

Small Island Challenges in Educational Reforms: The Case of Mauritius

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Abstract

Educational reform is a dynamic process that continues to haunt small island developments. After the two bold steps taken recently in Mauritius, namely regionalisation and the abolition of ranking at CPE level, there now seems to be a pause - except for continued construction of schools. Whilst these developments seemed to be initially welcomed by the population in general, it has raised a number of serious concerns. A number of important issues have cropped up such as the no provision for elites in our educational system, time-consuming student recruitment exercises at Standard I and Form I, the unacceptable rates of failure at CPE, the place of science/IT, the unequal access opportunities. Most of these have remained so far unanswered probably because it may be difficult for us to seek for remedial solutions to these challenging issues with the existing system. Yet, tangible and innovative solutions do exist to our emerging educational problems provided there are some adjustments to the existing system. This paper deals with ways to enhance the current education framework that has been now set on a regional focus. A rotating cluster system is proposed as a solution to the above challenges. The demarcation of the regions is carried out on the basis of the student population in the regions targeted, proximity of the schools, and the transport network. Benefits include equal access opportunities, less traffic problems, optimisation of resources, specialized schools, justified construction of schools, and reintroduction of competition.

Keywords:

Sustainable; Education Reforms; Educational Systems; GIS; Small Islands

1. Introduction

More than 40 years ago, the nations of the world, speaking through the Universal Declaration of Human Rights, asserted that "everyone has a right to education" – The 1990 Jomtien Declaration on EFA, to which many small islands are adhered to, including Mauritius. Education encompasses teaching and learning specific skills, and also something less tangible but more profound: the imparting of knowledge, good judgment and wisdom. One of the fundamental goals of education is to impart culture across the generations. Education is believed to begin before birth as evidenced by some parents playing certain type of music or reading to the baby in the womb in the hope it will influence (educate) their child before birth. That education is life-long has now become commonly accepted as evidenced by the increased enrolment of adults in post-secondary education, both as part time and full time students. Education can be informal (through family) and formal (societal driven – through schools).

It is up to the nation to invest in education and to efficiently use the resources that should become commensurate with the educational outputs. Education is vital to a nation addressing human development, satisfying employment and in setting the pace for social mobility. It is also of crucial importance in providing a highly skilled labour force as per the economic

requirements of the challenges of time. The basic principle underlying the concept of HRD is access to education. In this spirit, the introduction of free secondary education in 1976 has been fundamental in transforming the economic and social platform into a success story for Mauritius – a credit we owe to late Sir Seewoosagur Ramgoolam (SSR) for his farsightedness and to ensuing ministers for their continued support. Amongst other matters, SSR concentrated on educational reform and insisted that children of the working class should be allowed the advantages of culture and learning which was the birthright of every child. Education is considered as a right not a privilege. Investment in the Education has always been on the high side in Mauritius ~ 15% of the budget in 2003.

The new millennium calls for higher-level challenges - knowledge-driven transformations - as a result of the fiercer competition for greater market share. How will small-island developing states cope with these challenges? It is thus an imperative challenge for small islands to develop their national capabilities to meet the global challenge. Knowledge-driven transformations simply translate to a competition of brains. Our educational system should then be developed to the fullest - commensurate with the requirements of emerging and future economic challenges. We need a system that is realistic, simple and stress-free. The complexity of its society meant that such an ideal system has been very difficult to implement in Mauritius. Attempts are being made to abolish the cutthroat competition that prevailed for several decades. Whilst it is true that recent attempts have provided partial relief – from global to regional, the cutthroat competition still exists. The reason for this is simple – parents still want the best access to education for their wards.

Educational reforms can be crudely categorised into two main categories: those that target quantitative aspects and those that target quality aspects (Dowson et al., 2000). The shift from quantity to quality are normally driven by interrelated reasons such as: the introduction of nine-year compulsory education (world-wide trend) with students guaranteed access to schooling to Grade 9, the growing dissatisfaction from both employers and higher education bodies with student and teacher performance (call for higher standards, increased accountability and for greater economic competitiveness), the perceived need to secure stability and prosperity for all citizens following government changes, and the quest for quality education in other countries influences small island policy makers and subsequent calls for reform.

This paper deals with ways to enhance the current education framework using the principles of a regional focus. A rotating cluster system, based on a significant improvement in widening the access, is proposed as a solution to emerging challenges. The demarcation of the regions, on the basis of the student population in the regions targeted, proximity of the schools, and the transport network, is carried out on a geographical basis. Benefits include equal access opportunities, less traffic problems, optimisation of resources, specialized teachers, specialised schools, justified construction of schools, and reintroduction of a new type of competition commensurate with the requirements of global competition.

2. Current Educational System in Mauritius

The most significant colonial legacy in the Republic of Mauritius, located in the SW of the Indian Ocean basin, is perhaps the French/English bilingual but multicultural systems that currently dominate public policy. Basic education has long been recognised as the pillar of social progress and the Government has all along attached great importance to it. Every year substantial resources are devoted to this area; with a financial provision for basic education of around 15% of the budget – split as follows; 1.5% to pre-primary ~32% to primary, ~ 40% to

secondary, ~16% to post-secondary, ~2% to technical and vocational, and the remaining to other expenses. The State's recurrent expenditure on education is around Rs 5000 million for the financial year 2001/2002. Schooling is thus free (funded by taxes) from primary level (institutionalized since colonial days) through the secondary level since 1976 and through the postsecondary level since 1988.

The educational set up in Mauritius is patterned after the British model. The structure is as follows: 1 (Pre-Primary) + 6 (Primary) + (3+2) (Lower Secondary) + 2 (Upper Secondary). A 9-year basic compulsory education, a recommendation of the Vision 2020 document, is provided (Education Master Plan, Ministry of Education, 1991). The Government has also subscribed to the SADC Protocol on Education and Training that provides for 9-year basic education. The latter covers 6 years at a primary school level and 3 years at a lower secondary school level. Admission to the primary school is from the children coming from the pre-school classes and from other private pre-primary schools. The Lower Secondary School that follows, from Form I to Form III, is designed to promote the general development of students by helping them to acquire broad based knowledge, insight, skills and values; to prepare them to make the appropriate choice at Upper Secondary level and for an active adult life in the future. Admission to the 9-yr schooling system is currently on a regional basis – the regional focus reduces traffic problems but hardly reduces the stress load on the students and parents. As in many other countries, after the Form III, then comes an elective two-year secondary school which is divided in two instances where students can either prepare for higher education (academic) leading to the School Certificate or receive vocational/technical education. Those in the academia move on to the Upper Secondary level leading to Higher School Certificate in the stream of their choice (Science; Humanities; Business; Technical). Table 1 shows the relevant statistics regarding the pre-primary, primary and secondary schooling for 2003.

Table 1: Educations Statistics for Mauritius include pass rates at different cycles (2003)

Source: Ministry of Education & Scientific Research

	Pre-Primary	Primary	Secondary
Schools	1061	278	169
Enrolment	37414	124933	100447
Teaching Staff	2445	5431	5786
Student/Staff Ratio	15	31	17
Average Class Size	15	34	34

	M	F	Total	No. Passed	% Passed
CPE	13743	12748	26491	16686	63.0%
SC	6548	7507	14055	10699	76.1%
HSC	3216	3808	7024	5310	75.6%

Around 28,000 candidates take part in the CPE examinations yearly with some 65% are expected to pass, that is, around 18000 students. Although this is a common feature year in year out, it is not at all clear as to why one-third of the student population fail to clear CPE level. Out of the 18000 children who pass the CPE examination every year, some 4500 obtain 4 A's. Until the recent educational reform, fierce competition existed for a student to secure a place in one of the small number of perceived high prestige 'star' secondary schools, where some 1000 limited places were available. This translated to tremendous pressure on children to perform well and pressure on parents to secure supplementary private tuition to improve their children's chances. This also had repercussions on the society at large by

favouring those children who could afford extra tuition. More so, admission to star schools was generally determined by so narrow a margin as one decimal place, which is pedagogically unsound let alone arbitrary and unfair. This created an unhealthy situation that resulted in a 'rat race' beginning right from the tender ages of the students. The ranking system also demanded an instrument of selection as precise as it is arbitrary and ruthless to demarcate the few hundreds to be admitted to the star schools from the rest. Ranking, being carried out on a national basis, meant that it was not sensitive to the residential factor. Ranking was perceived to pervert the role of the school that was forced to ensure that a maximum number of children are ranked in the top list and this became its primary objective. Important aspects of education such as physical development, aesthetic appreciation and creativity, and the importance of learning to live together in a multi-cultural society as responsible citizens were thus obscured by the ranking process.

The decision to do away with CPE ranking was based on a comprehensive strategy premised on a four-pronged approach:

- adoption of the grade system as the measure of achievement,
- construction of new state secondary schools,
- transformation of 'star' state secondary schools into Form VI colleges,
- regionalisation of admission to Form I.

This comprehensive strategy, involving a massive investment of Government into education, translated into the setting up, over 4_ years, of some 50 additional secondary schools. With the abolition of ranking, it is expected that schooling reclaim its primary function, which is the holistic development of the child. Nevertheless, a measure of healthy competition would be maintained for the child to excel, for her/him to compete with herself/himself instead of engaging in a permanent stressful rivalry with other children on a national basis.

After the two bold steps, namely regionalisation and the abolition of ranking at CPE level, there now seems to be a pause - except for continued construction of schools. Whilst these developments seemed to be welcomed by the Mauritian population in general, it has raised a number of serious concerns. A number of important issues have cropped up such as the no provision for elites in our educational system, time-consuming student recruitment exercises at Standard I and Form I, the unacceptable rates of failure at CPE, the place of science/IT, the unequal access opportunities. Most of these have remained so far unanswered probably because it may be difficult for us to seek for remedial solutions to these challenging issues with the existing educational set up. Yet, tangible and innovative solutions do exist to our emerging educational problems provided there are some adjustments to the existing system. Although it is true that the previous educational set up unnecessarily stigmatises young children, places too much pressure on learning and in fact distorts learning at the primary level, the perception that the abolition of ranking will relieve parents, bringing about a paradigm shift, is, however, no longer true. Although parents may have obtained partial relief from the abolition of ranking, they still suffer from the same trauma; the trauma of selecting the best school in the region; the admission policy has therefore remained discriminatory. That this is so has to do with the educational system.

Amongst the four providers of tertiary level education, the University of Mauritius, dominates the show. This is expected to short-lived with the mushrooming of a number of privately-owned institutions offering tertiary education in partnership with foreign institutions. The present participation at the tertiary level is considered to be modest (present equivalent of 11%). With new and emerging opportunities such as open and flexible

learning, the participation rate is grow significantly with a projected medium-term increase to 25% of the age group 19-24 .

3. The School Cluster Rotating Level System (SCROLS)

It is important to revisit the key stages of the schooling system for demonstrating how the proposed model works.

First, we categorize the school educational system into 5 Key Stages (KS 1-5):

- KS1. Lower Primary (LP) (3 levels – Std. I-III)
- KS2. Upper Primary (UP) (3 levels – Std. IV-VI)
- KS3. Lower Secondary (LS) (3 levels – Form I-III) (Middle School)
- KS4. Middle Secondary (MS) (2 levels – Form IV-V)
- KS5. Upper Secondary (US) (2 levels – Form LVI-UVI)

Second, we identify clusters of schools within a region of interest (zone) and label each of the school falling within a zone as one of the above (that is Lower Primary, Upper Primary, etc.). The number of schools chosen – all categories- in a particular zone should be commensurate with zonal student population. On a more complex level, the zone can be stage-dependent.

Third, each school will absorb students of one level only (for example, those who have just cleared the CPE) – not a mix of grades. If a zone has 1800 students that have cleared CPE, this implies that 2 lower secondary schools (if the absorption capacity per school is 900) will house these students in that zone. With the current system, the same students will find themselves in 15 institutions (if the absorption capacity per school is 120).

Fourth, SCROLS students remain in the same school until they proceed to the next key stage. Assuming that the expected number of students clearing CPE is more or less constant year in year out, then there will be 6 LS schools in this zone (two per grade).

What are the benefits of the SCROLS?

Currently, students who have just cleared the CPE have to fill in a form that contains some 15-20 schools (per gender). Parents become very confused and worried in deciding the ranking. By bringing the choice down substantially (say to 2) in a particular zone tantamount to promoting more equal access opportunities since students can gain access to the same high school of the cluster – eliminating entry competition to the best schools. Fewer schools also means that the regional discrimination between will be even less and far simpler. Within a key stage, students will not shift from school to school within the same key stage since the school only cycles from level to level with changing years. SCROLS also implies equal opportunity as far as access to level-based resources is concerned – from teaching staff to *books*, laboratory equipments and computers. SCROLS thus minimizes significantly on duplication of resources. In fact, by going from the conventional to this system will mean that there will be big savings (both capital and recurrent)!! Specialized Middle/Upper Secondary Schools can be developed within each zone – for example science-based or technical oriented schools. Each school will build a system of competition since there can be as many as 25-30 classes (depending on the size of classes). There are many ways to do this. Level-based teaching implies more specialised teaching from dedicated staff since staff does not have to worry about preparing teaching materials at levels outside the key stage.

4. Proposed Educational System for Small Islands

Figure 2 shows the proposed set up for the schooling system.

Pre-schools

Kids attend pre-schools or kindergarten to learn the finer points of meeting friends (and enemies), professional authority (in the form of a teacher), playtime, naptime, drawing, music, sometimes the basics of reading and writing, and various other activities. Pre-schools also serve the purpose of training children to be apart from their parents without anxiety. Suffice it to say that the public and private owned kindergartens must be based on an agreed national curriculum based on the principles of early childhood development.

Primary Education (KS1 + KS2)

Primary education is the first years of formal, structured education that occurs during childhood and is aimed at teaching students how to learn. The major goals of primary education are achieving basic literacy and numeracy amongst all their students, as well as establishing foundations in science, geography, history, IT and other social sciences. The relative priority of various areas, and the methods used to teach them, are an area of considerable political debate. Traditionally, children are introduced to various subjects at these tender ages, some classified as core subjects (like English, French, mathematics, science, history & geography), some as elective subjects (such as Asian languages, creative arts and music), and others as non-examinable subjects such as health and physical education, computer studies and living values. The focus of primary schooling is normally on mathematics, the development of spoken and written communication skills, the environment (physical and scientific), the development of the right attitudes and self-understanding. As in other countries, children are placed in classes with one teacher who is primarily responsible for their education and welfare for that year. This teacher is assisted to varying degrees by specialist teachers in certain subject areas, often music or languages or IT or physical education or religious studies.

Key Stage 1 (KS1) – Lower Primary

The wider access of the SCROLS system implies that students varying from poor to very good will be admitted to a KS1 school in a region. The continuity with a single teacher and the opportunity to build up a close relationship with the class is a notable feature of the primary education system in many countries. This arrangement is crucial in KS1. The first three grades is the most important stage to discriminate right from the early stages the weakest students. As mentioned earlier, it is crucial to design the curricula that will ensure a near perfect discrimination. It is this stage that will ensure a smooth and an elevated pass rate flux from stage to stage eliminating bottlenecks and high attrition rates. Innovative assessment methods need to be developed principally based on continuous examinations. Only extremely weak students will be allowed to repeat the year or be sent for remedial education, otherwise, the student will be automatically promoted to the next grade.

Key Stage 2 (KS2) – Upper Primary

The wider access of the SCROLS system implies that students varying from poor to very good will be admitted to a KS2 school in a region. KS2 will accommodate three types of students: the normal stream, the ‘decelerated’ stream, and the ‘accelerated’ stream. Admission to KS2 schools will automatic for all streams (KS1 and KS2 are paired schools). The normal stream will take three years to complete this stage and covers grades 4 to 6. Bright students will follow an accelerated program and complete this stage in two years; it is expected that there may be at least one such class per school (around 25 students/school).

The weaker students will follow a decelerated program and complete this stage in four years; it is expected that there will be up to 3 such classes per school. For the normal stream, promotion to the 5th grade will be automatic and based on a combination of student's performance on CA and formal exams. At the end of the 5th grade, all students will be assessed only by examinations; the latter will be at national level. All 6th grade students will take a national examination – the first milestone – (National Certificate for Primary Examinations - NCPE) with one paper per subject at the end of the year. Bright students (those who have attained a certain level at the 5th grade) and other students (with consent/advice of parents/teachers respectively) will take an additional paper per subject – scholarship level. The first paper will be pitched at a level commensurate with the requirements of the grade. The second paper will be of increasing difficulty to easily discriminate the brightest students. It is expected that ~20% of 6th grade students will take the scholarship papers. NCPE therefore establishes the framework for a healthier competitive educational framework.

Lower Secondary Education (KS3 + KS4)

Secondary education teaches a conceptual framework that can hold all human knowledge, and then fills in basic facts and practices of the major skills (perhaps in a simplified form) of every major human activity. Lower Secondary education occurs mainly during the teenage years. Secondary education usually covers grades 7 through 11. The first portion, middle school (KS3), covers grades 7 through 9, while the second level, junior high school (KS4), covers grades 10 and 11.

Key Stage 3 (KS3) – Middle School

The wider access of the SCROLS system implies that students varying from poor to very good will be admitted to a KS3 school in a region. KS3 will continue to accommodate the three streams: normal/decelerated/accelerated. Admission to KS3 schools will be determined only by the performance at the first paper series based on the current grade system – for normal streams and for the decelerated programs. However, admission to the accelerated program will take into account the marks in both papers. The normal stream will take three years to complete this stage. Bright students, selected at the end of the NCPE exams, will follow an accelerated program and complete this stage in two years; it is expected that there is at least one such class per school (around 25 students/school). The weaker students will follow a decelerated program and complete this stage in four years; it is expected that there will be up to 3 such classes per school. For the normal stream, promotion to the 8th grade will be automatic and based on a combination of student's performance on CA and formal exams. At the end of the 8th grade, all students will be assessed only by examinations; the latter will be at national level. Students of the final year of KS3 will take a national examination (National Certificate for Middle School Examinations - NCMSE) with one paper per subject at the end of the year. Brighter students of the normal stream (those who have attained a certain level at the 8th grade) and other students (with consent/advice of parents/teachers respectively) will take an additional paper per subject. The first paper will be pitched at a level commensurate with the requirements of the grade. The second paper will be of increased difficulty to allow discrimination of the brightest students. NCMSE presents an opportunity for late developers to re-establish themselves into the normal stream or the accelerated program.

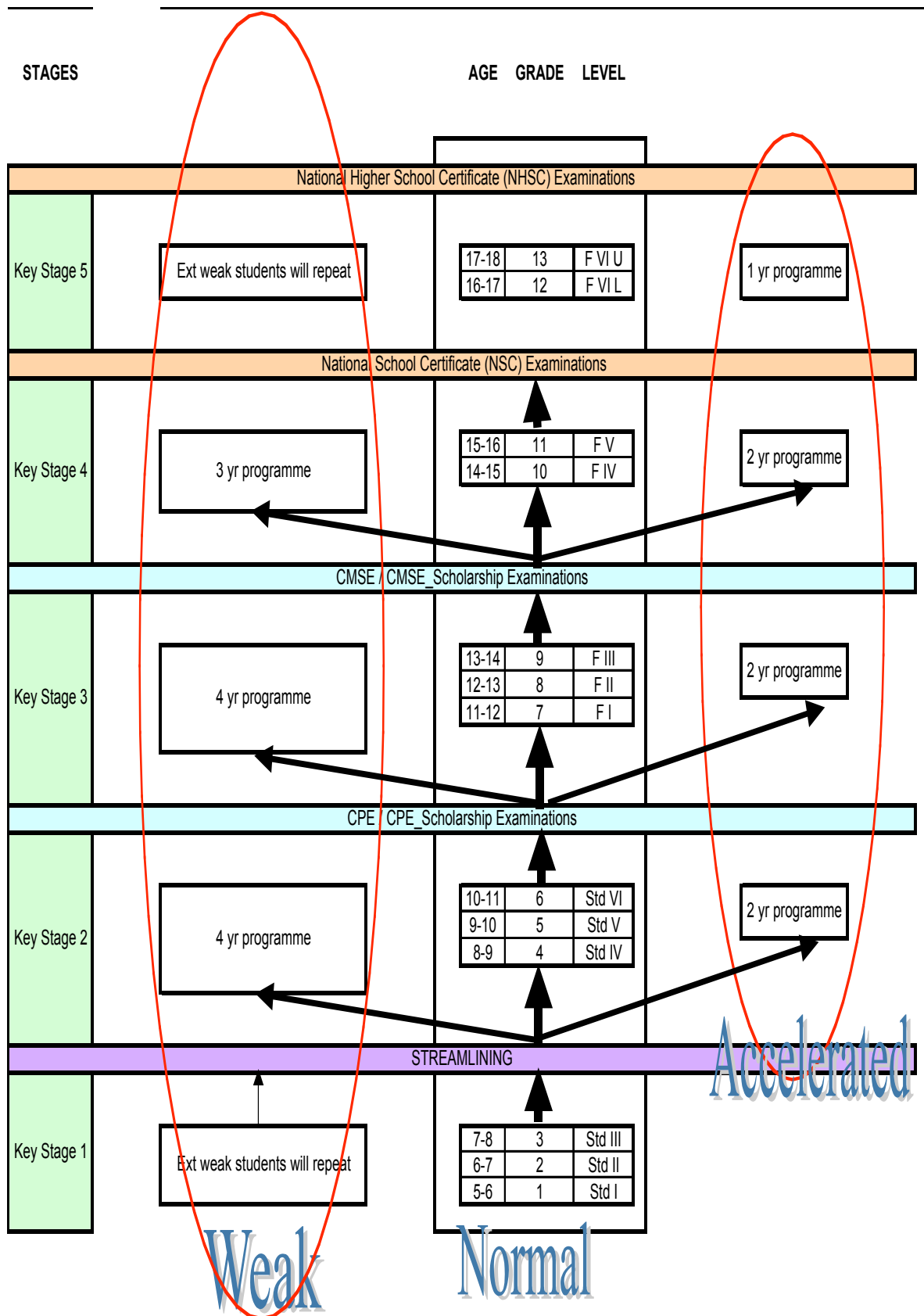


Figure 2: Proposed Educational System (A Schematic Presentation)

Key Stage 4 (KS4) – Junior High School

The purpose of a secondary education (KS4 and KS5) can be to prepare for either higher education or vocational training. The normal stream will take two years to complete this stage leading to the national SC examinations (National School Certificate – NSC). The weaker students will follow a decelerated program and complete this stage in three years. Bright students will also follow a 2-year programme but will now take up enrichment programs (more than 8 O Levels). NSC presents an opportunity for late developers to re-establish themselves into the normal stream or the accelerated program.

Upper Secondary Education (KS5)

Key Stage 5 (KS5) – Senior High School

The school-leaving age is grade 13 if the standard curriculum has been followed throughout life, without skipping grades or being held back. Thus, the last two years of senior high school are not compulsory, but most students complete the senior high school and receive the National Higher School Certificate (NHSC) after taking the national HSC examinations. The weaker students will follow a decelerated program and complete this stage in three years. Bright students will have the option to complete this stage in one year or to take up enrichment programs (4to5 A Levels) by following the 2-year programme together with the normal stream.

5. Dealing with the Extremes

Educational achievement is a highly complex phenomenon. Curriculum Design forms a key element in the setting up the various levels and the key stages. The levels/stages are roughly coordinated with human development and should be coordinated with student development. The process of curriculum development is evidently a dynamic one bringing in innovations. Since no nation can come up with a single curriculum appropriate for all students of the same level, it is natural to expect that any particular level will have students with extreme capabilities – i.e. students performing very well and very bad. It is generally agreed that weak students unable to cope with the regular curriculum should have extra help. Similarly, bright children should be put onto special programs. There is thus a call for curriculum differentiation for two these extremes – which we will deal with in the next two sections. Each school should have the responsibility of solving the extreme problem. Innovative approaches in space-time management, curriculum development/delivery and external supports must be sought to improve standards on a global scale. These include specialised teacher training, specialised educational aids, development of best practices, medical (and psychological) support, special needs of students, mentorship (including parents, volunteers, NGOs, CBOs, business organisations, etc.). SCROLS copes with the extremes by providing – at peer level – specially designed curricula based on curriculum expansion for weaker student and curriculum compaction for bright students. Whilst the former will need one additional year per KS, bright students on the other hand will have one less year at KS3.

Curriculum Differentiation for Weak Students

Low achieving schools arises for a number of reasons: a curriculum that lacks life skills or is irrelevant to the children's environment, problems within the educational system, inadequate educational provision, socio-economic, etc. Recently, the 'Zones d'Education Prioritaires' ZEP concept was introduced with the aim of raising the standard of achievement of low achieving schools (with pass rate at CPE level of less than 40% for 5 years); some 28 schools are under this category. The philosophy of the ZEP concept is based on the premise that positive reinforcement is required to create favourable learning conditions for children living

mostly in the less developed regions – with a no time-bound on curriculum delivery. Economically, we cannot afford to have highly specialised schools and to accommodate no time-bound on curriculum delivery. The ZEP concept is therefore only part of the solution as failed students are found in all schools. SCROLS do away with the ZEP concept since it aims at a significantly wider access at the very outset. For the investment made in our Education Sector, our country cannot afford high rates of school dropouts, failures (~35% at the CPE level; ~23% at the SC level and ~25% at HSC level) and repetition in education. The CPE drop outs of the education system at age 11/12 are without qualifications or prospects. Only ~ one-third of the remainder proceeds to the sixth form. Around 19% clears the HSC exams of which only a very small proportion proceed on to tertiary education. This high attrition rate means many citizens do not develop their full potential and the economy does not have enough citizens who are sufficiently educated, to acquire the higher skills that are in increasing demand. Clearly many children fail to develop the challenging, analytical and creative qualities needed for success in the modern world.

The success rate can be enhanced either by retarding weaker students to clear the key stages or to provide them with mentoring. Since most of the children do already resort to mentorship, it is therefore not desirable to take up this option. Instead, delaying the student by one year per KS seems to be the only solution. This streaming exercise to discriminate the weaker children (whether rural, urban, disabled, or from the disadvantaged segments of the society) should be carried out right from the early age i.e. KS1. The curriculum of KS1 therefore deserves special attention to allow for careful streaming. It should be diversified enough to incorporate the cognitive aspects of information processing and the different learning styles of individual children. The whole system must change which includes the curricular orientation, the teaching methodologies (which should aim at critical thinking skills) and also the examinations (which needs to be more competent-based rather than content-based). This kind of approach must become systemic and extended to other key stages so as to reverse or to stop the trend of excluding large numbers of school age children from the formal educational system, and to produce skilled outputs rather than crammers. Education, therefore, has to be looked at with a very long-term view beyond passing examinations onto adult professional life.

The curriculum should be diverse enough to cater for various individual differences of the (most) children with materials and methodologies adapted to suit their needs. Teaching methodologies put most of the onus on rote learning, and the assessment in examinations follows the same pattern, i.e., students have to put down whatever has been memorized. Teachers should be well trained to improvise well enough for the children to learn in different ways rather than to focus almost solely on the lesson plan and how to impart content. Activity-based curricula changes are welcomed but these are not always helpful. Teachers need to be trained on more innovative teaching methodologies to capture the interest of the students. Teachers and the teaching profession have to be accorded the status deserved, for good teachers make for good professionals in later life. For the weaker students, emphasis on continuous assessment rather than examinations can help in this exercise. Weaker students proceeding to KS2 or higher will follow (upon advice by the head school and with the consent of parents) specially designed curricula. The standard curricula will thus have to be expanded so that the students are given additional amounts of activities, drill, and review; laying emphasis on the more difficult concepts/areas. Late developers can switch back to the normal stream at exit points of each KS.

Extremely weak students, on the other hand, can only be accommodated either by repeating a particular year or by sending them to remedial schools. The latter can prove to be very effective especially if it caters for disabled children and children with learning disabilities. The learning difficulties or disabilities could be categorized so as children are streamed and taught in these remedial classes in order to help them overcome their difficulties and improve the educational output. Remedial education has proven to be successful in many developed countries and responsible for increasing levels of school performance and achievement. Only by seriously considering the root causes of exclusion, like poverty, fees, hidden costs of education, and other access problems, can countries with compulsory universal education as their policy statement, claim to be truly compliant. However, remedial education is costly so that, in the long term, the inclusion of remedial education within the school system itself will be more viable (than to accommodate high rates of failures and repetition which have a higher cost both in material and human terms). Volunteers (retired teachers and others) and voluntary organizations can assist in this endeavour with support services from sociologists and educational psychologists. Such efforts are already a reality in Mauritius with specialized schools like the School for the Blind, the School for the Deaf, the APEIM, SENS, HEAR, ENS and Lizie dans la Main.

Curriculum Differentiation for Gifted and Talented (GAT) Students

GAT programs are not necessarily "elitist." GAT students need educational experiences that match their different ways and rates of learning. GAT students are significantly more likely to retain science and mathematics content accurately when taught two to three times faster than normal class pace. One expects around 1% (the top 1%) of the student population that will need a significantly different level of instruction and curriculum than is available in schools. We need to support GAT students in achieving their very highest educational and personal potential. Individuals should have equitable and just access to opportunities and be provided with the right stimulus. It will be very unfair to place (not to mention imprison) bright and meritorious kids in a mixed ability class or environment for several years. SCROLS provides a hybrid model that involves acceleration, enrichment programmes for this caliber of students.

Enrichment fills the time of children who learn more quickly by offering materials or activities that do not allow faster progress through the established curriculum. Enrichment activities may include introducing students to other fields or activities, such as art, music, journal writing, clubs or field trips; assigning additional work at the same level of difficulty, or assigning the advanced student various school responsibilities such as classroom aide.

Acceleration, on the other hand, refers to the many strategies used to speed up the rate at which talented students move through academic curricula. Acceleration is intended to facilitate learning for highly able students who might otherwise be limited to a diet of repetitive educational experiences. Some forms of acceleration move students out of learning groups composed of their age-peers, placing them with students who may be significantly older. But acceleration is also often subject-based, allowing students to maintain ties with same age peers while forging ahead in particular academic areas. Supporters claim that acceleration places these students where they will be exposed to the academic challenges they need, thus promoting real advances in their skills and understanding. Yet others argue that acceleration rushes students through school, putting students' social, emotional, and even intellectual development at risk. Acceleration can be achieved in several different ways including: Early Entrance to kindergarten/school/college, Grade Skipping, Curriculum Compacting, Telescopic Curriculum. Credit by examination, Mentorship, Concurrent

Enrolment, Subject-matter acceleration, Advanced Placement, Accelerated Classes, Combined classes or ungraded classrooms, Continuous progress, Self-paced instruction. Several of these acceleration options also involve ability grouping and/or are logically linked together.

SCROLS provides a neat method for meeting the needs of TAG children through its combination of enrichment and acceleration. This gives children a better chance to find peers who share their interests and maturity level as well as their academic mastery. It helps teachers to adjust the rate of instruction as well as the level of instruction to their distinctive learning needs.

6. Curricular and Related Issues

Curriculum reforms need to focus on languages, critical thinking, information technology, living values, health and physical education, vocational and technical education to make the child a complete person - from social to economic; education being the bridge between these two concepts. A knowledge based society calls for the integration of education and human resource development to produce an adaptable, trainable and educable work force with the necessary knowledge and skills.

Curriculum Design and Curriculum Broadening

As with any educational system, due consideration should be given to curriculum design. The SCROLS system is no exception. The SCROLS calls for curriculum design involving three main types of students: the normal stream representing the bulk of the students, the 'decelerated' programme for the weakest students and the 'accelerated' programme for the brightest students. Curricula changes, especially at SC and HSC levels, have undergone drastic changes since the last two decades impacting on tertiary education with little innovations brought in. The curricula are often viewed as being 'downgraded'. Curriculum design is a continuum and must involve all stakeholders from the pre-primary to the university (especially if these admit the lion-share of the tertiary system). Although curriculum design must be a dynamic process, once it has been implemented, it should remain valid for three successive years and aligned with textbooks preparations. School curricula will have to be broadened to include emerging disciplines that will ensure that the products of our educational system yields a higher and surer return in terms of human development, economic competitiveness and social cohesion. In this information age, one can think of inclusion of computer education, health education (with the purpose to inculcate good eating habits) sex education (with the purpose to reduce disease and out-of-wedlock pregnancy) as well as civic education, life skills and performing arts.

Textbooks and associated Health Risks: Textbooks contain material that the student will normally cover during the year. It is the practice that each year textbooks be re-written and given to students. This requires considerable investment (an unnecessary penalty on tax payers). How often do textbooks become outdated? Delays are sometimes experienced at the beginning of the programme because of the unavailability of the revised textbooks. Parents find it deplorable for their kids to carry all textbooks, supplementary texts to school, including those of the private tuition. The weight of the books is so heavy that it represents a potential danger to the student's fragile bone structure and health let alone the learning tension they endure. Two possible solutions are proposed here. The first approach is built on a term-wise scenario whilst the second one is based on a unit-wise (preferred) scenario. The term-wise scenario hinges on the fact that the academic year of the school system is divided

into three terms. It would be desirable that (1) workbook materials be designed to cover only materials in one term (this reduces the carrying load by three), (2) textbooks be prepared (like the work book) on a term-basis on a three-yearly basis; any revision within this term can be treated in the form of a supplementary document (less pressure and more economic), (3) the time saved (from 2) be spent on raising quality of our products and quality assurance, and (4) the textbooks (and the supplements) be returned to the next cohort of students. The unit-wise scenario is based on breaking down the contents of a subject into major themes (for example: water, air, light, etc.); a subject can thus contain say up to 10 units. Again, built upon the unit principles, (1) workbook materials be designed to cover only each unit (this reduces the carrying load considerably), (2) textbooks be prepared (like the work book) on a unit-basis on a three-yearly basis; any revision can be compiled into a supplementary document, (3) the time saved (from 2) be spent on raising quality of our products and quality assurance, and (4) the textbooks (and the supplements) be returned to the next cohort of students. The unit-wise scenario has advantage that it will be easier to introduce video or on-line materials to supplement the classroom materials.

7. Teaching Methodologies

Teaching methodologies should aim at critical thinking skills.

Online Materials: Computer based or networked learning structure, in which people contribute to each others' education, i.e. online education (a subset of distance education), provides a useful aid as a supplementary tool to the teaching and learning process. This methodology is a break to the traditional educational system.

Private tuition: Private tuition has been a subject of complaint right back to 1911 by Mr. W.A. Russell, Rector of the Royal College. As mentioned above, the abolishment of the so-called rat race has not eliminated or reduced private tuition. Parents are still concerned that they admit their wards to the best school in the region (formerly, island). That private tuition does not have any *raison d'être* is a subject of debate. For sure, private tuition cannot be tolerated on a massive scale. It will never be eliminated; but measures can be taken to decrease it – obvious deterrent measures include denying private tuition on school premises, teachers to include it in their tax returns, extension of school hours (not class hours), use of video/on-line materials, and the operation within a solid quality assurance framework.

Language Policy: Language policy can be a very sensitive and very controversial issue that requires national consensus. Studies have to be carried out to investigate how flexible our medium of instruction at classroom level should be and to what extent our present approach to languages needs be revised to live up to our national aspirations.

Training and Inspection: Peer coaching may supplement in-service training, through the appointment of senior teachers as mentors to recently-qualified staff, guiding them in their early years of teaching in matters of curriculum content, classroom practice and relationships with other staff, students, parents and the community.

8. Examinations

The educational system must be more competent-based rather than content-based.

Local/Regional Examining Body: Around Rs200 million are spent each year on SC and HSC examinations (it is understood that the fees have so far been subsidized by 50%).

Thousands of students also take the GCE ‘O’ level and ‘A’ level examinations for which they have to pay fees. It is assumed that part of this money goes to the MES; whilst the bulk of the fees go to University of Cambridge LES and the University of London Board. The sum spent on examinations is indeed significant. It is noteworthy to point out that the University of Mauritius has been conducting examinations at higher levels (BSc and MSc) level without any problems. It is proposed that henceforth all such examinations be organized by Mauritians. Given the goodwill of one and all, we should be able to realize this. Government needs to invest into such an institution to work out all the logistics. University of Mauritius can be called upon to set up such a unit as an income-generating source. Else, a board can be established at regional level with educational set up similar to Mauritius, for example, at SADC level.

Laureateship: Probably one of the arguments against the establishment of an institution to cater for ‘O’ and ‘A’ level examinations is the award of laureateship. The rat race towards the star school stems very much from the award of laureateship. The 31 awards represent additional costs to the Government since most of laureates proceed overseas for their higher studies; each laureate being covered for three years. More so, the majority of the laureates do not come back to serve their nation. Yet, for politico-cultural reasons, this diseased condition continues to survive. Government should instead transfer the notion of laureateship to university students for postgraduate studies (Masters programmes). The latter offers several advantages than the current system: (1) for the same sum of money, more students (trebled) can become laureates since the Masters programmes are typically one year programmes, (2) students have matured well enough at this point to specialize in priority areas of the nation, (3) the impact of the rat race concept will be diluted to the fullest since the race for laureateship is really at the tertiary end affecting far fewer students.

Grade inflation: Grade inflation is the practice of schools or teachers to give a greater number of student good grades than actually deserve those grades. Grade inflation can be perceived to be problematic for schools because it is seen as a dilution of standards. The provision of scholarship papers at the final stages of KS2 and KS3 can be seen as a way to redress this grade inflation. This revives the competitive spirit for healthy education required for economic progress.

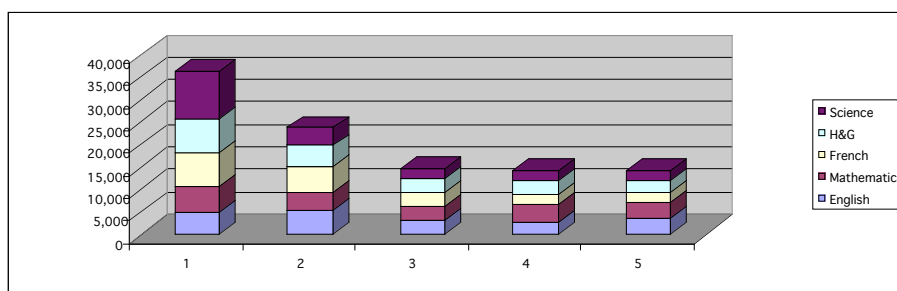


Figure 3: Grade Inflation at CPE level CPE 2003: 1-5 representing A-E, respectively
Source: Ministry of Education & Scientific Research

Absenteeism: Absenteeism is becoming very acute, especially during the weeks preceding examinations. Poor teaching, teachers' absence, some unscrupulous teachers, private tuition, and fierce competition have been identified as the main causal factors. Appropriate legislation will have to be introduced to combat absenteeism.

9. Resources

More Schools: The major dysfunction of the Mauritian educational system is believed to be the bottleneck situation that constrains access from primary to secondary education. Any improvements toward a reduction of failures/repeaters at CPE will call for a more or less proportional increase in the number of secondary schools. Also, it should be possible to accommodate specialised schools (such as science and technical) to save on resources within each region.

Educational buildings: Educational buildings, a grossly under-utilised resource (busy only during the day), can be advantageously used to cater for the needs of students (any grade) and the local community (especially to bring the literacy and numeracy levels to 100%).

IT Resources within schools: Information Technology is opening the way for every school to have access to a vast expanse of resources. Links with local and foreign institutions have to be developed in a coherent manner – to avoid any chaotic outcome. These facilities should be extended to students and the local community after school hours.

Teachers: The role, capacity and status of teachers have to be revisited for this system allows for specialization – within key stages. Teachers should be trained to develop online materials and participate in the national examinations process. In-service training programmes should be organized at regional level.

10. Science/IT Literacy

Recent studies on the status of science and technology in Mauritius, focussing on the education sector, show that science as a subject is becoming increasingly less attractive to pupils, as is the case in many countries across the world [Suddhoo, 2003]. In short, the studies have allowed identifying several weaknesses in science education. Our current lacking in science could have implications on the quality of our human resource, particularly within the context of the vision of transforming the country into a Cyber island. The major recommendation of the consultants is a complete review of the teaching and learning of science in our primary and secondary schools. The consultants are of the view that the current state of affairs is already leading to pupils and students shying away from science for many reasons varying from science being perceived as a difficult subject to the lack of career opportunities for those opting for scientific subjects. The present status of science in Mauritius is **not an isolated finding**, since many other countries in the world are facing more or less the same problem. However, in the context of SIDS, these issues, if not dealt with at an early stage, could hamper developmental growth in the country not being able to develop its human capital [Sudhoo, 2003]. In Mauritius, several initiatives have already been taken to redress the situation. A science education plan has been developed and Task Forces have been set up to implement and monitor the actions.

11. Quality Assurance Framework

Quality education (QE) will be the focus of tomorrow's world. Implementation of recommendations of QE is already a reality in several nations. Small islands must follow suit in order to confront the challenges of the knowledge-based economy. Small islands need to develop quality schools to inculcate a quality culture in their entire education system and to introduce a practical framework to monitor and assure quality – a shift from "effective schools" to "quality schools". Recommendations include the establishment of a special fund to promote quality and innovation in school education at all levels (within the ambit of **basic** education), the setting of educational goals and development of quality indicators, the establishment of a quality assurance mechanism, and raising professional standards of principals and teachers (Education Commission Report No. 7 (1996)).

Small islands should be encourage the education community to take the initiative in introducing improvements and innovations to school education by providing a flexible and responsive funding mechanism with a bottom-up approach. Objectives include the promotion of a quality culture in the school system, enhancement of the personal growth of students, and strengthening the co-operation between the community and key players in the school system to help build a quality culture. This calls for the establishment of a Steering Committee (SC) that will maintain close relationship with front-line educators. The SC will advise on the policies and procedures towards providing a streamlined mechanism to facilitate the realization of innovative ideas on basic education and the implementation of school-based pioneering or improvement projects, in a bid to create a quality education culture. Amongst others, it should include award schemes for outstanding schools and teachers to give due recognition to teachers and schools with commendable performance based on a comprehensive set of equitable criteria. Members of the SC will take the lead to exchange views and experience with the education sector and to join hands with educators in the promotion of quality education. The Ministry should set up mechanisms performance evaluations and develop educational indicators and for sharing best practices. Best practices are those exemplary and/or innovative strategies that (1) promote high student achievement; (2) address specific educational needs of students and the core curriculum content standards including the cross-content workplace readiness standards; (3) yield documented results meeting set objectives, and (4) can be replicated. A regulatory body should be in place to deal with the mushrooming of a variety of institutions and to avoid potential conflicts between publicly owned and privately owned institutions.

12. Conclusions

We have proposed novel reforms in the education sector which offer a totally new system with a radical widening of opportunities; a model commensurate with the emerging and future challenges of the knowledge driven economic transformations. The model can be easily adapted to SIDS. The model has been derived from a simple concept that of offering a wider access to schools through its level-based school-wise admission whilst retaining the competition element.

The new system proposed, based on a more widened access, provides new opportunities for major resource optimisation, enhancing the quality of education, specialization teachers/schools, justified construction of schools, and reintroduction of a new type of competition commensurate with the requirements of global competition. The state of the quality of education can be continually checked by cross-national comparative studies.

The reform envisages people more citizens going on to higher education through reduced dropouts and failure rates, and a higher proportion of time devoted to science and information technology. The reform in the education sector will require a phased programme for implementation, Government and teachers to adopt major changes in attitude and methods and Government to undertake additional investment in education.

Major policy recommendations for SIDS are:

- To increase access to schools with due provisions to curriculum differentiation for normal, weak, and talented and gifted students

- To adopt incremental decentralisation policies with flexible implementation but observing a strategic balance between the autonomy and the characteristics of its beneficiaries
- To develop cross-national comparative studies on the quality of education with a view to not only improve on the quality of education in schools but also towards creating more equitable systems
- To develop a common examinations board
- To develop e-learning as teaching aid and to expand access to quality education
- To make science and mathematics compulsory up to Grade 11.
- To develop regulatory framework for education at all levels

References

Education Master Plan, Ministry of Education, Arts and Culture, Mauritius, 1991

Dowson, C., Bodycott, P. Walker, A. and Coniam, D., 2000, Education Reform in Hong Kong: Issues of Consistency, Connectedness and Culture, *Education Policy Analysis Archives*, epaa.asu.edu, Vol 8 No. 24

Delacy, M Acceleration for Gifted Students, Portland Public School District Talented And Gifted Advisory Committee, April 19, 1996,
<http://home.pacifier.com/~mdelacy/margaret/accelera.htm>

Education Commission Report No. 7 (1996) Quality School Education. Hong Kong Education Department

Suddhoo, A., Science and Technology in a Small Island Developing State: The Case of Mauritius, GASAT