced levels of education. Still, Lula is a champion for education for all and has raised the federal contribution to FUNDEB during his presidency. His goal is for every child to gain a college degree or a vocational certificate. He understands that post-secondary education is key to Brazil's development, but the challenges are great: high school graduation stands at a little more than 30% of the age cohort.

▪ Benchmarking

Brazil demonstrates how low-performing countries can use both national and international benchmarking to focus their efforts and establish tools to improve their education systems. Using the US National Assessment of Educational Progress (NAEP) and PISA as models, Brazil has created IDEB, an internationally-benchmarked system that establishes goals for every school and measures their progress towards that goal. Brazil's focus on teacher quality, accountability and school management is consistent with the best practices of high-performing countries and can be a model for other countries starting on the path to improvement.

In both Acre and São Paulo, the secretaries of education placed a premium on the development of full instructional systems that took the federal standards and expanded them into curriculum, instructional materials, teacher training and assessments. Because the current level of performance is low, the standards, curriculum and assessments start from where students are and attempt to take them to higher levels of cognitive performance. States and provinces in other countries can use these strategies as models of how to move forward from general curriculum frameworks at the federal level to establishing what teachers need to change their practice and implement aligned instructional systems.

▪ System coherence and alignment

System coherence is far more difficult to accomplish in a federal system, especially one that has states with such different economic and social conditions. Yet a federal system can use the lessons from Brazil:

- Establish policies that foster a systemic approach to education and use funding to the states as incentives for implementing similar policies in their states.
- Create a synthetic index like the IDEB to establish standards for each school.
- Publicise scores that show performance levels in each state and school to create public pressure in states and schools that are not improving.
- Identify and publish promising practices that successful states have used and share them with state leaders as possible strategies for improvement.
- Hold meetings with state secretaries of education in low performing states and require improvement plans from their states.

▪ Teacher and principal quality

The most critical lesson from Brazil is the importance of the quality of the teaching force when improving education. Before the reforms, the standards for entering teacher education and becoming a teacher were very low. Teacher education institutions focused on philosophy of education rather than the knowledge and skills needed to be an effective teacher. The infrastructures to support in-service education were very weak. Until these problems are addressed, a country cannot make major strides in student achievement. Recent efforts by the ministry and the São Paulo Secretariat are models for where to start to improve the teaching force. The ministry is proposing an assessment system for new teachers that could establish standards for entry into the profession. Minister Haddad hopes that pre-service teacher exams may be a strategy to influence the teacher education programmes at the universities. In addition, the 1996 Law of Directives and Bases of National Education requires each state and municipality to establish career paths for teachers. Several states are creating career paths that link salary to expertise and some are developing incentive programmes. São Paulo's new career path system will include examinations.

Individual states are using different strategies to address teacher quality. Some are working with federal universities and NGOs to develop effective training for in-service teachers. Ceará and São Paulo have organised coaches to work with teachers in the classroom using the state's instructional materials to help them improve their practices. Acre raised its salaries to be competitive with other states, and it has been able to attract teachers to the state. Secretary da Silva believes that Acre is on the path to improved teacher performance.

▪ Accountability

Brazil provides good examples of how a federal system can establish accountability in its system. It has used the IDEB to establish accountability at the school, municipality and state levels. The ministry has used its public statements, planning documents, and public relations initiatives to create public interest in IDEB results as a measure of improvements in educational quality in local schools. The business and industrial constituencies support these efforts. Local communities want their school to score well in the ratings.

▪ Instructional practice

Surveys of instructional practices in Brazil indicate that the primary mode of instruction still involves the teacher at the front of the room and all students engaged in the same activities at the same time. It is not unusual to use this strategy when attempting to get all students to a basic level of literacy; many countries do. However, given the range of students in both ability and in age because of grade repetitions, this may not be the most effective strategy to recommend to others. The first challenge in any low-performing country is to improve teachers' content and basic pedagogical knowledge. Initiatives occurring in some Brazilian states show that improved instructional practices can be and are being addressed:

- Acre is focusing on primary curriculum with training provided by supervisors who monitor instruction.
- Ceará has a structured teaching programme for primary grades.
- São Paulo uses coaches to assist teachers in the implementation of the curriculum, lesson plans and instructional materials.

▪ Standards for teachers

Without high standards for professional practice, it is difficult for any country to move its education system forward. Brazil is attempting to change certain aspects of the current system rather than the whole system at one time. It will



take time to see if this approach works or if Chile's approach of establishing the standards first and then aligning tools is more effective (The Framework for Good Teaching-*El Marco para la Buena Enseñanza*, see OECD, 2009a). Minister Haddad's proposal of an examination for teachers prior to entering the classroom is a first step towards a better-qualified teaching corps, as is the initiative for all states and municipalities to develop career plans that connect expertise with compensation. A nationally-available examination will help small states and municipalities that have not already developed examinations for entry level teachers. Secretary Souza's career plan for São Paulo, which involves assessments of teachers' knowledge of content and pedagogy, will set standards for those who wish to move up the career ladder. In addition, his use of an examination to qualify temporary teachers will raise the bar until qualified teachers are available for every post.

▪ Equity in the distribution of resources

As Brazil shows, money is not enough to improve education. The country spends 5.2% of its GDP on public education and almost 16% of the total government budget on public education. This is as much or more than most OECD countries, so insufficient funding is not the issue. The challenge is the efficiency and effectiveness of the education system. Part of this is the high cost of teacher pensions, taking up 30-50% of the states' spending on education. This reflects the pensions offered to other Brazilian civil servants, and is an issue common to many countries. Inequitable funding of different levels of education is another problem. Brazil funds its public universities at a much higher per student level than its basic education system. The 2010 OECD publication *Education at a Glance* notes that the spending per student on tertiary education (excluding R&D) is nearly six times higher than on primary education in Brazil, as compared to about 30% higher on average in OECD countries (OECD, 2010b). This results in first class public universities that few public school graduates are eligible to enter.

Although higher education is funded at a higher level than basic and secondary education, Brazil is a good example of how to use federal statutory authority to make the funding available for basic and secondary education more equitable. FUNDEF has identified a group of federal, state and municipal taxes and has dictated that a set percentage of these revenues must be dedicated to basic and secondary education. This establishes a firm base for educational expenditures, supplemented by federal "top-up" funds that ensure that every municipality would have at least minimum funding for education. To allocate these funds, FUNDEF moved from a formula based on population density – which was biased towards large cities – to a system based on minimum per-pupil allocations. This has provided states such as Acre and Ceará with the necessary resources to improve their education systems.

▪ Incentives for learning

To date Brazil is still experimenting with incentives. It has established incentives for student attendance through the *Bolsa Família*, which gives parents an incentive to keep their students in school and get regular health checkups. However *Bolsa Família* does not provide an incentive for students to work hard to achieve excellence. Acre and São Paulo have established incentives for schools that improve their performance levels, as have some other states and large cities. Here the school is the unit of improvement. The only incentive for students to take tough courses and work hard is the hope of entering a public university because they have excelled in the entrance exam. Because most students have not received the quality of education necessary to excel, that hope is beyond the realm of possibility for them. Intermediate incentives might encourage students to move to higher levels of performance.

WHERE IS BRAZIL ON THE EDUCATIONAL CONTINUUM?

Brazil's mixed economy is still heavily based on commodities and therefore still relies on unskilled labour in many sectors. However, in future the economy will increasingly be based on how much its labour force can add value to the raw materials it produces. Brazil knows it must produce much larger numbers of skilled workers than it is currently producing. It is this that is driving demand both for a greater quantity of educated workers and for improvements in the quality of education. On the quantity side, the challenge is to increase the length of the school day and the proportion of the cohort that completes high school. On the quality side, the challenge is to move towards the average national PISA scores. These are ambitious but appropriate goals for a country that until recently could be counted as among those well to the left on the economic development dimension line (Figure 1.1, Chapter 1).

In municipalities across Brazil, you find teachers at all points along the continuum as the country works to professionalise and educate its teacher corps. Most teachers are located just to the left of the middle of the continuum, especially if one includes the temporary teachers filling vacancies with the system. As a result, many states have developed curriculum materials that explicitly identify teaching strategies and student materials that allow students to learn independently.



As is normal for a country in the early phases of modern industrial development, Brazil is still struggling with basic literacy for the majority of its students. Grade repetitions increase the complexity of classrooms, with students of varied ages and backgrounds all in the same room with teachers who may not have the competence to deliver effective education in this environment. In public schools where the students come from more educated families, students and teachers are able to focus on more complex learning.

States are focusing on the management of schools as a key reform area. They understand the importance of professional principals who can lead staff in collaborative efforts of continuous improvement. School-based decision making was part of the education law of 1996, but this is difficult to accomplish when teacher attrition and mobility are high and capacity is low. Indeed, this may be an arena in which the goal is well ahead of the capacity to achieve it.

FINAL OBSERVATIONS

Barbara Bruns, Lead Education Specialist for the Latin America region at the World Bank, notes that Brazil has transformed its education system over the last 15 years. Using a public administration framework, it has extended public basic education to over 95% of the population; it has established assessment systems using an internationally benchmarked index that characterises the progress of each school; it has created student-based funding formulas that distribute funds fairly within states; it has used conditional cash transfers to poor families to move the next generation out of poverty through education; and it has encouraged states and municipalities to take actions to improve education in individual schools. Brazil has enjoyed 15 years of economic and political stability that has enabled it to develop solid industries that export to the world. Consumption is up among its citizens and this continues to fuel its economy. Its challenge now is to raise the level of education of its citizens high enough to enable them to take commerce and industry to competitive levels in a global marketplace.

While all of the educators in the ministry and state secretariats agree that educational levels are still too low, they are working hard to use the best thinking on high performing schools to improve their systems. Their focus on instructional systems; improved teacher preparation, qualifications, salaries and training; the use of targets to identify best practices and to provide support for low performers are starting to make a difference. In each of the three states and in Brazil as a whole, performance has exceeded their targets, and they believe this is just the start of their journey to excellence. We close this chapter with the words of Minister Haddad: “We are more united than ever to achieve the objectives. The 20th century was a lost one for Brazil because the country did not address the issue of education reform. Maybe for the first time, I see the country mobilised; targets were established and everyone agreed to them. Nobody contests the national plan for education. I think we have a hard job ahead, but Brazil has a real chance to overcome its difficulties in this area.”



■ Figure 8.2 ■
Brazil: Profile data

Language(s)	Official: Portuguese
Population	191.9 million (2008) ² 646 962 (2005) ³ (<i>Acre-North</i>) 8.1 million (2005) ⁴ (<i>Ceará-Northeast</i>) 10.9 million (2006) ⁵ (<i>Sao Paulo-Southeast</i>)
Youth population	26.4% ⁶ (OECD average 18.7%)
Elderly population	6.6% ⁷ (OECD average 14.4%)
Growth rate	1.04 (OECD 0.68%) ⁸
Foreign-born population	0.04% immigrants ⁹
GDP per capita	USD 10 466 (2008) (OECD average 33 732) ¹⁰
Economy-Origin of GDP	Services: 65.3%; Industry (including construction): 28%; Agriculture: 6.7% of GDP (2008) ¹¹
Unemployment	7.3% ¹² (OECD average 6.1%) ¹³
Youth unemployment	18% ¹⁴ (OECD average 13.8%) ¹⁵
NEETs, 15-17 year-olds	10.7% (2007) (<i>North</i>) 10.3% (2007) (<i>Northeast</i>) 8.7% (2007) (<i>Southeast</i>) 9.6% (2007) (<i>Total</i>) ¹⁶
Expenditure on education	5.2% of GDP; (OECD average 5.2%) 4.0% on primary, secondary and post-secondary non-tertiary 0.8% on tertiary ¹⁷ education ¹⁸ (OECD average 3.5%; 1.2% respectively) 16.1% of total government expenditure (2007) ¹⁹ (OECD average 13.3%) 12.2% on primary, secondary and post-secondary non-tertiary 2.6 % on tertiary education ²⁰ (OECD average 9%; 3.1% respectively)
Enrolment ratio, early childhood education	49.7% (2008) ²¹ (OECD average 71.5%) ²²
Enrolment ratio, primary education	95.6% (2008) ²³ (OECD average 98.8%) ²⁴
Enrolment ratio, secondary education	76.4% (2008) ²⁵ (OECD average 81.5%) ²⁶
Enrolment of 15-17 year-olds ²⁷ in ISCED 2 and ISCED 3	M 39.1%; F 36.2% (2007) (<i>North</i>) M 42.8%; F 34.5% (2007) (<i>Northeast</i>) M 23.5%; F 58.7% (2007) (<i>Southeast</i>) M 31.1%; F 47.9% (2007) (<i>Total</i>)
Enrolment ratio, tertiary education	21.1% ²⁸ (OECD average 24.9%) ²⁹
Students in primary education, by type of institution or mode of enrolment ³⁰	Public: 88.4% (OECD average 89.6%) Government-dependent private: no data ³¹ (OECD average 8.1%) Independent, private: 11.6% (OECD average 2.9%)
Students in lower secondary education, by type of institution or mode of enrolment ³²	Public 90.3% (OECD average 83.2%) Government-dependent private: no data ³³ (OECD average 10.9%) Independent, private : 9.7% (OECD average 3.5%)
Students in upper secondary education, by type of institution or mode of enrolment ³⁴	Public: 86% (OECD average 82%) Government-dependent private: no data ³⁵ (OECD average 13.6%) Independent, private: 14% (OECD average 5.5%)
Students in tertiary education, by type of institution or mode of enrolment ³⁶	Tertiary type B education: Public: 16.9% Government-dependent private: no data ³⁷ Independent-private: 83.1% (OECD average Public: 61.8% Government-dependent private : 19.2% Independent-private: 16.6%) Tertiary type A education: Public: 29.3% Government-dependent private: no data ³⁸ Independent-private: 70.7% (OECD average Public: 77.1% Government-dependent private: 9.6% Independent-private: 15%)
Teachers' salaries	Average annual starting salary in lower secondary education: missing data* (OECD average USD 30 750) ³⁹ Ratio of salary in lower secondary education after 15 years of experience to GDP per capita: missing data (OECD average: 1.22)
Upper secondary graduation rates	63% ⁴⁰ (OECD average 80%) ⁴¹

*Data on Brazilian teachers' salaries missing from *Education at a Glance 2010* (OECD, 2010).

StatLink  <http://dx.doi.org/10.1787/888932366750>



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Notes

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20. OECD (2010), *Education at a Glance 2010*, OECD Publishing. Public expenditure presented in this table includes public subsidies to households for living costs (scholarships and grants to students/households and students loans), which are not spent on educational institutions (data from 2006).
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