

Is the Trinidad and Tobago education system structured to facilitate optimum human capital development? New findings on the relationship between education structures and outcomes from National and International Assessments

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Abstract

One of the more critical roles of the education system is to develop human capital. Low quality, unequal human capital development remains an important issue for Trinidad and Tobago as it seeks to align its economic structure with the emerging requirements of a knowledge society. The education system inherited from British colonial rule was noticeably elitist and examination-oriented, designed to filter, segregate and retain students based on perceived meritocracy, as defined solely by performance in public examinations. Significant features of this inherited differentiated system include segregated schools and embedded institutional practices and beliefs supportive of academic tracking, streaming and setting. Despite government's commitment to a seamless system, the legitimacy of a differentiated system remains high among the populace, with a persistent concern for the fate of "the top 20% of the ability group". The question then becomes, *are the country's needs (and that of all ability groups) best served by a differentiated or non-differentiated school system?* In other words, is the current design of the education system the best strategy for efficient and equitable human resource-centred development? The issue of structure and outcome in education systems has emerged internationally with the growth of regional and international assessments, which allow comparisons and benchmarking across countries and education systems. High quality differentiated systems as in Germany can be compared with high quality non-differentiated systems as in Finland. Trinidad and Tobago is currently enrolled in the PIRLS and PISA international assessments, and benchmarking data is available from the 1990/1991 IEA study of reading at ages 9 and 14 and the 2006 PIRLS. We use this information along with data from national assessments to analyze, benchmark, and compare outcomes from the differentiated education system in Trinidad and Tobago.

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Human capital development as promise and challenge

The human capital requirements of globalization and the information age have placed great demands upon economic and educational structures of both developing and developed countries (Cogburn & Adeya, 1999). Rapid changes in the economy and in the nature of work have forced nations to transform education and training systems to produce individuals that can contribute productively in this new age (Miller, 1996; OECD, 2007). In practical terms, this has meant implementing education reform for life-long learning, universal secondary education, and greater access to post-secondary education. For the Anglophone Caribbean, the response of the education sector has been somewhat varied, with limitations increasingly apparent in several areas (Miller, 1996; Di Gropello, 2006). Compared with its CARICOM¹ partners, the economic situation in Trinidad and Tobago might appear favourable; however, the sustainability of current successes are intertwined with a dwindling natural resource base and the challenge of developing a high quality human resource base. During the first decade of the twenty-first century, Trinidad and Tobago's economic indicators continued to improve with a decline in unemployment and increase in GDP (Elías & Rojas-Suárez, 2006). In the preceding decade, increased revenue from LNG and petrochemical production partly compensated for declining revenue from reduced oil production. Nevertheless, despite expansion in manufacturing and tourism, the Trinidad and Tobago economy remains strongly reliant on revenue from hydrocarbons and indeed the relative growth in manufacturing has been significantly slower (Artana et al., 2007).

Trinidad and Tobago outlined its vision for the future in an elaborate Vision 2020 planning exercise; documenting a pathway to developed nation status, built on five pillars: competitive business, caring society, innovative people, effective government and sound infrastructure and environment. Vision 2020 recognizes the centrality of the human resource to Trinidad and Tobago's future, acknowledging the limitations of a small population compared with the new rising stars in the world's economy. The Vision 2020 2007-2010 operational plan puts forwards four main goals in creating an innovative people: (1) to become well known for excellence in innovation, (2) to create a seamless self-renewing, high quality education system, (3) to produce a highly-skilled work force to drive innovation and production, and (4) to harness cultural elements to inspire innovation and creativity. Implied in goals 1 to 3 is an education system aligned to the production of high quality human capital, as measured by innovation, creativity, flexibility, and productivity. The focus of such efforts is appropriate given that small investments in this area can lead to relatively high gains in the countries of Latin America and the Caribbean (Behrman, 1996).

Both "high-quality" and "equal" are features of human capital"? High quality refers to the range and extent of skills and competencies necessary for sustaining economic growth (Olaniyan & Akemakinde, 2008). "Equal" suggests small variation in the range of workforce skills. Thus, both quality and inequality are deeply intertwined but independent outcomes. For example, high-quality might coexist with unequal outcomes or unequal outcomes may persist despite significant improvements in quality. Perry et al (2006) noted the unequal distribution of human capital linked to rurality and ethnicity in the relatively string

¹ CARICOM is the Caribbean Community here referred to as a trading block

Latin American economies of Brazil, Chile, and Mexico. Likewise, an analysis of the human capital challenges faced by oil-dependent economies like Qatar points to the dangers of uneven human capital development brought about by education inequalities (Gonzalez et al., 2008). Central to Trinidad and Tobago's efforts to develop high quality and equal human capital is goal 2, which refers to the creation of a seamless high quality education system. The implications of a seamless system are apparent in the following quote:

Fundamental to the development of Innovative People is the creation of a 'seamless education system' which ensures that every citizen, regardless of age, experience or social status, is afforded the opportunity to access education and thereby become prepared to participate in the development of a modern skills-based economy. Through this system, students at any level are able to transit smoothly through the education continuum. Pre-primary, primary, secondary, tertiary, technical and adult education is therefore part of a continuous and integrated process (Vision 2020 Operational Plan, Section 1, p. 23).

Seamless in this context, then, implies that the education system is integrated and efficient, able to reduce barriers to learning and produce large amounts of well-trained graduates (McCabe, 2001; Huggins, 2004). Thus, the concept of seamlessness has both horizontal and vertical dimensions, with the latter evident in the linkages and transitions between different levels of the education system. Given the historical setting, an important question would be: *is the current education system seen as a help or a hindrance or do the planners envisage radical reform?* The Vision 2020 audit of the education system made use of Global Competitiveness indicators to suggest that the system does possess some of the desired elements. Indeed, the 2009-2010 data on global competitiveness paints a relatively favourable picture of the education system, with the quality of the primary education system ranked 39th out of 134 countries and the quality of the education system ranked 35th (World Economic Forum, 2010). However, secondary enrolment is ranked 74th and tertiary enrolment, 101st. The quality of the primary education sector and overall education is better than Jamaica (86th for primary and 83rd for overall quality) but significantly worse than Barbados (5th for primary and 13th for overall quality). However, Trinidad lags behind both countries in secondary enrolment and tertiary enrolment. Perhaps more importantly Trinidad and Tobago ranks 69th in educational expenditure, Jamaica ranks 28th and Barbados ranks 9th² (World Economic Forum, 2010).

Of course, numerical indices cannot fully capture the processes and structures related to quality or equity, especially when applied across different contexts. A better understanding of the Government's intent and priorities is to be found in the Ministry of Education's strategic and corporate plans. The 2002 to 2006 Ministry of Education Strategic Plan identifies the need for transformation especially in four key areas: (1) modernization of the curriculum, (2) development of teacher education, (3) initiation of a comprehensive early childhood care and education system, and (4) developing a seamless transition at primary to secondary level. The last objective appears to imply recognition of the disjuncture and contradictions that have enveloped the system. Although the word transformation is used, perhaps the type of reform really meant is radical restructuring and not simple renewal or repair (Jules, 2008). Such

² For the period 2007 to 2010, 76% of the expenditure for Vision 2020 was on competitive business, sound infrastructure and environment with 10% for an innovative people and 9% for a caring society (Government of Trinidad & Tobago, 2006).

restructuring is a reengineering the system with a focus on radical change, including complete elimination of dysfunctional structures.

The perils of a misaligned education system

Reconsidering the concept of a seamless education system

Although current policies recognize the challenges, they do not always explicitly address various aspects of the vertical and horizontal dimensions of seamlessness. Horizontal seamlessness implies integration at different levels, including subject areas and disciplines. Thus, in a seamless system, technical-vocational and academic pathways do not diverge and remain separate. Horizontal seamlessness also implies equality of opportunity, partly achieved through standardization, so that all learners are exposed to the same core curriculum. Clearly, this may not happen if learners are being placed in different tracks within the school or different schools that cater for different ability groups. Horizontal seamlessness also applies to schools in different geographical locations and different socioeconomic contexts. Large differences between schools in these different contexts would suggest differential opportunity. Seamlessness cannot occur in the absence of structures for inclusion, such as support for students at risk and those with special education needs.

Vertical seamlessness focuses on the transition points in the education system and on the presence of systems that provide opportunities recovery³. Transition points are at early childhood to primary, primary to secondary, and secondary to post secondary. Issues of efficiency and equity apply to each transition point and to the action and role of any gatekeepers. A vertically seamless system is built upon interlocking phases that collaborate on issues and challenges. A good example of such a design is the Finnish strategy to reduce non-readers at 15, which locates itself in intensification and class size reduction for poor readers in the early primary school (OECD, 2007). In contrast, the lack of seamlessness is evident in Trinidad and Tobago where non-readers are only identified by poor performance at the end of the primary schools' cycle through the high stakes Secondary Entrance Assessment, whereupon they are shunted to special classes and schools, with very limited opportunity for recovery.

The clarification of these terms, then, suggests that the inherited colonial system had many seams. Colonial systems were never designed to provide the same education for everyone and differences were often apparent across gender and social status (Hickling-Hudson, 2004). Some schools focused upon the less valued technical and practical skills while other schools trained local elites in subjects such as Latin and Greek (Campbell, 1996). Also unique in colonial and postcolonial systems were the gatekeepers positioned at key transition points. As a wave of nationalization and democratization spread in the 1960s, local politicians came to believe that changing gatekeepers⁴ might improve the fairness of selection (Alleyne, 1995; De Lisle, 2009a). By the end of the 1960s, however, empirical studies confirmed that selection by examinations maintained the same type and level of segregation (Manley, 1963; 1969; Cross & Schwartzbaum, 1969). All of this is not to say that the colonial education structure was inefficient, rather it was simply "fit for purpose", if that purpose was to select a few high achieving locals who would staff the civil service, while reducing the aspirations and expectations of many others. Nevertheless, even

³ See Hand, Parker, & Francis (2009)

⁴ More recently, Trinidad and Tobago society has sought to hold on to postsecondary gatekeepers like the Cambridge A-Levels, in the midst of increasing opportunities at the tertiary level (De Lisle, 2009). These actions suggest a level of awe and reverence that is both strong and persistent (Olmedilla, 1992).

the labour skills of education non-participants could prove critical to a colonial economy, with the production of raw materials as the mainstay. The question is, to what extent would such retained structures facilitate the intentions of vision 2020? In other words, is the current education system aligned with the intentions and goals of Vision 2020? And if not, what type of transformation is required?

An unequal human capital?

Colonial and postcolonial systems were elitist rather than egalitarian. Structures in elitist systems are designed to select and sort students (Heyneman, 1987; 2004), but the systems are also built on beliefs and attitudes, such as low expectations, inappropriate aspirations, and teacher behaviours and practices designed to ensure that not everybody learns. Thus, an important part of the retention of elitism through local education reform is the continued impact of negative teacher expectations and practices within new sector schools. When the secondary schools system first expanded, the population receiving access to secondary school was just below 40%. Nevertheless, failure rates in the new schools remained very high, with some claiming success to be impossible (Campbell, 1997⁵). Even with universal secondary education, these views have not changed and may even have intensified.

It may be then that by retaining several elitist structural and behavioural elements onto its 2020 roadway, Trinidad and Tobago now runs the risk of producing a low-quality and unequal work force, incapable of the innovation, production and creativity outlined in Vision 2020. This unequal workforce would consist of a few highly educated and skilled workers and many unskilled workers, functioning at substantially lower levels and receiving lower wages. Such a workforce contrasts with the Government's vision of Trinidad and Tobago as a high technology industrial and manufacturing CARICOM giant. Central to the creation of unequal human capital are selection and stratification, which lead to inequality in educational attainment. However, the removal of selection has always been resisted in the past because of strong societal perceptions and beliefs. For example, the 1998 Task Force for the Removal of the Common Entrance Examination argued for maintaining a role for a gatekeeper examination at the primary-secondary transition point to allocate the best students to the best type of schools (Task Force, 1998). The challenge, then, is to get the entire populace onboard the restructuring mission. This requires a re-examination of the meaning of quality and equity in an education system.

Quality and equity in elitist and egalitarian education systems

Most notably, then, the understanding of quality in postcolonial elitist systems is out of sync with that in modern education systems designed to achieve targets such as the Millennium Development Goals. In elitist systems, quality is measured by the capacity of the system to produce a few high quality scholars, some of whom can compete with scholars in the metropole. The focus is not on educating everyone in basic skills and critical thinking; instead, substantial resources are put into the education of the local elites; who are provided with the best teachers, best schools, and best resources. Thus in elitist systems, the quality of schools may vary sharply, depending upon the clients (Walde, 2000). Modern education systems are increasingly egalitarian rather than elitist. Egalitarian systems attempt to equalize outcomes by distributing resources across different schools to ensure that opportunities for learning are enhanced for all students. Egalitarian systems are by their very nature inclusive and resist concentrating low

⁵ Campbell (1997) documented the strong opposition of the Examinations Review Committee led by former Chief Education Officer C.V. Gocking to the expansion of the education system and his argument for the suitability of examinations for students outside the 20%.

achieving or disadvantaged students in poorly resourced special school types. Differential allocation of resources might occur in compensatory systems meant for equalization, as in the case of Mexico and Uruguay (Anderson, 2005; Winkler, 2000). Thus, modern egalitarian education systems are ultimately designed to reduce sharp differences in outcomes.

This does not mean that all students are treated equally in egalitarian systems. Berne and Stiefel's (1984) constructed three different types of equity for resource allocation issues: vertical equity, horizontal equity and equality of opportunity. Horizontal equity means equal treatment of equals, vertical equity is equal treatment of unequals, and equal opportunity means the absence of differences due to extraneous characteristics (Barros et al., 2009). The compensatory schemes in Mexico and Uruguay are designed to foster vertical equity but may also lead to increase equality of opportunity (Ravela, 2005). Equity has also become a critical concern even for high quality OECD systems. Levin (2003) developed a useful framework for examining equity issues in OECD education systems. Levin, in differentiating between equity and equality, noted that although numerical equality was impossible⁶, commitment to equity should translate into a policy focus on the degree of inequality within a system. Levin argued that in developing such policy, there are two dimensions to consider: (1) whether overall levels of provision are sufficient and of the right kind and (2) concerns about the participation and success of learners from particular groups that have tended to experience lower levels of participation and success in all areas of education. The latter relates to the nature of the education provision and the absence or presence of systems to assure quality outcomes for groups by gender, ethnicity and socioeconomic status.

Perhaps, equity issues are even more important for ambitious states like Trinidad and Tobago, where equity and quality are intertwined (UNESCO, 2003). In the past, Trinidad and Tobago has been confronted with the challenge of ensuring quality with system expansion (Alleyne, 1995), but equity issues have been glossed over despite some evidence in the past (World Bank, 1993, 1995). As such, in the last decade, few equity policies have been developed; and of those initiated, many have been implemented with low fidelity. The most successful implementation in recent times is in early childhood care and education, with early childhood centres located in disadvantaged areas and attempts at standardizing and monitoring. However, there are also instances of poor implementation as in the case of inclusive education, where current structures lag behind those proposed in the 1993-2002 White Paper (Lavia, 2007; Williams, 2007). There are no policies for compensatory education and accountability systems are still in their infancy. This has resulted in high variability in the performance of primary schools. This variability is magnified in the segregated secondary school sector, with students allocated to schools based on prior performances. The segregated architecture is supported by a system of beliefs and expectations among all clients, which further limits performances in "low ability" schools.

Does stratification (differentiation) really lead to inequity?

Some evidence that differentiated systems are less efficient and less equitable compared with integrated systems comes from research using data from international surveys (Dupriez & Dumay, 2006; Dupriez, Dumay & Vause, 2008). Interrogating the relationship between system structure and equity is only possible with high quality standardized data across several countries. Such data is increasingly available from countries' participating in international assessments of educational achievement such as the Progress

⁶ We agree with Levin (2003) and Benadusi (2007) who argued that inequity includes large magnitude inequalities and inequalities that are linked to extraneous variables.

in Reading Literacy Survey (PIRLS), Trends in International Mathematics and Science (TIMSS), and Programme for International Student Assessment (PISA). Although the TIMSS is curriculum-based, the PIRLS provides a measure of reading, and the PISA assesses core competencies in mathematics, reading and science at the end of the second cycle. In this regard, Baye and Christian (2006) emphasized that “international surveys can be viewed as unique tools that enable us to analyze how efficient and how equitable countries are and then to consider this information in relation to institutional settings” (p. 199).

In international surveys, overall rankings provide a measure of quality while measures of dispersion are used to judge equity at various levels. Demeuse and Baye (2008) developed a series of indicators for evaluating differentiation in European education systems. The indicators include the grouping method employed in class organization, age of first selection, percentage grade repetition, transition practices to secondary schooling, level of inclusion, parental choice of school, and freedom of access to tertiary education. The authors found that these differentiated structures were indeed moderately correlated with segregation indicators for European countries, with countries like Finland, Norway and Sweden (Low score on structures, high segregation) on one end and Germany, Belgium and Netherlands on the next. Park (2005) found that system features like differentiation and standardization could act as mediators between family background factors, such as SES, and quality or equity outcomes. Nonoyama (2005) provided evidence to show that some aspects of differentiation enhanced the effects of family background. Therefore, the impact of socioeconomic status could also be dependent on the structure. Despite the complexity of these patterns, some OECD systems are able to attain both high efficiency and high equality, with the impact of family background factors much reduced.

The Context of Trinidad and Tobago

The main argument in this paper is that several inherited elements in the Trinidad and Tobago education system foster inequality in educational attainment and may ultimately create unequal human capital. The study does not set out to prove that education inequality leads directly to unequal human capital⁷, instead the focus is on judging equity in basic education and linking those differences to features of the current system architecture. The inequality measures are based on the more important attainment scores rather than access or participation (Vegas & Petrow, 2008). Inequity is thus considered either a large difference in attainment (Levin, 2003) or a difference associated with extraneous variables like gender and socioeconomic status (Barros et al. 2009). Critical elements of the local education structure that might contribute to inequity are (1) market education forces, (2) structural differentiation in schools and classrooms, and (3) beliefs and expectations of stakeholders and participants.

An education market consists of four elements: (1) choice, (2) diversity and differentiation among providers, (3) competition, and (4) responsiveness to parents’ and pupils’ needs and preferences (Oplatka, 2004). The education market in Trinidad and Tobago developed from early competition between denominational and Government schools (De Lisle et al., 2009). By the 1960s, the Common Entrance Examination (CEE) included mechanisms that, in theory, allowed students to choose freely between

⁷ The link between inequality in education and human capital may be contentious. Piffaut (2009) confirmed such a link in Chile. However, Lim & Tang (2008) recently provided evidence to show that, internationally, the relationship between human capital inequality and education inequality is not linear. Thus, they concluded that “using “education inequality as a proxy of human capital inequality could lead to completely misleading findings” (p. 45). The education Gini is based on several factors including years of schooling; however, the data in this study is on inequality in educational attainment, which may have a closer link with human capital as an outcome.

secondary schools⁸. Interestingly, the 1975 Republican constitution also included a clause that permitted parents to opt out of the government system for schools of their own choice (Anthony, 1993). In reality, there are few private secondary schools and the competition is primarily between the government and denominational sector. However, at the primary school level, private schools are important in some urban areas, but eventually even these schools feed into the public secondary sector. The competition at the primary school level is fuelled by the desire to gain entry into elite secondary schools (London, 1989; 1994). Essentially, then, the education system in Trinidad and Tobago is selective, stratified and segregated. In this paper, the term differentiated is used to describe these characteristics.

The selection mechanism at eleven plus is an important agency in the process because it not only manages choice of primary and secondary school, but it also sustains and creates differentiation at both levels. The structural differentiation in the secondary school sector is based on different models of schools implemented during different time-periods as well as different management systems (London, 1991, 1994). For example, prior to 2009, government school types included colleges, secondary schools, high schools, comprehensive schools, composite schools, and junior secondary schools. In terms of school model, denominational schools are less varied, but represent a distinct option in the system as well, which takes into consideration alignment to the different religious groups. Most traditional schools are considered more prestigious than newer schools and this gives rise to the fundamental difference that becomes the prime motivator for school choice (London, 1994). High achieving students tend to select these schools in much greater numbers (Jackson, 2009). In order to ensure success at the Eleven Plus, primary schools are often specifically organized, with streaming commonly practiced. There is also significant competition for schools that do well at the Eleven Plus.

The basic architecture of Trinidad and Tobago's education system has persisted throughout the significant reform and expansion periods of the 1970s and 1990s. Indeed, Trinidad and Tobago has been a significant recipient of education funding from both the World Bank (Fourth Basic Education Reform Project) and the IADB (Secondary Education Modernization Project and the Seamless Project) (De Lisle, 2009b). Despite several reforms, however, the level of differentiation remains the same or may be increasing. Figure 1 provides a formal diagram of system structure based on a 2006 UNESCO document. Even in the diagram, some differentiation is readily evident in the secondary school sector⁹. Variation is also evident in the primary school and early childhood sector despite a standardized curriculum. In the case of early childhood, there are significant differences in private and public service providers, despite the installation of monitoring systems.

[PLACE TABLE 1 & FIGURE 1 ABOUT HERE]

Several structural and behavioural elements contribute to differentiation. The listing in Table 1, is partly based on the work of Demeuse & Baye (2008), but extends the concept of differentiation to include standardization of the curriculum and differential teacher practices and beliefs (Mitchell, 2001). Since benchmarking data was not readily available for Trinidad, it is difficult to weight each factor. However, the level of differentiation seems comparable to the more stratified European systems, with early selection at age eleven, high repetition rates, and limited access to higher education. Also important are the belief structures and expectations of both teachers and parents supportive of inequity (Mitchell, 2001). For

⁸ Another part of the reality is that the great majority of students do not get their first choice and many are placed outside any of their choices (De Lisle et al., 2009)

⁹ As of 2009, most Government schools have either been deshifted or converted to ensure a single model of secondary school.

example, Evans (2001, 2006) documented the negative effects of teacher beliefs on male achievement and behaviour in the tracked systems of Jamaica. Likewise, in Trinidad, Kutnick et al. (1997) found that teacher expectations and practices created differential outcomes for boys at the lower secondary level.

In search of the evidence

Gathering the evidence

To gather evidence on the possible impact of structural elements related to differentiation, national and international large-scale data involving Trinidad and Tobago were obtained. Although the Vision 2020 makes liberal use of evidence from certification and selection examinations to assess the state of the education system, educational evaluators prefer to rely on low to medium stakes national or international surveys (Brandon, 2005). In so doing, they minimize the possible impact of teaching to the test or extra lessons in the shadow education system (Bray, 2009). Such practices limit the usefulness of data from the Eleven Plus and Caribbean Secondary Education Certificate (CSEC), which includes the partial contribution of external systems (London, 1989). If data is to be used from public examinations for evaluation purposes, it must be used with great caution, as the influence of socioeconomic variables will be magnified.

Another important benefit of using only high quality data from national and international assessments for system evaluation is that both norm-referenced and standard-referenced indices are available (Lockheed, 2008). Standard referenced indices are essential to answering the question, “*how good is good enough*” and are required for evaluating the extent to which standards are being met (Brandon, 2005; De Lisle, 2008). In Trinidad and Tobago, student performance is classified into four achievement levels, defined in Table 2 (2005 definitions). This standard based classification overcomes the deficiencies of current MoE indicators, such as the number below 30% in the SEA, which can be manipulated by adjusting test difficulty. All international assessments now include standard-referenced data and from 2005, national assessment data at the primary school level in Trinidad and Tobago is also standard-referenced. High quality data will also report both statistical and practical significance, the latter allowing an evaluation of the magnitude of differentials.

The national evaluation system in Trinidad and Tobago is in its infancy and not comparable to the mature systems in the OECD or Latin American countries (Ferrer, 2006). To date, Trinidad and Tobago has participated in two international assessments, both in reading. These are the 1990-1991 IEA study of reading and the 2006 PIRLS¹⁰. Data will be available in December 2010 from the 2009 PISA administration, which will allow further comparisons of quality and equity across several country systems. Although international survey data have been available for some time, there has been little local use in secondary analysis and policymaking. Some changes in the use of the data might be expected, however, with the forthcoming release of PISA results with the current OECD focus on equity and the increasing capacity of local research groups. Although national assessments do not allow benchmarking, they better capture some forms of inequity and provide trend data. Currently the Trinidad and Tobago Ministry of Education employs annual census administration, which facilitates the development of school

¹⁰ Because of changes to the PIRLS framework in 2000, data from 1990-1991 are not directly comparable to 2006. We use the overall ranking and score in the different assessments simply as an indication of system performance. Data from the PIRLS was retrieved from the following publications-Martin, Mullis, & Kennedy (2007), Mullis et al., 2006; and Mullis et al., 2007.

performance measures as in State Assessments within the US. In this analysis, both original data sets and secondary data are used.

Developing the focus

In this study, five areas were analyzed, (1) overall quality or effectiveness of the system; (2) magnitude of overall inequality; (3) inequality by extraneous factors, at different levels, and (4) consideration of differences in practices and beliefs. Attention was given to norm and standard referenced data from both national and international assessments. It seemed useful to concentrate on basic education, which is the foundation of the education system in which all students are involved¹¹. The definition of basic education used here includes early childhood, lower secondary, and some upper secondary, as well as basic life skills for youth and adults (UNESCO, 2008). The study does not make use of evidence from the National Certificate of Secondary Education (NCSE) Part 1, which has both certification and accountability functions and does not report standard-referenced achievement levels. The national assessments in Mathematics and Language are conducted at Standard 1, ages 7 to 8, and at Standard 3, ages 9 to 10. This data is reported both as scores and as achievement levels; the latter defined by the number of students meeting the prescribed standards.

For the international survey data, 15 comparator countries were included in the benchmarking set. The OECD countries were categorized using levels of efficiency and differentiation into four groups (1) high performing non-differentiated systems of Canada, Sweden and the USA¹²; (2) low performing non-differentiated systems of Poland, Iceland and Norway, (3) high performing differentiated systems of Germany and England and (4) low performing differentiated systems of Belgium (French) and the Slovak Republic. Qatar and Iran were included as education systems in oil-based economies and two high performing Asian countries (Hong Kong and Singapore) and one low performing country¹³ from Southeast Asia (Indonesia). This set of comparator countries included several commonly used in benchmarking economic performance¹⁴. In judging the level of inequity within the system, two different types of inequalities were independently assessed: (1) overall system inequality as judged number of individuals below some minimum threshold, and (2) inequality between groups or categories of individuals (Benadusi, 2007).

[PLACE TABLE 2, 3 & 4 ABOUT HERE]

Findings

1. Overall quality and magnitude of inequality

National Assessments

Tables 3 and 4 provide national assessment data for Mathematics and Language at Standards 1 and 3 of the primary school. As shown in Table 3, for the period 2005-2009 in Mathematics, 53% of the students met or exceeded standards and for Standard 3, 41%. The performance of students on Language is shown in Table 4. As indicated, overall pass rates (measured as number of students meeting or exceeding standards) is similar to that in mathematics, with 47% meeting or exceeding standards in Standard 1 and

¹¹ If there is less than 100% participation in secondary education, then evaluation data is only available for those who were selected or those who were retained.

¹² See Allmendinger, 1989

¹³ Although Indonesia is considered a low performing country in PIRLS, it is considered an emerging economy and has made rapid economic growth in the last four decades

¹⁴ Elías, Jaramillo, & Rojas-Suárez (2006) included Norway, Iceland and Singapore in their benchmarking analysis of development status.

43% meeting or exceeding standards in Standard 3. What is notable is the improvement in performance, especially in Language, over the four years. Although the cut score varies, depending upon the informed expectations of the panellists, the achievement levels are linked to actual test performance and the curriculum standard. Therefore, even without test equating systems, the data does suggest some improvement in performance. The extent of improvement can be gauged by analyzing the performance of students at Level 1, labelled “Well Below Standards”. As shown in Table 4, for students in Language at Standards 1 and 3, the numbers of students at this level declined from a high of above 40% to below 25%.

International Assessments

Thus, the national assessment data indicate that the number of students performing poorly was well above the 10-15% estimated by the Ministry of Education using the below 30% indicator. The judgement based on national assessment data is confirmed by the PIRLS 2006 criterion referenced data. Table 5 provides mean scores from the 1991 IEA literacy study at age 9 and the 2006 PIRLS. The table also includes the number above the four achievement levels set by the PIRLS. As shown by the criterion-referenced data, 36% of Trinidad and Tobago’s 9-10 year old population was below the lowest benchmark in 2005, similar to that obtained in the national assessment survey. This figure places Trinidad and Tobago outside the grouping of more developed countries, even compared to those with comparatively poor performances in the EU, such as Norway. However, Trinidad and Tobago’s system efficiency is better than the wealthier oil economies of Iran (40% below lowest benchmark) and Qatar (76% below lowest benchmark) and of low performing Asian countries such as Indonesia (46% below lowest benchmark). Trinidad’s mean score in the 2006 PIRLS was 436, well below the international mean of 500. This suggests that despite the investment in expensive reforms such as the Fourth Basic Education Project, the efficiency of processing has remained more or less the same or even declined somewhat.

A recent doctoral thesis by Trong (2009) reanalyzed the data for students classified below the benchmark in the 2006 PIRLS. On the premise that all students should have the opportunity to develop basic reading skills, such as locating information and making simple references, Trong calculated the global relative risk (GRR) of performing below the lowest international benchmark. For Trinidad and Tobago, this figure is 2.7, indicating that the risk of being placed in this category for students in Trinidad and Tobago is 2.7 times higher than other countries. Table 5 provides two other specific measures of equity in the system, (1) the standard error, which captures the disparities in scores and (2) the disparity index, which is the difference in scores between the 5th and 95th percentiles. As shown, among the countries in this selected sample, Trinidad and Tobago had the highest standard error (along with Iran) and the highest disparity index. This finding supports the argument that even at the primary school level there are large inequalities compared with both developed and developing type countries. The IEA reading survey conducted in 1990-1991 provides data at the end of the lower secondary school (age 14), providing a forecast of the possible pattern in the forthcoming PISA data. Trinidad and Tobago’s score was 479, also below the mean (Elley, 1992). However, Cyprus, Spain and Belgium were also below the Benchmark though scoring higher than Trinidad and Tobago. Trinidad and Tobago’s performance was superior to Thailand, the Philippines, Venezuela, Nigeria, Zimbabwe and Botswana; however, the standard deviation of 87 was second highest to New Zealand.

2. *Socioeconomic status, Urban-rural and gender inequalities*

National Assessments

De Lisle, Smith and Jules (2005, 2010) provided reanalyses of the Trinidad and Tobago national assessment data, focusing especially on the magnitude of inequalities¹⁵ for gender, rurality and in the 2010 study, poverty. De Lisle, Smith and Jules (2005) found medium-sized differentials for low achieving students living in rural educational districts, primarily on Language. These patterns were further explored in De Lisle, Smith, and Jules (2010) using published poverty indices and criterion-referenced data from the 2005 national assessments. The study found an association between rurality, poverty, gender and low performance, and after examining the trend from 2005 to 2007, concluded that the differences across geographic locations were relatively persistent. Table 6 includes achievement data linked to various social, demographic and economic characteristics of each educational district. As shown, the low achieving districts of North Eastern and South Eastern in Trinidad are both rural and report comparatively higher private and possibly public poverty¹⁶.

De Lisle, Smith, and Jules (2010) found that not all coeducational primary schools reported practically significant gender differentials favouring females. There was also a relationship between the size of gender differences and geographic location, with more schools reporting high gender differences located in the rural areas. De Lisle (2010) further elaborated on differences in the performance of primary schools and explored the impact of socioeconomic circumstance and school resources across geographic locations, as represented by the education districts. Table 7 provides some of this data linking school performance to resources by educational district. As shown, the lowest school performances, as measured by the mean SEA score and the mean Academic Performance Index (API) are in the North Eastern and South Eastern sections of Trinidad. These districts also reported higher number of partial or fully multigrade schools (33.3% in North Eastern and 53.9% in the South Eastern Education District). However, in terms of effect sizes¹⁷, the largest differences across districts were in teacher experience, with teachers in the Port of Spain, South Eastern and North Eastern educational districts having much less years of teaching experience per school.

International Assessments

Table 7 provides data on the extent of inequity across geographic location, socioeconomic differences at the school level, and socioeconomic differences at the individual level (using parental occupation). As shown, the differences between the performance of students in urban and rural schools (-62) was larger than the international mean of -25. Only one other country in the selected comparator schools had a higher disparity in favour of urban schools and this was Iran. Some countries even reported lower performance in urban schools, including England (+41), Germany (+20), and the USA (+15). Principals estimated the numbers of students in their schools who were socioeconomically disadvantaged. As shown, the difference in the mean achievement score (491) of schools reporting 0-10% socioeconomically disadvantaged students was much larger than that (405) of schools reporting more than 50% of their students as economically disadvantaged. This difference of -86 was the second highest in the 16 countries. All countries with differentiated systems in this sample reported large differences for schools

¹⁵ Using effect size measures (Cohen's d)

¹⁶ Public poverty refers to deprivations resulting from the lack of basic infrastructure whereas public poverty refers to deprivation due to the lack of resources on the part of the individual or household.

¹⁷ The effect size used here is eta squared

with different numbers of economically disadvantaged students. This might suggest that the primary impact of differentiation is to concentrate disadvantaged students into inefficient schools.

Trong (2009) suggested that parental education was a stronger variable influencing inequality for the entire PIRLS sample set. Nevertheless, in this analysis, parental occupation was used as an indicator of individual socioeconomic status¹⁸. As shown in Table 8, the performance of students with parents in the professional class was 486 compared to 387 for students whose parents were labourers. This difference of -99 was the third largest behind Iran (-108) and the Slovak Republic (-104). Trong's (2009) analysis provided another useful indicator of inequality for specific extraneous variables, which she termed, "risk factors". This index is known as the Relative Risk Percentage (RRP) equity index, which she defined as the relative risk of low reading achievement associated with a particular "risk factor" and the percentage of students in the population with that risk factor. Trong created four categories based on the RRP. These were (1) SRP- many students at risk and high relative risk, (2) SR-high relative risk but not many students at risk, (3) MRP-moderate level of risk and many students at risk, and (4) MR-moderate level of risk but not with many students at risk. Although Trinidad and Tobago was not placed in any of the four categories, for parent education (1.9), rurality (1.4), and gender (1.4), the RRP was significantly greater than one for all these risk variables. It could be that in Trinidad and Tobago, the students below the lowest benchmark in PIRLS were not strongly differentiated on these extraneous variables.

[PLACE TABLES 5-7 ABOUT HERE]

3. *Attitudes, Beliefs, and Practices*

National Assessments

Attitudinal data has only been collected only once over the last six years and this was in 2006 on a small sample of schools. Anderson, George and Herbert (2009) reanalyzed this data. Table 9 provides a summary of their findings with the variables renamed to make it consistent with the international assessment literature. As shown, the most influential variables were student reading motivation for Mathematics and Language, Reading Self Concept and Reading Readiness for Language, and the expectations of the teacher as perceived by the student. It may be that attitudinal variables associated with teacher and parent expectations and the student responses are central to the variable performance in schools.

International Assessments

Attitudinal data on the PRILS 2006 is provided in Table 10. This data includes the Principal's Perception of School Climate, which is a composite variable measuring the principals' judgement of teachers' job satisfaction, teachers' expectations for student achievement, parental support for student achievement, students' regard for school property, students' desire to do well in school, and students' regard for each other's welfare. These variables capture school ethos, teacher expectations, academic optimism, and academic emphasis (McGuigan, 2005). Table 10 also provides a measure of teacher's job satisfaction, students' self-concept in reading, and student absenteeism. The latter is a good indicator of students' engagement, an important cognitive-affective variable associated with achievement and retention. As shown, there were large differences in the achievement of schools reporting high principal's perceptions of climates and low values. The difference of 104 was much larger than the international mean and any of the countries in this sample. The comparative magnitude of the difference suggests that this complex of attitudinal variables is important in explaining attainment inequality in local schools. This is confirmed by

¹⁸ The focus, then, in this analysis was on economic rather than on social or cultural capital (Sullivan & Whitty, 2007)

the coefficient of determination (R^2), which provides an estimate of the variance explained in achievement. Principal's Perception of School Climate explained 13% of the variance (.13) indicating the potency of this variable.

Most countries, including Trinidad and Tobago, reported very small differences in achievement for high, medium and low teacher satisfaction. Differences were more significant for student reading concept, with Trinidad and Tobago reporting the largest difference of the 16 countries in this sample. Countries with differentiated systems were also more likely to report differences in achievement associated with reading concept. With the exception of England, most countries did not report large differences in achievement for different levels of student absenteeism, even when the education systems were differentiated. However, in the case of Trinidad and Tobago the difference in achievement scores between schools reporting absenteeism as a minor problem (448) and major problem (370) was comparatively large. This data set suggests that there were significant differences in the beliefs, values and expectations in schools influencing upon achievement inequality. These differences were more notable than those of the comparator countries.

[PLACE TABLES 8-10 ABOUT HERE]

Judging quality and equity

The evidence from the 2005 to 2009 National Assessment data and the two international assessments surveys conducted on Trinidad and Tobago in 1991 and 2006 suggests that both efficiency and equity are significant issues compared with the comparator countries in this benchmarking. The system's efficiency at the basic education level appears comparable and superior to some developed countries, even the wealthy oil producing countries of Iran and Qatar and Asian movers like Indonesia. However, despite Trinidad and Tobago's reported low education¹⁹ and economic Gini indices in Latin America and the Caribbean (Perry et al., 2006; Lopez & Perry, 2008; Thomas & Yan, 2009), the education inequalities reported in this benchmarking study are comparatively large. The system certainly appeared much less equitable than the OECD countries, even those with highly differentiated education systems. Data from the 2009 PISA to be released in December 2010 should make this picture clearer, however.

The efficiency and level of equity in an education system can only be improved by paying systematic attention to the core issues as revealed in the data. This must be supported by effective policy-making and efficient implementation. Greater organizational efficiency of the Ministry of Education is needed to ensure the use of evidence-based policy-making in implementing Vision 2020. Bearing in mind the current lack of capacity in the critical areas of research and data use, improving educational equity will prove a challenge. The equity issue is a complex problem that operates at multiple levels (system, school, and individual/family), with socioeconomic differences reinforced in a highly segregated school system and magnified further by differential expectations, attitudes and behaviours. Although the extent of inequity might have been hinted at in the past (World Bank, 1983, 1985), it is only now possible to better analyze and benchmark the full extent of the problem. It appears that the international data is very unforgiving and in Trinidad and Tobago point to practically significant differences in achievement that are strongly associated with extraneous factors such as gender, rurality and socioeconomic circumstance.

¹⁹ Trinidad has the lowest income Gini index in Latin American and the Caribbean and the second lowest education Gini in after Argentina

Low quality, high inequity basic education will first affect outcomes at upper secondary and post secondary education and ultimately the labour market and quality of human capital. As in Brazil, large inequities in educational outcomes can only produce unequal human capital. It is certainly worrying, for example, that at age 9, 36% of students were below the lowest international benchmark in the basic skill of reading²⁰. It seems unwise, if not impossible to correct such a problem at the secondary level, where the student must also master multiple subject areas. The development of a functioning special education needs system, then, becomes critical to achieving this goal as well as implementing systems that ensure early intensification for struggling learners. These objectives are unlikely to be achieved in a system obsessed with and dominated by a selection examination at age eleven. The upper secondary sector does little to correct these weaknesses in early education and, in fact, by tracking students into different schools further accentuates these patterns (Jackson, 2009). From this perspective, the upcoming PISA data assessing competencies at the end of the second cycle at age 15 must fill policymakers with a sense of foreboding.

[PLACE TABLE 11 ABOUT HERE]

In search of evidence-based policy

The evidence from the national and international surveys suggests that attention should be given explicitly to policies fostering equity in Trinidad and Tobago. Reducing inequity must be given the same priority as enhancing quality and increasing access to secondary and postsecondary opportunities. With regards to fostering equity, Vision 2020 is a very useful document; however, this has to be translated into viable and implementable policies. More importantly, a strategy has to be found around current societal beliefs that hinder radical restructuring. This might be necessary considering the impact of the selection process on the differentiated education system. Whether consensus building as proposed in Vision 2020 can achieve such widespread support is left to be seen. A useful roadmap for reform for a country like Trinidad and Tobago desirous of closing the gap is to employ education best practice, as identified in the countries involved in international surveys. This is neither to deny the value of local research nor the importance of indigenous knowledge for local education reform (Louisy, 2004; Crossley, 2008). The problem is that the majority of the local research is small scale using convenience samples. Effective and intelligent Government policy cannot be built on such research, which has limited reach and scope²¹. Indeed, in this the matter of equity, the gap between Trinidad and Tobago and the comparator countries may already be insurmountable.

Enhancing equity has become one of the core themes for the OECD and the international assessments have identified best in several systems, including Sweden and Scotland. The OECD has put forward ten strategies for enhancing policies, nine of which are directly applicable to Trinidad and Tobago. The ten policies are listed in Table 11 and a score in each area is provided based on the effectiveness and implementation of local policy. The first four policies focus on fairness and inclusion and the overall score for this category is 7 out of 16. The greatest current weakness in this area is in the application of policies to limit early tracking and streaming. The absence of vision or policy in this area has remained despite early evidence from the 1991 international assessments of a high SES effect for schools (Yang, 2003). It might be that solutions to the current system require both readjusting the choice rules and minimizing the impact of the Eleven Plus, possibly by removing or delaying the selection process. Neither is possible without intensive consensus building and societal discussion. On the positive side,

²⁰ Only 2% were above the advanced benchmark

²¹ Low transferability and generalizability

several viable alternative recovery routes have been established for the 20 to 24 year old groups. Additional improvements in this area include the introduction of technical education in schools and greater diversity in the post-secondary education sector. Still, not enough has been done to identify students at risk for dropout.

Policies 5 to 7 are categorized as fair and inclusive practices, with a score of 5 out of 8 was given. The low score for inclusion represents the difficulty in implementing the 1993-2003 White Paper and the current lack of focus on the classroom as the site of first intervention (OECD, 2009). Although a student support service and monitoring and intervention unit have been established, in practice implementation of the appropriate procedures and practices across educational districts and school have been varied and inconsistent. Although part of the problem might be a lack of system capacity, there are still too few opportunities for classroom teachers to build competence in this area within general education degrees and a complete absence of local specialist training for practitioners at the district level (Williams, 2007). One positive is the recent introduction of training for specialist reading teachers under the Secondary Education Modernization Programme. For parental involvement, although the relationship between the National Parent Teachers Association and the Ministry of Education has improved somewhat, leading to useful innovations such as homework centres, much more needs to be done at the school and district level. There is certainly need for policies specifically targeting disadvantaged families and communities.

Steps 5 to 8 deal with fair and inclusive resourcing with a score of 5 out of 12. Trinidad and Tobago has been very successful in the provision of affordable and high quality early childhood care, but the provision of high quality and unvaried basic schooling afterwards might still be a concern. The data from national assessments presented in this study suggests significant under-resourcing in the rural low achieving districts. Little consideration has been given to the development of compensatory education schemes for schools in situations of challenge (rural or chronic poverty) (Anderson, 2005). Part of the problem centres on a failure to acknowledge these deficiencies and an understanding of the role of the school in possibly magnifying the SES effect. Target setting must be realistic and built upon meaningful and valid performance indicators (De Lisle, 2010). The development of performance measures for schools is in its infancy and is impeded by a lack of awareness. Much more indigenous knowledge is required in this area.

Trinidad and Tobago has invested heavily in its education system and has ambitious plans for improving quality on the path to achieving developed nation status. The absence of data in the past, failure to develop a quality national evaluation system, and lack of effective policies or policy implementation has partly contributed to the current problem of inequitable attainment. It would appear from national and international assessment data that these attainment inequalities are comparatively large and are strongly linked to extraneous factors, such as gender, socioeconomic status, and rurality. Reducing this magnitude of inequality and limiting the influence of extraneous variables (inequity) require the establishment of sound compensatory education programmes and radical restructuring to limit early tracking and streaming. Such restructuring must also include extensive retraining for teachers and other personnel in the areas of children at risk and special education needs, if the goal of the system is to help all students to learn. Every school must be able to identify and systematically target barriers for learning. Improvements in these areas will bring benefits because the equity of educational outcomes is linked to the generation of low quality, unequal human capital.

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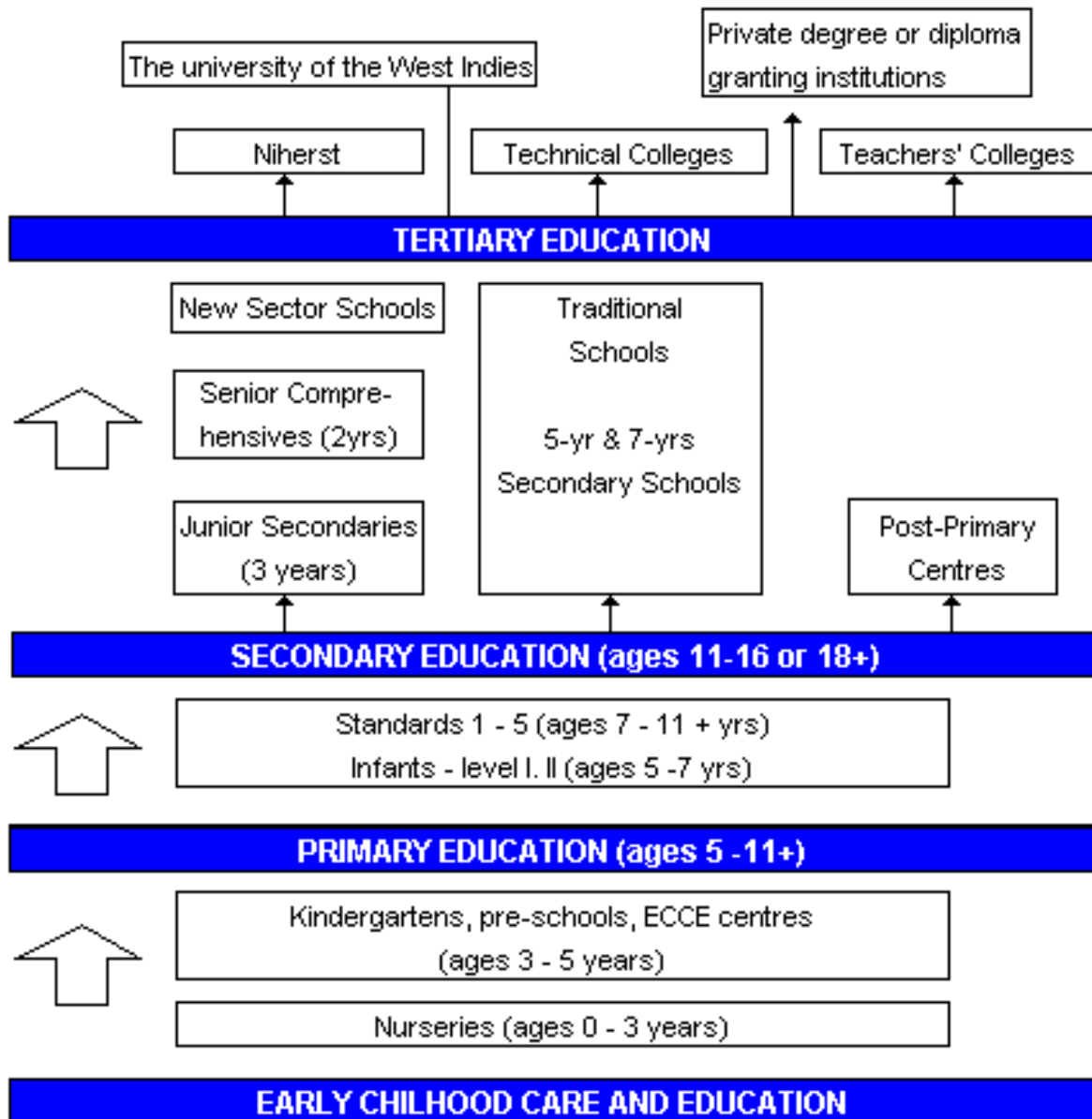


Figure 1: The structure of the education system in Trinidad and Tobago (UNESCO, 2006)

Table 1: Structures contributing to differentiation in the education system of Trinidad and Tobago

Differentiation Factor	Description
1. Frequency of Ability Grouping	Ability grouping officially frowned upon but frequently practiced at both primary and secondary levels. Segregation is formalized in selection process at Eleven Plus with different school types.
2. Age of First Formal Selection Procedures	Formal selection at Eleven Plus, but not at the end of ECCE.
3. Rate of Grade Repetition	The Central Statistical Office figures are reportedly low, but informal practice in many schools is to hold some students back, especially with institution of accountability examinations. In recent formal policy, students below 30% are retained in the primary school.
4. Transition to Secondary Schooling	Students are tracked into several different school types. The variety of school types has been significantly reduced in the last years.
5. Transition/Access to Tertiary Schooling	Some institutions Like the UWI still used A-Levels (CAPE) as strict gatekeeper but increasing access elsewhere
6. Inclusionary Practices	Formal procedures and structures on paper, but implementation is extremely variable and there is a lack of integration across services.
7. Parental Choice of Schools	In theory, parents can choose any school; however, in theory, majority of students are assigned because placement is based on performance in the Eleven Plus. There is a high rate of transfer from some school types, but families are not always successful.
8. Shared/Standardized Curriculum	On paper, there is a standardized curriculum in both NCSE and CSEC; in practice, delivery is variable and differentiated by ability groups. Some attempts to integrate vocational and academic elements at Secondary Level.
9. Distribution of resources	Most prestige schools have informal mechanisms which enhance access to resources. Increasing attention to Government schools has altered this landscape somewhat.
10. School Models/Types	Small private school sector at the secondary level, but there are a larger number of urban private schools in the primary sector. Private schools perform significantly better in national assessments of educational achievement. At the Secondary level, there are several school models and denominational boards, but recently, there is some reduction in the Government sector (Most schools are now secondary).
11. Teacher Beliefs and Practices	Teacher efficacy varies across schools. Traditional approaches to teaching, learning, and assessment are pervasive although there is increasing focus on differentiated learning in professional development workshops.
12. Institutional Beliefs	Academic Emphasis and Collective Teacher Efficacy varies across schools in both sectors.

Table 2: Achievement levels and 2005 definitions

Achievement Levels and Labels	2005 Definitions of Achievement Levels
LEVEL 4 –EXCEED STANDARDS	Superior academic performance indicating an in-depth understanding and exemplary display of the skills required.
LEVEL 3 –MEETS STANDARDS	Satisfactory academic performance indicating a solid understanding and adequate display of the skills required.
LEVEL 2-NEARLY MEETS STANDARDS	Marginal academic performance, work approaching, but not yet reaching, satisfactory performance. The performance indicates a partial understanding and limited display of the skills required.
LEVEL 1-WELL BELOW STANDARDS	Inadequate academic performance indicating little understanding and minimal display of skills required. There is a major need for additional instructional opportunities, remedial assistance, and/or increased student academic commitment to achieve at the meets standards level.

Table 3: Distribution of students in four achievement levels in Mathematics, 2005-2009

Standard	Performance Standards			Percentage of Students at Each Level by Year					
	Achievement Levels	2005	2006	2007	2008	2009	Average	Pass/Fail	
Standard 1	Level 4-Exceeds Standards	23	15	31	4	17	18	P=53	
	Level 3-Meets Standards	31	31	35	30	47	35		
	Level 2-Nearly Meets Standards	32	37	21	53	25	34	F=48	
	Level 1-Well below Standards	14	17	13	13	11	14		
Standard 3	Level 4-Exceeds Standards	20	9	10	5	11	11	P =41	
	Level 3-Meets Standards	21	36	32	27	32	30		
	Level 2-Nearly Meets Standards	31	32	40	56	37	39	F =59	
	Level 1-Well below Standards	28	23	19	11	20	20		

Table 4: Distribution of students in four achievement levels in Language, 2005-2009

Performance Standards		Percentage of Students at Each Level by Year						27
Standard 1	Achievement Levels	2005	2006	2007	2008	2009	Average	Pass/Fail
	Level 4-Exceeds Standards	10	18	13	4	30	15	P=47
	Level 3-Meets Standards	21	34	37	35	32	32	
	Level 2-Nearly Meets Standards	25	24	29	41	23	29	F=53
	Level 1-Well below Standards	44	24	21	20	15	25	
Standard 3	Achievement Levels	2005	2006	2007	2008	2009	Average	Pass/Fail
	Level 4-Exceeds Standards	8	3	20	4	16	10	P=43
	Level 3-Meets Standards	28	32	38	36	33	33	
	Level 2-Nearly Meets Standards	21	39	26	49	37	35	F=57
	Level 1-Well below Standards	43	26	15	11	14	22	

Table 5: Comparative performance of selected countries in the 2006 PIRLS

Category	Country	1991	2006 Norm Referenced Information				% Above Criterion Referenced Benchmarks				% Below	GRR±
		Mean Score	Mean Score	SE	Disp-arity °	Diff. F-M	Adv.	High	Inter-mediate	Low	Lowest	
Target Nation	Trinidad & Tobago	451	436	4.9	340	31	2	13	38	64	36	2.7*
High Performing Non-Differentiated	Canada, BC	500	558	2.6	229	9	16	56	88	98	2	0.2
	Sweden	539	549	2.3	210	18	11	53	88	98	2	0.1
	USA	547	540	3.5	244	10	12	47	82	96	4	0.5
Low Performing Non-Differentiated	Poland	--	519	2.4	249	17	7	36	73	93	7	0.5
	Iceland	509	511	1.3	227	19	3	29	72	93	7	0.5
	Norway	524	498	2.6	220	19	2	22	67	92	8	0.6
High Performing Differentiated	Germany	503 ^{West}	548	2.2	217	7	11	52	85	97	3	0.2
	England	--	539	2.6	290	19	15	48	78	93	7	0.5
Low Performing Differentiated	Belgium (French)	507	500	2.6	227	5	3	23	66	92	8	0.6
	Slovak Republic	--	531	2.8	245	11	8	43	80	94	6	0.4
Oil Based Economies	Qatar	--	353	1.1	311	37	0	2	10	28	72	5.3*
	Iran	--	436	4.9	309	14	1	8	30	60	40	3.0*
High Performing Asian	Singapore	515	558	2.9	252	17	19	58	86	97	3	0.2
	Hong Kong	517	564	2.4	195	10	15	62	92	99	1	0.1
Low Performing Asian	Indonesia	394	405	4.1	258	20	0	2	19	54	46	3.5*
International Averages		500	500	--		17	7	41	76	94	6	NA

± GRR stands for Global Relative Risk (Trong, 2009)

*Statistically significant risk above 1.0

° Disparity Index was calculated from the difference at the 95th to 5th percentile in scores

Table 6: Selected achievement, demographic, economic, and social indicators for the 8 educational districts in Trinidad and Tobago

Educational District	Performance in Math (05-08)		Performance in Lang (05-08)		Administrative Regions	Classification	Pop. Density/km ²	Household Income (TTD)	% household poor	% Inadequate Toilet.
	% Passing at Std 1	% Passing at Std 3	% Passing at Std 1	% Passing at Std 3						
POS & Environs	47.2	40.1	42.6	45.0	City of Port of Spain	Urban	4,086	4,805.90	4.7	5.6
					Diego Martin	Suburban	839	6,351.05	7.6	8.5
					San Juan /Laventille	Suburban	658	3,924.65*	12.2	13.9
Victoria	63.9	54.4	57.4	55.4	City San Fernando	Urban	2917	4,346.25	2.2	0.8
					Princes Town	Rural	148	3,480.46*	11.6	9.7
					Penal/Debe	Rural	340	3,480.46*	4.0	4.4
St. George East	56.1	46.1	47.4	46.8	Arima Borough	Urban	2690	6,949.41	0.8	0.2
					Tunapuna/Piarco	Suburban	400	4889.50*	8.6	9.2
Caroni	58.3	48.1	47.7	45.4	Chaguanas Borough	Urban	1143	5419.33	2.9	2.4
					Couva/Tabquite/Talparo	Rural	225	3,901.08*	7.0	9.9
St. Patrick	51.2	41.8	40.0	40.1	Point Fortin Borough	Urban	762	2,716.793	2.2	2.9
					Siparia	Rural	165	3,419.08	15.3	13.0
North Eastern	48.0	34.1	35.7	32.5	Sangre Grande	Rural	69	3,298.275	10.2	6.2
South Eastern	49.6	39.6	39.3	35.3	Mayaro/Rio Claro	Rural	41	2,834.10	5.6	6.8
Tobago	45.3	25.4	37.8	32.5	Tobago	--	180	5,171.29	4.9	6.6

Table 7: Differences in performance, socioeconomic context, and resources for schools across different educational districts

Location of Institution	Academic		SES (05-08)	Managerial/Organizational (07)			Teacher Resources (06)					
	Mean API (05-07)	Mean SEA (01-04)	Mean % Free Lunch	Teacher/Student Ratio	% Partial / Fully Multigrade	% Denom-inational	Tenure At School	% Female	% Trained Teachers	% With A Levels	% With Cert Ed.	% With degree
POS & Environs	298	53.9	58.4	18.0	10.2	64.7	14.7	82.9	80.1	25.8	10.35	4.8
Victoria	301	59.8	78.1	14.7	19.0	76.4	20.2	76.2	91.8	24.2	10.12	6.62
Caroni	299	58.0	69.1	16.8	20.0	71.6	18.4	69.8	90.8	27.5	10.7	4.59
St. George East	289	56.7	60.9	17.1	15.3	66.3	18.5	75.0	87.4	26.8	12.4	5.5
St. Patrick	287	56.9	83.1	15.5	25.0	69.6	18.7	74.1	87.0	23.2	6.0	2.6
North Eastern	250	44.9	86.1	14.6	58.1	74.4	15.6	67.4	83.9	19.1	10.7	8.8
South Eastern	260	51.9	79.6	15.5	33.3	85.7	15.4	69.2	80.4	26.7	8.1	4.2
Tobago	259	52.3	98.4	15.7	53.9	60.6	17.5	89.1	79.5	12.6	14.6	11.4
Country	280	55.2	73.8	16.2	24.7	63.4	17.6	75.1	85.9	24.2	10.9	5.6
Diff	Statistical Significance	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
	Practical Significance*	Med.	Med.	Large	Small	Small	Small	Large	Med.	Med.	Med.	Med.

*Interpretation for eta squared-.01 ~ small; .06 ~ medium; .14 ~ large

Table 8: Comparative inequity in selected countries as measured in the 2006 PIRLS

Category	Country	Mean Score for Schools					%Economically Disadvantaged in School					Parent Occupational Level±					
		Urban	Sub-urban	Rural	Diff	RRP° rural	0-10	11-25	26-50	>50	Diff	Prof	Business	Cler'cl	Skill Work	Lab'r	Diff
Target Nation	Trinidad & Tobago	470	441	408	-62	1.4	491	444	440	405	-86	486	448	448	419	387	-99
High Performing Non-Differentiated	Canada, BC	555	565	545	-10	1.3	572	557	533	530	-42	578	557	547	548	540	-38
	Sweden	549	549	550	+1	0.9	555	545	558	522	-33	566	537	537	524	--	-42
	USA	524	550	539	+15	1.5	566	559	546	511	-55	--	--	--	--	--	--
Low Performing Non-Differentiated	Poland	528	529	508	-20	1.8	528	524	511	510	-18	545	521	519	505	490	-55
	Iceland	518	509	506	-12	1.1	513	499	--	--	-14	531	505	503	496	479	-52
	Norway	502	504	492	-10	1.3	498	490	--	--	-8	515	478	491	470	--	-45
High Performing Differentiated	Germany	535	557	555	+20	0.2	558	550	540	465	-77	582	554	552	524	--	-58
	England	523	553	564	+41	0.4	573	534	511	501	-72	--	--	--	--	--	--
Low Performing Differentiated	Belgium (French)	494	496	512	-18	0.6	517	506	480	453	-64	533	500	499	473	462	-71
	Slovak Republic	544	537	512	-32	3.0	548	533	525	470	-78	566	542	534	519	462	-104
Oil Based Economies	Qatar	362	336	318	-44	1.2	367	348	351	352	-13	381	347	362	339	--	-41
	Iran	454	415	376	-78	2.0	481	422	412	390	-109	499	428	448	412	391	-108
High Performing Asian	Singapore	558	--	--	--	--	568	547	531	--	-37	588	554	545	523	--	-65
	Hong Kong	573	555	540	-33	--	574	559	559	550	-24	573	561	565	561	554	-19
Low Performing Asian	Indonesia	451	425	393	-58	1.8	425	437	413	393	-32	462	422	447	393	394	-68
International Averages		508	501	483	-25		521	504	488	465	-56	533	506	504	485	469	-63

± Trong (2009) used the parental education variable for calculating the RRP for the bottom 36%. Although parental occupation might possibly has a lower correlation, it may have more meaning in the context of an extraneous variable

° RRR for bottom 36% only. RRP stands for Relative Risk Percentage for that group of students only

Table 9. The role of the attitudinal variables on language and mathematics achievement in the 2006 Trinidad and Tobago Survey associated with the National Assessments of Educational Achievement

Renamed Variable (Category)	Beta (Mathematics)	Beta (Language)
Perceived Teacher Expectations	0.19	0.19
Academic Self Concept (Reading)	0.20	0.29
Perceived Parental Support	0.10	0.10
Perceived Teacher Support	0.13	0.08
Student Engagement	0.07	0.16
Engaged in Writing	0.10	0.10
Student Reading Motivation	0.28	0.28
Reading Readiness from Home		0.21
Parental Encouragement (Reading)	0.06	
Home-School Index	0.11	0.13
Parent Connection to School	0.08	0.10
Early Literacy Activity		0.06
Parent Engagement in Reading	0.07	0.07
Pre-school experience	0.05	0.06

Data based on Anderson, George, & Herbert (2009)

N=

Table 10: A comparative analysis of differentiated beliefs and practices among teachers, students, and principals in schools based on PRILS 2006

Category	Country	Principal's Perceptions of School Climate				Teacher Job Satisfaction				Students' Reading Self-Concept				Students' Absenteeism (Engagement)					
		R ²	High	Med.	Low	Diff	High	Med.	Low	Diff	R ²	High	Med.	Low	Diff	Minor	Mod-erate	Major	Diff
Target Nation	Trinidad & Tobago	.13	505	423	401	-104	437	435	428	-8	.24	482	399	338	144	448	420	370	78
High Performing	Canada, BC	.05	566	547	--	-19	562	552	563	+1	.17	584	533	--	61	558	546	--	12
Non-Differentiated	Sweden	.03	553	543	--	-10	549	546	--	-4	.21	569	523	--	46	546	546	--	0
	USA	.06	549	520	--	-29	542	632	--	-10	.15	566	518	495	71	537	525	498	39
Low Performing	Poland	.01	522	519	--	-3	520	519	--	-1	.25	547	483	--	64	519	--	--	--
Non-Differentiated	Iceland	.00	512	510	--	-2	507	520	--	+13	.21	534	484	--	50	510	501	--	9
	Norway	.01	500	495	--	-5	497	504	--	+5	.18	518	477	--	51	498	--	--	--
High Performing	Germany	.09	557	546	--	-11	546	549	--	+3	.18	571	529	--	42	545	504	--	41
Differentiated	England	.07	551	521	--	-30	550	518	--	-32	.21	578	519	468	100	541	505	472	69
Low Performing	Belgium (French)	.03	506	489	--	-17	503	495	--	-8	.13	526	487	454	72	497	479	472	25
Differentiated	Slovak Republic	.07	548	532	--	-16	534	529	--	-5	.20	562	512	459	102	539	506	517	33
Oil Based Economies	Qatar	.05	373	345	--	-28	360	346	325	-35	.28	400	309	279	119	354	352	344	10
	Iran	.08	429	414	--	-15	421	420	-	-1	.21	458	383	--	75	419	393	374	45
High Performing Asian	Singapore	.04	562	552	--	-10	555	564	549	-5	.15	583	542	489	94	553	--	--	--
	Hong Kong	.01	566	563	--	-3	560	566	--	-6	.17	585	545	--	40	573	--	--	--
Low Performing Asian	Indonesia	.01	409	401	--	-8	405	406	--	+1	.13	426	398	--	28	408	407	399	9
International Averages		.04	513	493	--	-20	502	498	--	-4	.16		529	436	93	499	477	446	54

Is the Trinidad and Tobago education system structured to facilitate optimum human capital development

Table 11: Judging Trinidad and Tobago Policy against OECD Equity Policy Recommendations

-----Policy Strategies for each OECD Equity Step -----			Trinidad & Tobago Equity Scorecard	34
OECD EQUITY STEP	Possible Local Strategy	Current Action	Score (0-4)	
1. Limit early tracking and streaming and postpone selection	Eliminate the 11+ and promote greater choice by ensuring high quality in all schools or postpone selection to 14+	Nothing to date	0	
2. Manage school choice to contain risks to equity	Provide greater information on schools and improve quality of all schools	Attempts to provide information to parents in 2009	2	
3. In upper secondary education provide attractive alternatives, remove dead ends and prevent dropout	Increase diversity of options and ensure recovery routes. Develop programmes aimed at retention	CVQs/Technical education introduced	2	
4. Offer second chances to gain from education	Emphasize lifelong learning and develop programmes that offer second chance	MUST/HYPE are examples of retraining	3	
5. Identify and provide systematic help to those who fall behind at school and reduce rates of school year repetition	Develop multiple successive interventions starting at the primary school	Monitoring Unit established. Reading teachers being trained.	3	
6. Strengthen the links between school and home to help disadvantaged parents help their children to learn	Develop viable schemes to ensure that students work at home	Homework Centres established and other evidence of some collaboration	2	
7. Respond to diversity and provide for the successful inclusion of migrants within mainstream education.	NA	NA	--	
8. Provide strong education for all, giving priority to early childhood provision and basic schooling	Enhanced ECCE and quality basic education	Increased focus on high quality ECCE, and standardization of Centres, with targeting of disadvantaged communities	3	
9. Direct resources to students and regions with greatest needs	Develop multiple compensatory programmes for rural areas and disadvantaged students	Mechanism for identifying schools developed, but inconsistent application of this provision.	1	
10. Set concrete targets for more equity-particularly related to low school attainment and dropout	Greater evidence-based decision making for an enhanced system	Some recent attempts in PEP, but not sufficiently thought through.	1	
TOTAL			17 (36)	