An Investigation of Education Factors that Foster Social and Economic Growth in Barbados

Technical Report · January 2024

DOI: 10.13140/RG.2.2.23660.68483

6 authors, including:

s. Joel Warrican
University of the West Indies
49 PUBLICATIONS **391** CITATIONS
SEE PROFILE

Coreen Leacock
University of the West Indies
21 PUBLICATIONS **159** CITATIONS
SEE PROFILE

Erin Anne Mahon
University of the West Indies
13 PUBLICATIONS **17** CITATIONS
SEE PROFILE

Simone King
University of the West Indies
1 PUBLICATION **0** CITATIONS
SEE PROFILE

An Investigation of Education Factors that Foster Social and Economic Growth in Barbados

Contributors

S. Joel Warrican
Coreen J. Leacock
Erin Mahon
Simone King
Dalano Da Souza
Stephanie Pascal

2024

This page is intentionally blank

List of Contributors

The following individuals contributed to the collection of data for this investigation and the production of this report.

Professor S. Joel Warrican	Professor of Education, School of Education Director, Caribbean Educational Research Centre The University of the West Indies, Cave Hill
Dr Coreen J Leacock	Senior Lecturer School of Education Coordinator, Caribbean Educational Research Centre The University of the West Indies, Cave Hill
Dr Erin Mahon	Research Fellow, Caribbean Educational Research Centre The University of the West Indies, Cave Hill
Ms Simone King	Graduate Student, Economics The University of the West Indies, Cave Hill
Dr Dalano Da Souza	Lecturer in Economics The University of the West Indies, Five Islands
Ms Stephanie Pascal	Graduate Student, Economics The University of the West Indies, Cave Hill

This page is intentionally blank

Table of Content

List of Tables

List of Figures

EXECUTIVE SUMMARY

INTRODUCTION

The Barbados Government has embarked upon a novel approach to governing, coordinating and growing the economy. This new methodology is codified in a series of Country Missions that provide a framework for achieving excellence in our human and societal development. The overall aim is to promote strong, inclusive economic growth that will raise living standards, combat marginalization (especially among young people), and provide greater long-term income security for Barbadians, thus helping to combat crime. A further aim of the initiative is to meet critical development needs by paying attention to areas such as adequate supply of healthy, affordable food, a revitalized and sustainable agriculture sector and quality, affordable health care. Among the avenues identified to pursue these desired outcomes is education. It is posited that quality education can help students to develop attitudes, skills and competencies necessary for national economic growth. These necessary qualities go beyond the acquisition of academic knowledge and certification and encompass the so-called 'soft' skills that engender skills such as effective communication, respect for self and others, a spirit of collaboration rather than competition, critical thinking and problem solving.

In order to determine the extent to which the desired skills are already incorporated into the existing educational provisions and the potential of the education system to be developed to support human and societal development and economic growth, the Barbados Government established the Barbados Economic Growth Council (BEGC), which includes a sub-group that is tasked with *designing an appropriate public education program to enhance the public's awareness of the importance and need for economic growth*. The sub-group commissioned a research project to obtain adequate data to inform its decision making as it carries out its assigned task.

This research project had four main objectives to be achieved. These are:

- Determine what skills are emphasised by countries that are deemed to be making exceptional strides in social and economic development.
- Determine if and how extensively skills that are deemed necessary for survival in modern society are addressed in programmes offered by the educational institutions at different levels in Barbados.
- Determine skills deemed necessary by employers and employees in the workplace currently and in the future.
- Assist the BEGC to develop an evidence-based model for transforming Barbados' economic landscape through skills development.

SECTION 1 EDUCATION FOR ECONOMIC AND SOCIAL DEVELOPMENT: A GLOBAL PERSPECTIVE

Literature that identified factors that contribute to social and economic growth of countries was reviewed. A key contributing factor was the development of human capital (Becker 2009), especially through education. Human capital is defined as the as skills which promote economic activity such as cognitive skills and knowledge (Kucharčíková 2011). A set of "soft" skills, including effective communication, self-respect, respect for others, collaboration, critical thinking, and problem-solving, creativity, innovation and entrepreneurship and multiple literacies (such as financial literacy; digital literacy; health literacy) deemed essential for social and economic development was identified. The expectation is that the more skills and aptitudes possessed by a greater share of the labour force, the more a country can expect to produce, and the more the economy is expected to grow. Education emerged as an important contributor to sustainable development through its impact on production, competitive advantages, employment, poverty reduction and economic growth (DaSouza and Jackman 2023; Wilson and Briscoe 2004). Examples of four small states with characteristics similar to Barbados were explored to illustrate how these countries – Singapore, Mauritius, Costa Rica and Malta – were able to achieve economic turnarounds by transforming their education systems to meet the needs of 21st century citizens.

SECTION 2 EDUCATION IN THE BARBADOS: COLONIAL INFLUENCES, CURRENT ISSUES AND OUTCOMES

This section explored the current status of the Barbados education system, highlighting conditions and practices that sprang from the days of its colonial past, and that now threaten the quality of education provided for modern day students. Some of the existing conditions and practices – related, for example, to over-emphasis on high stakes examinations; the use of such an examination to transfer students from primary to secondary education; teacher recruitment and preparation practices; and school leadership – appear to be antithetical to those that help students to develop the skills and competencies deemed necessary for social and economic development. The impact of these conditions (generally based on policies and practices established by the colonial powers) on students' academic achievement was also explored. Evidence that supports the notion that present education practices contribute to divisiveness among citizens, marginalisation of large proportions of young citizens, and the absence of opportunities for students to develop essential skills was presented.

SECTION 3 METHODOLOGY

To assess the extent to which the desired skills are currently integrated into existing educational programmes and to evaluate the potential for further development of the education system to support human and societal development and economic growth, a survey of educational institutions was conducted. A questionnaire was completed by the

principal, or someone appointed by the principal of 14 primary schools, 4 secondary schools and 4 post-secondary/tertiary institutions. The questionnaire had five sections: Section 1 collected school demographics (e.g., roll, number of teachers, and teachers' qualifications). Section 2 collected data on the extent to which identified essential skills are already integrated into existing school programmes. Section 3 asked schools to report on the adequacy of their resources, human and facilities. Section 4 investigated the flexibility of programme content and delivery. Section 5 asked about the extent to which key stakeholders (students, parents and the community) are involved in institutional activities (e.g., governance, and decisions about programmes, curriculum content, and the use of institutional facilities). The data from each section of the questionnaire were summarised in tables that were used to speak to the status of the schools in the areas assessed. A correlation analysis was also run to develop a model to show how changes in certain conditions/characteristics could impact economic growth in Barbados.

SECTION 4 SUMMARY OF MAIN FINDINGS AND IMPLICATIONS

Below is a summary of the data reported by the schools in the sample. The information is reported by school to allow for exploration of differences among the schools in the sample. The results from the primary schools are presented first, followed by those for the secondary schools. After the correlation analysis, a brief summary of the data from the post-secondary/tertiary institutions is presented.

Status of Features of Barbadian Education: Primary School Sample

Selected Teacher Characteristics – Primary

- Of the 13 schools that submitted school roll data, 45% was female; 55% male.
- Of the 286 full-time teachers across the schools, 79% were female; 21% male.
- The teacher-to-student ratio across the schools ranged from 1-to-5 to 1-to-13.
- Within the 12 schools that submitted data on this feature, 94% held at least a bachelor's degree. (The areas in which the degrees were held were not reported. However, a previous study (CERC 2024) found that 35% of the 101 teachers involved held degrees that were not related to primary education.)
- Of the 13 schools that reported on this feature, 94% of the teachers were trained.

Integration of Essential Skills - Primary

- The essential skills were generally not widely integrated in the programmes of the 14 schools.
- Civic knowledge and skills were the most commonly integrated essential skills across the schools (an average of 7 ways out of a possible 35 ways).
- Financial literacy was the least integrated essential skills across the schools (an average of 1 way out of a possible 45 ways).
- Twelve (86%) of the schools reported providing opportunities for students to practice communication skills. A similar number reported such opportunities to practice digital skills.
- Two (14%) schools reported providing opportunities for students to practice financial skills.
- The most common context in which students practices essential skills was labs and workshops at the schools.

Adequacy of Resources - Primary

- One (7%) school reported having some career counsellors but could use more. None of the other schools reported having this service.
- Six (43%) schools reported not having a guidance counsellor.
- Thirteen (93%) schools reported having student leaders, although 1 school indicated that they could use more.
- None of the schools reported having adequately equipped workshops; facilities that support the use of advanced technologies; or a sick bay.
- Only 1 (7%) school reported having a staff room.

Flexibility of School Programmes/Curricula – Primary

- Generally, the schools' reports indicated that their programmes were somewhat inflexible, with limited student choice.
- Thirteen (93%) schools indicated that their academic programme content was fixed, with students taking pre-arranged courses/subjects.
- Programme delivery in an online environment was limited, restricted primarily, where it is used, to some courses offered in blended mode or online resources to support learning.

Stakeholder Involvement – Primary

- The schools reported somewhat restricted involvement of key stakeholders (students, parents and the community) in institutional activities.
- Ten (71%) of the schools reported parental involvement in institutional governance.
- None of the key stakeholder groups were reported to be involved in decision making about curriculum content.

<u>Status of Features of Barbadian Education: Secondary Schools Sample</u>

Selected Characteristics – Secondary

- Generally, the four schools that reported, indicated a range subject areas, including English; Mathematics; General Studies; Sciences; Business Studies (2 schools); Foreign Languages (2 schools); TVET (3 schools); Arts (2 schools); Physical Education (2 schools).
- Two (2) schools offered Caribbean Certificate of Secondary Level Competence (CCSLC) qualifications.
- All 4 schools offered Caribbean Secondary Education Certificate (CSEC) examinations.
- Two (2) schools offered Caribbean Vocational Qualifications (CVQs).
- Three of the 4 schools offer post-secondary education at the level of the Caribbean Advanced Proficiency Examinations (CAPE).
- Of the 254 full-time teachers across the schools, 64% were female; 36% male.
- The teacher-to-student ratio could not be determined owing to insufficient data.
- Within the 4 schools, 91% held at least a bachelor's degree. (As with the primary schools, the areas in which the degrees were held were not reported.)
- Across the 4 schools, 79% of the teachers were trained.

Integration of Essential Skills – Secondary

- The essential skills were generally not widely integrated in the programmes of the 4 schools.
- Financial literacy skills were the most commonly integrated essential skills across the schools (an average of 7 ways out of a possible 45 ways).
- Digital literacy was the least integrated essential skills across the schools (an average of 2 way out of a possible 45 ways).

- Of note is that across the 4 schools, workplace skills were only integrated an average of 5 ways out of a possible 25 ways.
- Only one (1) of the schools reported providing opportunities for students to practice workplace skills.
- The most common context in which students practices essential skills was labs and workshops at the schools.

Adequacy of Resources - Secondary

- Generally, the schools reported having most of the human resources identified, although the impression is that they did not have several of them in adequate numbers.
- One (1) school reported having no career counsellors, and 2 had no educational technologists.
- All of the schools reported not having facilities that support the use of advanced technologies; or a sick bay.
- One (1) school reported having no sick bay or student cafeteria/lounge.

Flexibility of School Programmes/Curricula - Secondary

- Two (2) schools each reported that most of their programmes were inflexible and two indicated some flexibility.
- Only one (1) school reported having a few fully flexible programmes where students were allowed to choose the subject that they would pursue.
- Programme delivery in an online environment was also very limited. Two (2) schools indicated that at least a few programmes offered online options.
- Two (2) school offered no online options at all.

Stakeholder Involvement – Secondary

- Stakeholder Involvement was even more limted than it was for the primary schools.
- One (1) school reported no involvement of the three key stakeholder groups in school activities (governance and decision making about programmes, curriculum content, and use of facilities).
- Three (3) of these secondary schools reported no involvement of community in school activities.

Results Of Correlation Analysis

- The correlation analysis found that theoretical improvements in financial literacy could substantially improve Barbados' socioeconomic outlook. For example, higher financial literacy could reduce Non-performing Loan (NPL) rates over time, leading to a more efficient allocation of resources and economic growth.
- Conservative estimates suggest that increasing financial literacy could reduce NPLs by between 0.25% to 1% annually, decreasing total NPLs in Barbados overtime.
- Higher financial literacy could also positively impact Gross Domestic Product (GDP) growth, tax revenue, and retirement planning, offering broader economic benefits.
- Digital and health literacy improvements also have the potential to generate substantial economic gains, such as reduced healthcare costs and enhanced business performance.

Tertiary Education: A Quick Look

- Two of the institutions (BIMAP and UWICH) reported that most of the broad category of skills were largely incorporated into their programmes.

SECTION 5 A MODEL FOR EDUCATION IN BARBADOS

A model for education in Barbados, based on inclusion, flexibility and caring, was presented. The model encapsulated:

- A pathway for transitioning from one level to the other, from primary education to tertiary education.
- A programme structure that includes the integration of essential skills for the 21st century and beyond.
- Curriculum content that is integrated and flexible enough to meet the needs of all learners.
- A number of enabling conditions that would contribute to the successful implementation of this transformative system.

Enabling Conditions

Below is a list of conditions to which attention and consideration must be given to support the implementation of the proposed model of education.

- Upgrade of school plants.
- Organization of Schools to include additional classes and departments to facilitate offering a wider range of subjects in, for example, STEM, Humanities, Creative/Fine Arts, Foreign Languages, TVET, and IT.

- Finding space in primary schools by construction more dedicated nursery schools.
- Building a non-tradition curriculum that integrates the essential skills at all levels, and that is organised to permit learning to take place not only in classrooms, but also through engagement in real-world activities that require immediate application of the skills learned. Thus, activities such as service-learning, project approaches, cooperative and collaborative learning, community service and internships should be included. Projects and learning activities that allow for the incorporation of the various essential skills/literacies should be prominent.
- Professional Development for Teachers should be given priority to ensure that teachers develop the skills and competencies to implement a non-traditional curriculum.
- Teachers should be trained and supported alternative assessment approaches, as well as in integrating the essential skills (e.g., communication skills, financial literacy skills, health literacy skills, digital literacy skills) in their teaching.
- To ensure quality teaching, attention must be paid to teacher recruitment and preparation. Thus, for example, recruited teachers should have adequate subject content knowledge as well as pedagogical knowledge. Teachers should not teach out-of-field, and where teachers' content knowledge is weak, there should be appropriate opportunities for them to upgrade their knowledge and skills in this area.
- Online learning should be encouraged from the early grades to foster skills that support lifelong learning.

The model of education proposed here removes elements that contribute to elitism, the marginalization of large proportions of youth who do not benefit from the current educational provisions and the overemphasis on high stakes examinations that create anxiety and other outcomes that have a negative impact on the Barbadian society. This proposed model may not the only viable alternative, but it could help to bring about the turnaround that is needed to lead to growth and development of the social and economic landscape of the country. It is also recommended that an integral part of the implementation of any alternative system should be research: research to determine what is effective, what may need to be revised and what should be discarded. Decision-making without adequate research evidence can lead to a waste of already limited resources that are available to small states such as Barbados.

SECTION 6 RECOMMENDATIONS

Based on the findings of this study, it is evident that the education system in Barbados can be considered of a traditional colonial structure, and unsuitable for preparing current and future students for the world in which they are expected to live. To address these issues, a number of recommendations are being made here.

- The process for recruiting and preparing teachers should be reviewed and revised. Teacher education should focus not only on content, but also heavily on pedagogy, helping potential teachers to develop strong competencies in integrating in their instructional practices, skills that are deemed necessary to help students to become contributing citizens.
- The curriculum for the different levels within the compulsory education range should be revised to be more integrated rather than subject-centred, with greater emphasis on skills development.
- The essential skills should be deliberately interwoven across the curriculum from the earliest grades, with activities pitched at the level of the students.
- Learning should be linked to real-life activities that allow students to practice the skills and competencies that they are expected to develop.
- Schools should be staffed with professionals who have the expertise to support the students in their learning and to guide them to develop positive attitudes, relationships and dispositions.
- Persons put in leadership positions in schools should be adequately qualified, with appropriate training. There should be some focus on continuous training for these leaders. For example, school principals should receive continuous training in instructional leadership, technological leadership, and in approaches for keeping staff engaged and accountable.
- Consideration should be given to support systems for teachers to guide them with the implementation of new school programmes. This will ensure the integrity of the implemented programmes, as a means of quality assurance.
- School facilities should be updated and upgraded to ensure that they are adequate to support the activities in which the students are expected to engage as they develop the essential knowledge, skills and competencies.
- Policies and guidelines should be developed to facilitate involvement of key stakeholders in the education process in the country. These would include students, teachers, parents, community leaders/groups, businesses, and NGOs. This engagement with key stakeholders should not only be for special occasions (e.g., consultation for projects), but on a continual basis, thus increasing the likelihood that these ones feel invested in the education process.

Considering the value of financial literacy and health literacy that emerged from the correlational analysis, it is worthwhile to make a few recommendations related to these. It must be acknowledged however, that enhancing financial literacy requires a coordinated effort from governments, financial institutions, educational institutions, and other stakeholders. Likewise, attention should also be paid to health literacy, drawing on the expertise of relevant agencies to guide the integration of these skills into the curriculum. Bearing this in mind, the following policy recommendations can help improve financial literacy and health literacy with a view to supporting economic growth.

- Integrate Financial Literacy and health literacy into Education Systems
- Promote Financial Literacy and Health Literacy through Public Awareness Campaigns
- Encourage relevant Institutions to Provide Financial and Health Education
- Support Workplace Financial and Health-Care Education Programmes
- Develop and Implement National Financial Literacy and Health Literacy Strategies
- Enhance Access to Financial Services
- Support Research on Financial Literacy, Health Literacy and Economic Growth
- Foster International Collaboration

INTRODUCTION

The Barbados Government has embarked upon a novel approach to governing, coordinating and growing the economy. This new methodology is codified in a series of Country Missions that provide a framework for achieving excellence in our human and societal development. The overall aim is to promote strong, inclusive economic growth that will raise living standards, combat marginalization (especially among young people), and provide greater long-term income security for Barbadians, thus helping to combat crime. A further aim of the initiative is to meet critical development needs by paying attention to areas such as adequate supply of healthy, affordable food, a revitalized and sustainable agriculture sector and quality, affordable health care. Among the avenues identified to pursue these desired outcomes is education. It is posited that quality education can help students to develop attitudes, skills and competencies necessary for national economic growth. These necessary qualities go beyond the acquisition of academic knowledge and certification and encompass the so-called 'soft' skills that engender skills such as effective communication, respect for self and others, a spirit of collaboration rather than competition, critical thinking and problem solving.

In an effort to modernise the country's education system, and to lessen the detrimental influence of education practices forged in the days of colonialism, the Barbados government embarked on an education reform initiative under the theme *Reimagining Education in Barbados*. The overall goal of the reform is to transform the Barbados education system to one that will help students to develop the knowledge, skills, attitudes and aptitudes to succeed in the twenty-first century.

In order to determine the extent to which the desired skills are already incorporated into the existing educational provisions and the potential of the education system to be developed to support human and societal development and economic growth, the Barbados Government established the Barbados Economic Growth Council (BEGC), which includes a sub-group that is tasked with *designing an appropriate public education program to enhance the public's awareness of the importance and need for economic growth*. The sub-group

commissioned a research project to obtain adequate data to inform its decision making as it carries out its assigned task.

This research project had four main objectives to be achieved. These are:

- Determine what skills are emphasised by countries that are deemed to be making exceptional strides in social and economic development.
- Determine if and how extensively skills that are deemed necessary for survival in modern society are addressed in programmes offered by the educational institutions at different levels in Barbados.
- Determine skills deemed necessary by employers and employees in the workplace currently and in the future.
- Assist the BEGC to develop an evidence-based model for transforming Barbados' economic landscape through skills development.

Overall, it is expected that this research will also provide the government with evidence to inform their decision making in relation to the proposed *Reimagining Education in Barbados* initiative.

This report presents the findings from the investigation. It has 6 main sections.

Section 1 examines education provisions that are known to promote economic and social development in countries. It pays special attention to a sample of countries that are noted as having changed their circumstances to improve the conditions of their citizens and endeavours to identify desirable competencies that should be developed through education to ensure that citizens are able to make a valuable contribution to their communities and their countries.

Section 2 examines the Barbados context, noting the development of education from colonial times. It explores the influence of colonialism on present-day practices and seeks to elucidate the impact of these practices on the outcomes of education that may be antithetical to social and economic growth.

Section 3 outlines the methodology used to collect data to ascertain the extent to which education institutions in Barbados have incorporated knowledge, skills and competencies deemed desirable in a country that is seeking to accelerate economic and social development, and to determine the education system's capacity to integrate these desirable features into its offerings at the primary and secondary school levels.

Section 4 presents the findings from the data collection activities and seeks to make a prediction (though tentative) about how certain factors may impact the country's economy.

Section 5 presents a model for education in Barbados that incorporates desirable facets to prepare young citizens to make a meaningful contribution to the economic and social development of the country.

Section 6 presents recommendations based on the findings of the research.

SECTION 1 EDUCATION FOR ECONOMIC AND SOCIAL DEVELOPMENT: A GLOBAL PERSPECTIVE

Studies in economic development have focused on educational attainment to economic development. This follows the human capital theory detailed in Becker (2009). Human capital can be defined as the as skills which promote economic activity such as cognitive skills and knowledge (Kucharčíková 2011). In essence, human capital is viewed a factor of production which acts as a source of economic growth. The expectation is that the more skills and aptitudes possessed by a greater share of the labour force, the more a country can expect to produce, and the more the economy is expected to grow. Education has emerged as an important contributor to sustainable development through its impact on production, competitive advantages, employment, poverty reduction and economic growth (DaSouza and Jackman 2023; Wilson and Briscoe 2004).

Education and Economic Growth - Education contributes to economic growth in several ways. These include (i) improving the quality of the labour force by imparting skills and work knowledge; (ii) increasing labour mobility and therefore promoting the division of labour; (iii) enabling new information to be absorbed faster and unfamiliar inputs and new processes applied more effectively; (iv) improving management skills which lead to a more efficient allocation of resources; (v) removing many of the social and institutional barriers to economic growth; and (vi) encouraging entrepreneurship by promoting individual responsibility, organisational ability, risk-taking in moderation and planning over the long-term (Lim 1996; DaSouza and Jackman 2023).

While many developing countries continue to lag behind the developed world in terms of improvement of the quality of education, attainment levels have increased considerably. As a consequence, much of the literature which investigates the relationship between human capital and economic growth has measured the former using school attainment (average years of schooling) instead of the quality of the education (Hanushek 2013). Moore (2006) concluded that educational attainment positively affects economic output in Barbados, while DaSouza and Jackman (2023) found similar results for neighbouring St Vincent and the Grenadines. Several international studies also support the existence of this positive relationship (Loening 2005; Afzal et al. 2011; Odhiambo 2020; Kyophilavong et al. 2018).

Quality and the Emerging Skills Mismatch - In recent years, the quality of education in developing countries has dominated policy discussion. Measures of quality include the structure of the education system, cost to the user, appropriate curricula and resources, literacy and pass rates, as well as access, and gender parity (UNESCO 2016). These measures have been, and continue to be the focus of education reforms which aim not only to improve outcomes for individuals, but also to contribute to enhanced economic growth and development at the macro level. Appropriate curricula, linked to literacy (digital, financial and health), and technical and entrepreneurial skills are considered especially important growth-inducing labour force characteristics (CSJ 2022; Radivojević, Kahrović, and Krstić 2019). Others like Cinque (2016) and Robles (2012) also consider 'soft' skills such communication and social skills important contributors to employability and productivity.

Some argue though that schools have failed to prepare students with these 'soft' skills for the job market. For example, Moore and Morton (2015) noted that new graduates are entering the job force with poor writing skills that are well below industry standard. Employers in the UK, faced with this problem, lamented that new graduates are often unable to put together a sentence (Johnston and Kotzee 2011). Although this is a basic literacy issue, the modern definition of literacy extends from the ability to read and write to include the ability to understand, interpret, create and communicate in the new digital world (UNESCO n.d.). Closely linked to the modern concept of literacy is the skill of critical thinking, which also includes the ability to interpret, analyse and evaluate information (Ennis 1964). Other forms of literacy, including financial, media, numerical, computer, technological and media are also considered critical in today's environment.

These charateristics create differences in the labour force and its contribution to economic growth and development. Acemoglu and Autor (2011) argue that in addition to schooling, the level of skills present in the workforce depends on inate ability and training. Many developing countries and developed countries are facing a skills mismatch whereby the skills sought by employers and those possessed by employees differ (ILO 2020). Research examining the skills gap in the Caribbean is scarce, however the few on the topic generally agree. The ILO emphasises the importance of technical skills as well as 'soft' skills in the

Caribbean with the goal of workers being lifelong learners. In a study of Barbados, Guyana, Jamaica and Trinidad and Tobago, Conrad (2011) contended that their education systems should increasingly focus on effectiveness, teaching and learning and development of competencies in thinking skills in order to achieve accelerated economic growth.

The fourth industrial revolution consists of technological advancement as never seen before with the swift rise in artificial intelligence, robotics, blockchain and machine learning (Zervoudi 2020). This newest revolution has proven the need for digital literacy in education as labour productivity benefits from such, as many high skilled jobs are now created with a key requirement being the digital and technological knowledge (Markhaichuk and Panshin 2022; Bejaković and Mrnjavac 2020). Dixon (2013) has argued that the Caribbean is trailing more developed countries in terms of including digital and technological literacy in the education curricula, which contributes to the growing labour force skills mismatch.

Digital/Technological Literacy - In the Future of Jobs Report, Di Battista et al. (2023) predicted that technology is expected to be the main driver among several sectors such as agriculture, e-commerce and trade, and that job displacement is expected. The report argues that with the emergence of artificial intelligence (AI) and machine learning, workers are expected to need continuous training to be up to date. Categories of jobs identified by the report which are expected to the see increase demand and contribute more directly to economic development include Renewable Energy Engineers, Information Security Analysts and Business Intelligence Analysts, while jobs which are expected to see reduced demand include data entry clerks, bank tellers and cashiers. With lower skilled workers at risk of becoming redundant due to technological changes and limited ability to upskill, emphasis is placed on entering the work-force already technologically competent (Markhaichuk and Panshin 2022).

The CARICOM Human Resource Development Strategy for 2030 generally accords with the overall research in the skills mismatch. The aim is for CARICOM nationals to be competitive in the global market. Since innovation within the region comes from nationals in the region, importance is placed on the development of citizens as life-long learners. Emphasis is

placed on the use of ICTs, teacher training, increase in the quality of education and a push to become multilingual individuals. The 'Ideal Caribbean Person' is said to be innovative, a good citizen, have integrity and be professional. Barbados has proposed in its own education reform titled Reimagining Education in Barbados , suggests specialist teachers at the primary level in numercy and literacy. The introduction of vocational subjects at the primary level as well as foreign languages are to be introduced from a pre-primary level starting at 3-5 years of age. Emphasis is placed on technological edcucation such as Robotics and Biotechnology at the secondary level.

To combat the skills gap on the technological side in Europe, coding has been introduced to children from age five, while emphasis is placed on the retention or enhancement of creativity and social skills (Dolphin 2015). Advanced level reading and writing are also becoming higher in demand especially with the knowledge of foreign languages (Sofroniou and Zukersteinova 2013). More recently, non-traditional forms of literacy such as health and financial literacy are being directly linked to a nation's prospects for achieved desired levels of economic growth and development. Consequently, there is a growing body of research advocating for school curricula to be updated to include these discrete elements of literacy, as well as the implementation of programmes targeting adults (CSJ 2022; Lusardi and Tufano 2015).

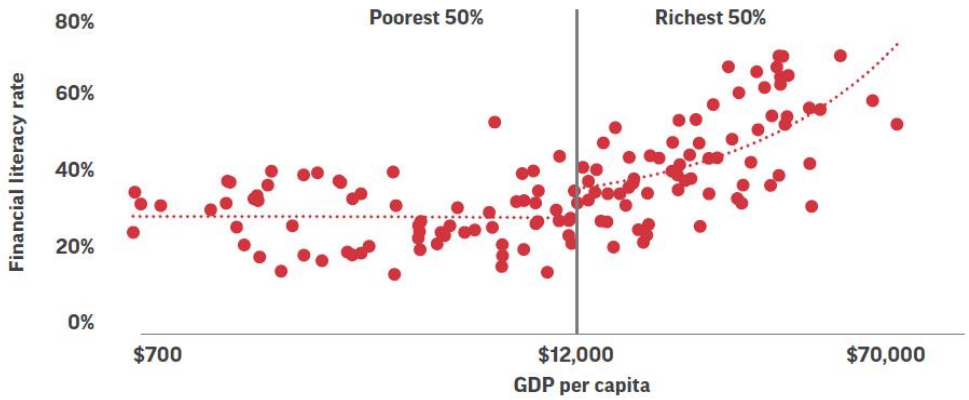
Health Literacy - Higher rates of health literacy among adults have been linked to improved health, increased life expectancy, higher productivity and incomes of labour, all of which are in turn linked to economic growth (Mehmood, Raza, and Mureed 2014; Šetek, Alina, and Poláčková 2018). The more educated the population is about issues which affect their health, the more likely they are to seek out and spend on health interventions to improve their outcomes. Healthier populations are more productive, take less time off from work and are able to earn and spend more in the economy (Weil 2014). Based on these relationships, the argument is that it is the public interest to invest in increasing health literacy of the population from as early as basic education (Nutbeam 2000).

Financial Literacy – Financial education refers to the understanding of the basic concepts of finance, which enables households to make financial decisions to limit the risks triggered

by changes in economic conditions and circumstances (Paşa, Picatoste, and Gherghina 2022).Without an understanding of basic financial concepts, people are not well equipped to make decisions related to financial management (Klapper, Lusardi, and Van Oudheusden 2015). Speaking in the Bristish House of Commons, Jerome Mayhew (2023) highlighted the growing body of research that has shown quantitatively shown the correlation between financial literacy and key determinants of economic growth. In 2023, Santander conducted a comprehensive survey of adults in the UK, revealing that 70% believed enhanced financial education could have bolstered their financial management as the country grappled with the cost of living crisis. Additionally, 68% of respondents supported integrating financial education into the primary school curriculum. Chetioui et al. (2024), Clichici and Moagar-Poladian (2022) and Zhang et al. (2022) have found similar results in the Morroco, the European Union and the OECD, respectively.

Tests of financial literacy tend focus on knowledge and understanding of risk diversification, inflation, numeracy (usually the concept of interest rates), and compound interest (Klapper, Lusardi, and Van Oudheusden 2015).

Figure 1_1: Economic Development and Financial Literacy



***Source**: Klapper, Lusardi, and Van Oudheusden (2015)*

Using questions to test these dimensions, the the Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey), which surveyed over 150,000 persons in 140 countries, has shown that countries with higher GDP per capita tend to have higher

rates of financial literacy (Figure 1_1), particularly in the richest 50% of economies.These results are less compelling in the poorer half of the population.

In a review of relevant literature, Klapper, Lusardi, and Van Oudheusden (2015) identified several important benefits of financial literacy to the economy. For example, consumers lacking an understanding of interest compounding tend to spend more on transaction fees (on credit cards and other transactions), accumulate larger debts, and face higher loan interest rates (Lusardi and Tufano 2015; Lusardi and de Bassa Scheresberg 2013). They also borrow more and save less (Stango and Zinman 2009). Conversely, the benefits of financial literacy are extensive. Those with strong financial skills excel in planning and saving for retirement (Behrman et al. 2012; Lusardi and Mitchell 2014). Additionally, financially knowledgeable investors are more adept at diversifying risk by investing in multiple ventures (Abreu and Mendes 2010). Similarly, those with higher financial literacy are less likely to default on their mortages and other loans (Gerardi, Goette, and Meier 2013; Zhang et al. 2022). A relationship has also been found between financial literacy and entrepreneurship. For example, financial literacy was found to be correlated with the performance of small businesses in Grenada (Payne 2022). All things considered, most of the literature concludes that financial literacy contributes to economic stability by fostering responsible financial behavior, and supporting sustainable economic growth.

Indications from the literature explored is that there are several different skills that are necessary for workers in the twenty-first century, some of which have not been emphasised in Caribbean education contexts. But it is apparent that the presence of these skills speaks to the development levels of the human capital and to the social and economic prosperity of countries. We will now consider how some small developing countries, similar to those in the region, by focusing on the development of their human capital through education, were able to improve their social and economic standing.

BOOSTING SOCIAL AND ECONOMIC STANDING: THE CASES OF SELECTED COUNTRIES

There are other countries with small state characteristics similar to Barbados, from which lessons can be learned. Case studies of a sample of these countries are presented here.

Singapore

Despite being constrained by a limited supply of natural resources and geographical limitations, Singapore's economy has grown exponentially since acquiring independence in 1965 (Menon, 2007). At 2022, the country has the second-highest GDP per capita in the world; a mark of the economy's strength and capacity. The increase of GDP per capita from US $516.50 in 1965 to US$82,807.60 is credited to a stable political system, a pro-business environment, a booming manufacturing sector that utilizes little human resources and a highly skilled workforce (Menon, 2007; Tat and Tot, 2014; Lin, 2023). Menon (2007) further lists other key features that augment the Singaporean economy, including it being "a major Transportation and Logistics Hub, a Tech Savvy nation, greatly favoured tourist Destination, a Global Leader in Biomedical research, the Leading Investment Destination, a Strategic Info-communications Hub and a Knowledge economy"; all of which are service industries.

Given its limited supply of natural resources and geographical limitations, Singapore has contributed and continues to contribute significantly to human resource development, particularly within the education system. Of the total 104.15 billion expenditure estimated for the Financial Year 2023, the Ministry of Education (MOE) allocated $14.60 billion (14%) for education (Government of Singapore, 2023). This is to fund a series of programmes, initiatives and infrastructure to facilitate structural learning and technical vocational training.

The core aim of Singapore's education system is to maximize each student's potential through the provision of a holistic learning experience and to enable the creation of lifelong learners. Core values include problem solving, creativity and innovation, critical and analytical thinking and leadership. Other key attributes Singapore seeks to nurture in its citizens are respect, responsibility, resilience, civic-mindedness, integrity, care and harmony (MOE, 2023), resulting in a high socio-emotional society, equipped to navigate the volatile globalized modern world. These skills and attributes are the basis of an educational system that prides itself on being student-centric and values-driven as seen in a number of programs geared towards cultivating these principles.

The MOE took several steps to propagate the message that academic achievement is not the be-all and end-all. Consequently, grades were replaced by discussions, homework and quizzes for primary school year 1 and 2 students and exams were abolished in 2019. This reduces the likelihood of basic memorization and regurgitation to simply pass examinations and instead mandates a deeper synthesis of topics covered in the classroom. To create a less competitive environment, which is the leading cause of stress for students, class ranking, school failure and pass rates, as well as the scores of top performers for standardized tests were deemphasised. Further, more scholarships for achievement in cocurricular activities beyond the scope of academics (such as leadership) are awarded.

Another leading factor that results in a strong educational system and by extension high human development rankings is Singapore's provision of quality teachers and parental involvement in their child's academic career. Only the top 5% of graduates from the National Institute of Education (NIE) are placed in the classes. All teachers are required to attend rigorous and evidence-based pre-service training at the NIE before placement in classrooms. There, the competencies and skillsets needed to educate students and navigate classrooms are developed. In addition, parents are an integral part of the education system through the Parents Support Group (PSG). This group, established by the MOE, focuses on parents' emotional support of their children's success.

Structure of Educational System

A distinct characteristic of the Singapore educational system is the creation of multiple systemic learning pathways based on students preferred interests and easy transitionary options between and within the various levels of school – primary, secondary, post-secondary – thus accentuating the core value of "no child left behind". These pathways, along with the desired goals of each level of schooling, serve as a roadmap within which the system acts and thrives.

Primary School education, which is compulsory, lasts six years. The goal is to build character, nurture sound values and good habits and develop literacy and numeracy skills. Curriculum consists of English Language, Mother Tongue Language, Mathematics, Art,

Music, Character and Citizenship Education, Social Studies, Physical Education and Science with opportunity to progress to advanced courses based on aptitude shown. Primary School Leaving Examination (PSLE) is written at the end of grade six and is used as a metric to determine secondary school placement.

Secondary School Education typically lasts about 4 to 5 years. Students are assigned to one of three courses based on their academic profile with the ability to transfer mid-stream through Subject-Based Banding:

1. Express Course: Four-year course leading to the Singapore-Cambridge General Certificate of Education (GCE) Ordinary Level (O-Level) exam. Curriculum: English, Mother Tongue Languages (MTL), Math, Sciences and Humanities.
2. Normal (Academic) [N(A)]: Four-year course leading to GCE N(A) Level exam. The curriculum is similar to that for the Express Course. Those who do well progress to Secondary 5 to prepare for O-Level exam. There are also pathways to polytechnics: one-year polytechnic foundation program (PFP) or two-year direct-entry-scheme to Polytechnic Program (DPP)
3. Normal (Technical) [N(T)] Course: Four-year course leading to GCE N(T)-Level exam. Curriculum: English, MTL, Mathematics, technical/practical subjects.

Apart from the different subject bandings at the secondary level, there are four types of secondary schools, namely

- Specialised Schools: For students who fail to meet requirements for any of the courses with Institute of Technical Education (ITE) Skills Certification which prepare them for employment or admission into the ITE.
- Specialised Schools for Normal Technical Students: For students who meet requirements for N(T) course but prefer a more hands-on and skills-based learning approach.
- Specialised Independent Schools: For students with strong skills in math, science, applied learning, arts and sports.

- Integrated Program: For academically strong students who prefer a less structured learning approach and would thrive in independent study. Students forgo O-Levels and prepare for GCE Advanced Level (A-Level) examinations in 6 years.

Post-Secondary Education

After Secondary (4 or 5 years), students proceed to either junior colleges, Singapore Sports School/ School of Arts, Polytechnics, ITE or Art Institutions. Lastly, there are universities for those who wish to further their education.

Mauritius

Mauritius, like Singapore, does not have a vast amount of exploitable natural resources like oil, gold or diamonds. Further, Mauritius also suffers from geographical constraints posed by its remoteness causing agriculture, sugar in particular, to serve as the cornerstone of the economy. Consequently, the country invested heavily to transform its dense population into a highly skilled and educated labour-force.

Structure of education system

Education is free at all levels in Mauritius - from early childhood to undergraduate tertiary level - which resulted in significantly high enrolment rates at the various levels. Both primary and secondary schooling are compulsory. Parents' failure to send their children to school is a punishable offense (fine and imprisonment).

The overall structure is a 6-5-2 format that is similar to the format of the Singaporean educational system. At the end of primary school (6 years), students write the Certificate of Primary Education (CPE) examination. Secondary school (5 years) leads to the Cambridge School Certificate (SC) or GCE O-Level examinations. Junior College (2 years) leads to the Cambridge Higher School Certificate (HSC) or GCE A-Level examinations.

Students who fail the CPE twice and reach the age of 12 are streamed to a pre-vocational school for three years with a focus on a skills-based curriculum.

Another key feature of the education system is that students are placed in secondary schools based on geographical zones. Importantly, the Higher Education Commission

Strategic Plan 2022-2025 is built on the following five themes: responsiveness, relevance, resilience, sustainability and engagement.

Reform Program

To increase the completion rate at primary level and increase secondary and tertiary level enrolment, Mauritius engaged in programme reform. For example, there was the introduction of a relevant and diversified curriculum, and the inclusion of Citizenship Education, Creative Education, and ICT. Attention was also paid to improving the quality of teaching, resulting in the formation of Mauritius Institute of Education (MIE), where teachers now complete a full pre-service training.

The MOE also highlighted the need to constantly review and update curriculum in line with the emerging industries being developed within the country. Thus, a fitting and cohesive approach was introduced, through which formal education and training work in tandem with the gaps in the labour force and the global economy.

The curriculum was expected to incorporate and focus on the following skills acquisition:

- Creative thinking skills
- Creativity
- Communication and e-communication skills
- Teamwork skills
- Cultural literacy skills (patriotism)
- Entrepreneurial Skills
- Physical Fitness Skills
- Moral and ethical approach
- Environment and daily life skills
- Science education

The aim is to ensure that all children have an equitable chance to have solid foundations on which to build and to acquire 21st century competencies.[1]

[1] https://govmu.org/EN/infoservices/education/Pages/curriculum.aspx

Costa Rica

While Costa Rica's economic success stems greatly from its creative environmental policies and accomplishments, as well as its political stability, it is also a reflection of the strong indicators of human development (World Bank 2023).

Structure of System

In Costa Rica, the education system is organised into several subdivisions. This includes preschool for children under the age of 7, primary school for those aged 7 to 12, lower-secondary school, and upper-secondary school. Preschool, primary school, and lower-secondary school are mandatory, and they, along with upper-secondary school, are publicly funded by the government. The subdivisions are further arranged in cycles. Both primary and secondary school consist of 2 cycles each. Cycle I covers grades 1-3, while Cycle II encompasses the grades 4-6. Upon the completion of Cycle II, students receive a primary school diploma. Cycle III (grades 7-9), which marks the end of compulsory education, is devoted to general education. Cycle IV (grades 10-12), is further categorized into three streams: the academic stream, the arts stream and the technical stream.

Challenges in Education System

Even though the Costa Rican education system is one of the strongest in the Latin American bloc, there are some shortcomings that require redress. A significant challenge is the high number of dropouts (World Bank 2023; OECD 2015). This situation is attributed to challenges largely associated with the socioeconomic background of students, despite education being free from early childhood to secondary schools, and government providing free books and school supplies. Further, at the age of 15, Costa Rican students are believed to be two years behind their peers in the OECD, and this was taken as an indication that formal education and vocational training were not sufficient to address the needs of the students.

Costa Rica partnered with the World Bank and the OECD in the formulation of policies to address a few of these perceived shortcomings. The actions taken include curriculum reform and *Yo me apunto* (I'm in). A major aim of the curriculum reform was to prioritize

critical thinking over rote memorization. It featured subjects such as citizenship and foreign languages with a view to helping students to become proactive learners and to equip them with skills that better meet the needs of the society and job market. The *Yo me apunto (I'm in)* programme was introduced to address the issue of high dropout rates. It aimed to decrease the retention rates in primary and secondary schools. Furthermore, in 2009, Costa Rica implemented more stringent regulations against grade repetition, resulting in a nearly 50% decrease in retention rates in primary schools and some improvement at the secondary level. The introduction of *Yo me apunto* (I'm in) marked a fresh and comprehensive approach aimed at increasing completion rates, with a specific focus on schools in the most vulnerable areas identified by the National Development Plan that needed improvement.

The case of Costa Rica demonstrates that making resources and access to schooling available to students may not be sufficient to ensure their success. Having appropriate programmes and policies among other things is also a strong contributing factor to increasing the chances of the students acquiring the knowledge and skills that support social and economic growth of a country. Though Costa Rica still has challenges with its education system, it provides a good example of the value of paying attention to the development of their human capital. By doing so, this country experienced some economic turnaround and now boast one of the strongest economies in that region.

Malta

Former Governor of the Central Bank of Malta notes the country's heavy investment in human capital is a key determinant of the economic transformation of the Maltese islands since independence (Grech 2015). This marked increase in educated and highly skilled human capital led to the expansion of a diversified services industry which is credited as the core reason that Malta's economy remained buoyant despite the volatile global pressures (Grech et. al, 2016).

The Curriculum Review Committee (2011) outlined six core principles in the National Curriculum Framework (NCF). These principles from which the aims of education were derived, are entitlement, diversity, continuum of achievement, learner-centred learning,

quality assurance and teacher support. These principles are demonstrated through an inclusive approach at all education levels, and the provision of free education (except for non-EU/EAA students) from early childhood to tertiary education in state schools. Catholic schools are also tuition-free due to state-sponsorship, with parents being responsible for school supplies and uniforms (Government of Malta 2023), while tax rebates are granted to parents whose children attend independent schools.

Structure of Educational System

While Maltese are mandated to go to school from ages 5 to 16, the educational system also consists of early childhood education (ages 3-5) and post-secondary education (ages 16+). Education is provided by three core entities: The State, The Church (Catholic Church) and independent schools, though all are regulated by the Government through the National Curriculum Framework (NCF). There are also resource centres designed for children with severe disabilities.

Due to the country's small size, Malta's educational system is predominantly centralized, though schools have a measure of autonomy. College Principals and the Council of Heads oversee primary, middle, and secondary schools within this system. The schools' Senior Management Team can initiate projects and programmes in line with their school's values and decide on professional development topics for educational staff. This encourages the implementation of more innovative and better structured programmes that are more in sync with the specific demographic of students enrolled at the schools.

Central authorities manage funds and curriculum development. At primary school level, the Personal, Social and Career Development (PSCD) classes focus on preparing students for career education in the secondary cycle. In the final year of primary school, students choose another language (besides the compulsory languages of Maltese and English studied throughout the 11 years of compulsory education) which they continue studying until the end of compulsory education (Year 11). At the end of Year 8, two more courses are introduced into the curriculum; one of which being a vocational subject. Year 10 offers job shadowing opportunities, allowing students to gain experience in a work environment to assist in their career decision-making and transition to the labour force. Upon completion

of Year 11, students take the Secondary Education Certificate (SEC) examination. Afterwards, students may choose to further their studies at either an academic or vocational institution.

To uphold inclusivity, various learning programmes are available in mainstream schools to cater to students' diverse needs. These programmes include:

- Individualized Education Planning (IEPs) for students with special needs, along with support from Learning Support Educators (LSE) and Inclusive Coordinators.
- Complementary Education Programmes in primary schools, and programmes like the Princes Trust XL, the Core Curriculum Programme, and the Alternative Learning Programme (ALP) in the secondary cycle, designed to offer remedial support to students who need it.
- Linguistic Induction Programmes for foreign students and third-country nationals, focusing on Maltese and English language acquisition.
- An Ethics Programme tailored for students of varying religious backgrounds and beliefs, available in both primary and secondary education.

Singapore, Mauritius, Costa Rica and Malta have all been able to transform their initial dire economic status into one of growth and prosperity. A critical tool employed was the large investment in the development of human resource particularly through formal education and vocational training. It is evident from the example of these case countries that that this investment in human capital is somehow related to economic growth. Since these countries share similar features with Barbados (e.g., they are all small developing states), their experiences could be instructive as Barbados seeks to transform its education system to facilitate social and economic growth. With the notion that social and economic growth is linked to the development of human capital, which in turn is a product of an education system that fosters the development of certain skills, it seems prudent to examine the Barbados system to determine the extent to which it is already geared to helping students acquire these essential skills or its capacity to incorporate them. Hence, the purpose of this study was to find out from schools at the primary and secondary levels the nature of their

programmes, and the quality of their staff and facilities, and the possible impact of these features on the social and economic growth of the country.

Before looking at the results of the study, the next section of the report provides an in depth look at the Barbados education system: its genesis, critical features, challenges and issues, and student outcomes.

SECTION 2 EDUCATION IN THE BARBADOS: COLONIAL INFLUENCES, CURRENT ISSUES AND OUTCOMES

This section will explore the issues of education in the Barbados context. It starts by tracing some of the customs in Barbadian schools to their genesis in colonial times and explores the influence of the beginnings on elements such as hierarchical structures of schools, assessment practices, teacher quality (recruitment and preparation), and leadership practices. The section also includes a summary of student performance in high stakes examinations at the primary level (Barbados Secondary School Entrance Examination/Common Entrance) and the secondary level (Caribbean Secondary Education Certificate/CSEC). This section captures the rationale for education reform and for paying attention to the development of human capital in the Barbados context to facilitate social and economic growth.

A Brief History of Education in Barbados

Barbados is a former colony of Britain, and the history of education in this country is strongly influenced by those colonisers. The history of education in Barbados indicates that formal education was introduced to the island in 1686, when two planters contributed land and £1000 towards the establishment of an institution in which poor white children could be educated. Prior to this, rich planters and well-to-do merchants sent their offspring to England to be educated, and poor white children were educated in private schools, run primarily by the clergy. It is apparent that no education opportunities for black children were not priority. Indeed, it was considered dangerous to educate slaves and their children as it was believed that this would lead to subversion and destruction of property.

In 1818, the first school for coloured boys was established, and in 1827, a similar provision was made for coloured girls. Education for children of slaves was only provided in the post-emancipation era and was limited to the so-called three R's (Warrican 2005). Between 1835 and 1845, the British Government provided an annual grant for education of former slaves. Around this time, many denominational elementary schools (Anglican, Moravian, Wesleyan) were opened. There was also the establishment of schools that provided education beyond the elementary years, date as far back as 1695, with the majority emerging in the 1700s and 1800s. These schools, for the most part, were fashioned after

the grammar schools in England and initially were for White children and those from well-to-do families. Eventually, schools for the poor White children were established. By the early 1900s, Blacks were allowed admission to these schools, but entry was on a competitive basis, where hopefuls wrote entry examinations for individual schools, and winning a place elevated the students and their families in the eyes of the community. Students who successfully completed a course of study at one of these prestigious schools could seek university entry, or apply for prestigious jobs in, for example, the civil service, banks, and the clergy. By the 1930s, students in Barbados competed for one of the limited places in these prestigious schools by writing a screening test. As was the case in the UK, these schools offered a highly academic curriculum that prepared students for the Cambridge General Certificate in Education ordinary and advanced levels examination, which could be used for university entry as well as entry to the job market.

In the mid-1950s, Barbados followed the trend in the UK where Technical and Secondary Modern schools[2] were introduced. In the UK, the Technical schools were for students who were deemed to have some ability, but who were not intelligent enough to benefit from the type of education available in grammar schools. They were prepared for jobs industrial and commercial fields and craft. The Secondary Modern schools accommodated those students who were deemed less intelligent. They were not expected to write examinations and were "destined for lower-level positions in the society.[3] Secondary Modern schools were the forerunner of comprehensive schools.

In the 1950s, Secondary Modern schools were introduced in Barbados to provide additional places for students to obtain secondary level education. These schools were less prestigious than the schools with grammar school history. The students who were allocated to these schools were those who failed to gain a place in the prestigious schools at the time of taking the screening test. By the 1990s when universal secondary education was attained in Barbados, the screening test (an intelligence test patterned after one that originated in the

[2] See Thompson, B. P., Warrican, S. J., & Leacock, C. J. (2011). Education for the future: Shaking off the shackles of colonial times. In D. Dunkley (Ed.). *Readings in Caribbean history and culture: Breaking ground* (pp. 61 – 86), Lexington Books. pp. 67-69

[3] Ibid, p. 69

UK and that was used to identify students who were deemed intelligent enough to benefit from the grammar school-type academic education) was still used to identify students who would be assigned places in the prestigious schools while the others were sent to the comprehensive schools. This hierarchy of school continues to be evident in Barbados down into the twenty-first century.

Grammar-Type Schools founded between 1695 and 1928			**Secondary Modern (Comprehensive) Schools founded between 1952 and 1997**		
Year Founded	School	Comment	Year Founded	School	Comment
1695	Combermere School	Originally an all-boys school; became co-ed in 1976	1952	St. Leonard's Boys'	
1733	Harrison College	Originally an all-boys school; became co-ed in 1980		St. Leonard's Girls'	Closed in 1997
1745	The Lodge School	Originally an all-boys school; became co-ed in 1980	1955	Princess Margaret Secondary	
1785	Alleyne School	The first school to become co-ed in 1881 (officially)		West St. Joseph Secondary	Renamed Grantley Adams Memorial School in 1984
1809/1709??	Boys' Foundation School	Amalgamated in 1978 to become Christ Church Foundation School	1960	Parkinson Memorial Secondary	
	Girls' Foundation School		1964	Springer Memorial Secondary	Girls' only
1881	Coleridge School	Amalgamated in 1952 to become Coleridge and Parry School;	1966	Ellerslie Comprehensive School	Now The Ellerslie School
	Parry School	Originally an all-boys school; became co-ed in 1981	1971	St. Lucy Secondary	Renamed Daryl Jordan Secondary in 2012
1883	Queen's College	Originally an all-girls school; became co-ed in 1981	1972	St. George Secondary	
1894	Alexandra School	Originally an all-girls school; became co-ed in 1984	1975	Garrison Secondary	Renamed Graydon Sealy Secondary in 2012
1928	St. Michael's Girls School	Originally an all-girls school; became co-ed in 1979; became The St. Michael School	1979	St. James Secondary	Renamed Frederick Smith Secondary in 2012
			1991	Deighton Griffith Secondary	
			1997	Lester Vaughan Secondary	Replaced the St. Leonard's Girls as the St Thomas Secondary; renamed in 1999

The colonial history of education is a strong influential force on the present status of schooling in Barbados. In the next section, consideration is given to critical features of the education system that apparently have an impact on the economic and social development

of the country. These include school environment, hierarchy of schools, assessment practices, teacher recruitment and preparation, and school leadership.

School Environment

In a recent survey among 145 students from 12 primary schools and 239 from 5 secondary schools across Barbados, approximately 43 percent of the primary students and a similar proportion of the secondary students indicated that to them, school felt like a prison. A further 15 percent of the primary students and 22 percent of the secondary students were ambivalent about this issue. This suggests that to them, the school environment is excessively restrictive. Today's classrooms are patterned after those set up in colonial days. This includes classrooms arranged in traditional configurations of desks arranged in rows and columns that do not easily facilitate interaction between the students; teacher-centred instructional approaches; and a curriculum that is highly academic.

The traditional philosophy that is associated with colonial classrooms is perennialism. It posits that students are empty vessels to be filled with knowledge, knowledge that is deemed worth having be experts in the field, represented in the classroom by the teachers. Under this philosophy, the preferred instructional approach is lecture/discussion with the teacher taking the lead. While this may have been effective in a context where there was limited access to educational resources (e.g., the teachers being the only one in the classroom with relatively easy access to information), this approach of passing on information to students is less effective, even stifling in today's classrooms. Today, students have access to as much information as do teachers, owing to advancements in technology. Trying to restrict them to what the teacher dispenses deprives students of the opportunity to learn how to use the widely available information in a manner that benefits them. This promotes critical thinking, a skill that has been identified as necessary in citizens who contribute to the development of their country.

Another influence from colonial times relates to the curriculum, and what knowledge is deemed worthwhile. The early schools created in the era of the colonisers, with their grammar school-type organisation, focused on academic programmes that led to external examinations. Having such an education and earning certificates that had currency for

further education was valued. This allowed for some persons educated under this system to study abroad and to acquire a worldview that they then applied to become leaders in their communities, and to agitate for improvements to the social and economic conditions of emancipated Barbados. Such a curriculum was so valued that even when the Secondary Modern or comprehensive schools were founded, even though their intake was from among students who did not appear to have the capacity for a purely academic programme, this is the curriculum that they tended to adopt. In today's context, students continue to struggle through a highly academic curriculum, for which they have no interest, that does not adequately prepare them to become contributing members of their families and communities, and that is delivered using approaches that are very similar to the ones used in colonial days. If education is to produce citizens that contribute to the social and economic development of their country, then the curriculum must be relevant to their lives and their context. It should equip them with knowledge and skills that they can apply to seek gainful employment to improve the social and economic conditions for themselves, their families and their communities. Students who are forced to pursue an irrelevant programme of studies are likely to become despondent and exit the education system prematurely and/or without skills and competencies to become contributing members of the community.

Hierarchy of Schools

The education system in Barbados is strongly linked to the notion of "good school/bad school". There is a dichotomy that exists which dates back to the colonial days. In summarising the history of schooling and schools in Barbados, reference was made to the fact that the earliest schools in the country were fashioned after the grammar-type schools in the UK. The long history of these schools and what they represent (places of learning for well-off students or students with high intellect) ensured that these schools enjoy a level of prestige. Consequently, even though there are enough places at the secondary level to accommodate all students leaving the primary level, there is still fierce competition for a place in one of these so-called "good schools". And indeed, even among these schools, a hierarchy exists. The hierarchy is maintained by to allocation methods used to assign students exiting primary education to schools at the secondary level, the current version of

the screening test that was initiated in the colonial days. Students who failed to win a place in one of the prestigious schools are assigned to the schools that were former Secondary Modern schools (the "bad schools"), now comprehensives (also arranged in a hierarchy of their own (Leacock, Thompson, Burnett & Obidah, 2007).

As fallout from this hierarchy of schools is that it fosters elitism, where students who attend the prestigious schools look down on those who do not, assuming that they are less intelligent. The dichotomies that exist are played out in different ways that tends to contribute to low esteem among the students who attend the less prestigious schools. For example, the students who attend the less prestigious schools are more likely to be from homes in the low socio-economic brackets, where language and background experiences are not closely matched to the expectations of school, which tend to be pitched at the middle- to upper-class levels. Unfortunately, there is little adaptation of the school curriculum to assist these children to benefit from the school curriculum (which tends to be highly academic). The tendency is to advocate for a curriculum that allows these academically weak students to "do something with their hands), implying that they cannot do anything with their heads (brain power), with the recommendation that they should be steered towards TVET. There is also the implication that doing things "with your hands" does not require much brain power. This reinforces the (mis)perception that TVET is an area for less capable students.

Two undesirable outcomes associated with this (mis)perception and the hierarchical arrangement of schools are evident. First, students in the prestigious schools who may actually be interested in a technical field traditionally classified as TVET may be reluctant to pursue that area at school or may not be able to because of the school's approach to banding subjects for particular tracks. They may also be discouraged from pursuing studies in these areas by parents, teachers and friends who subscribe to the notion that if you are "bright", you should follow an academic path at school. The second undesirable outcome is that large proportions of students who attend the less prestigious tend to fall through the cracks academically and often are the ones who become disengaged, frustrated and disenchanted with school. They are the one most likely to exits school prematurely and/or

without skills, competencies and qualifications to make them employable. The males who fall into this category are usually the ones that become part of the so-called "block culture".

Assessment Practices

Barbados' current culture of examinations as assessment also stems from its colonial past. As stated earlier, in the post emancipation era elementary education was expanded to include children of former slaves, and the focus was on the so-called three R's. before emancipation, opportunities for secondary education were available to the children of the planter class, well-to-do merchants and poor whites in the country. Post emancipation, this level of education also became available to black children. However, there were obstacles to entry to these secondary school. First, there were limited places available, and second since fees had to be paid, many in the society lack the means to pay for their children to attend. Selection examinations were used to identify the students who would benefit from a secondary education. Competition was fierce for these places and parents would sometimes invest all their money to ensure that they children (usually males) were adequately prepared for the examinations. These examinations, which focused on assessment ***of*** learning were the precursor of the common entrance examination [CEE], which over time, has become a strong contributor to the high-stakes examination culture that exists in the country today.

Barbados Secondary School Entrance Examination (BSSEE)

The CEE is a test that has its genesis in the UK, emerging from the 11+ examination that was based on the work of a renowned British psychologist Cyril Burke. (After his death, some of his work was deemed to be fraudulent. In addition, his work became the foundation used by others to support the notion of the intellectual inferiority of black people.) The 11+ test was used in the UK in the 1940s to help to determine the type of education children would receive: grammar school, technical school, or secondary modern school. High scores on the test were deemed an indication of high intelligence capable of benefiting from a grammar school education and low scores suggested lack of sufficient intellectual power to benefit from this lofty provision and hence, relegated these children to secondary modern schools. This examination was noted as contributing to high anxiety

among students at time.[4] This assessment approach was introduced in Barbados in the 1950s and deemed as the fairest way of allocating students to the limited number of places in secondary schools (though the number of places had increased with the building of Secondary Modern schools, they were still limited).

In the country today, even though there are enough secondary school places to accommodate all children exiting primary education in Barbados, the CEE continues to be use as the fairest means of assigning students to secondary schools. The fairness of the CEE can however be questioned. This assessment continues to be an intelligence test that seems to favour students from upper- and middle-class home and language backgrounds. And since the results are used to allocate students to the hierarchy of schools, it is usually students from lower socio-economic backgrounds that are allocated to the least prestigious schools as mentioned above. In addition, since the schools to which they are allocated do not make sufficient adaptations to the curriculum to meet the needs of these students, a large proportion of them either leave school prematurely and/or leave without the skills and competencies deemed essential for making a positive contribution to the social and economic growth of the community and the country.

Apart from the CEE, other assessment practices in schools also contribute to poor achievement of students in schools. For example, as mentioned earlier, there is often a heavy emphasis on assessment ***of*** learning, and not enough on assessment ***for*** learning. Assessment for learning happens at the classroom level, where teachers use it to ascertain the extent to which the learners are acquiring the desired knowledge, skills and competencies, and where students are experiencing challenges, take steps to assist then to overcome their challenges and make progress towards the set learning goals. Consequently, each year, a large proportion of students leave primary education with insufficient knowledge and skills to successfully engage with the generally highly academic secondary school curriculum. In fact, from 2010 to 2023, an average of 30 percent of the boys who wrote the CEE in public schools and 16 percent of the girls scored below 50 percent in English and 50 percent of the boys and 39 percent of the girls scored below 50 percent in

[4] Dent, H. C. (1963). *The Educational System of England and Wales*. London: University of Oxford Press, p. 104.

Mathematics (Table 2_1). Adequate assessment practices (assessment ***for*** learning and diagnostic testing) at the primary could help teachers to identify areas in which students need extra assistance before they transfer to secondary school. Then, at that level, there should be appropriate programmes and support systems in place to help the students to overcome challenges where possible.

Table 2_1: Proportion of Students who wrote CEE in Public Schools from 2010 to 2023 who scored below 50 percent in English and Mathematics by SEX

Year	Sex	Total Writing the Exam	English		Mathematics	
			No.	%	No.	%
2010	F	1618	383	23.7	726	44.9
	M	1605	636	39.6	907	56.5
2011	F	1685	284	16.9	478	28.4
	M	1744	606	34.7	771	44.2
2012	F	1682	324	19.3	591	35.1
	M	1760	670	38.1	832	47.3
2013	F	1597	281	17.6	609	38.1
	M	1746	555	31.8	911	52.2
2014	F	1607	278	17.3	599	37.3
	M	1603	496	30.9	787	49.1
2015	F	1466	228	15.6	691	47.1
	M	1534	489	31.9	920	60.0
2016	F	1544	178	11.5	784	50.8
	M	1531	443	28.9	944	61.7
2017	F	1403	181	12.9	607	43.3
	M	1383	341	24.7	746	53.9
2018	F	1434	200	13.9	455	31.7
	M	1486	348	23.4	586	39.4
2019	F	1389	210	15.1	436	31.4
	M	1477	443	30.0	680	46.0
2020	F	1455	198	13.6	522	35.9
	M	1457	355	24.4	680	46.7
2021	F	1398	225	16.1	628	44.9
	M	1414	399	28.2	710	50.2
2022	F	1240	175	14.1	520	41.9
	M	1359	365	26.9	652	48.0
2023	F	1322	179	13.5	527	39.9
	M	1348	336	24.9	637	47.3
AVERAGE %	F			15.8		39.3
	M			29.9		50.2

Caribbean Secondary Education Certificate (CSEC)

Assessment at the secondary school level is also associated with high stakes examinations that over the years have seen unacceptably large proportions of students in public

secondary schools either not qualifying to write the examinations or earning a failing grade when entered. The table below (Table 2_2) shows the number of entries and passes (obtained Grades I, II, or III) for the subject written at the CSEC level by students in public secondary schools in Barbados from 2010 to 2022.

Table 2_2: No. of Subject Entries and Passes at CSEC by Students in Public Secondary Schools (2010-2022)

SUBJECTS	No. of Entries	No. of Passes	Pass Rate
Additional Mathematics	2,315	1,259	54.4
Agricultural Science Double Award *	1	0	0.0
Agricultural Science Single Award	1,747	1,111	63.6
Biology	8,142	5,737	70.5
Building Technology (CONST)	347	209	60.2
Building Technology (WOODS)	1,391	999	71.8
Caribbean History	6,613	4,332	65.5
Chemistry	7,224	4,584	63.5
Clothing and Textiles	826	589	71.3
Economics	466	259	55.6
Electrical and Electronic Technology	759	436	57.4
Electronic Document Preparation and Management	8,262	6,782	82.1
English A	38,799	28,353	73.1
English B	18,171	11,806	65.0
Family and Resource Management	916	669	73.0
Food and Nutrition	3,731	3,366	90.2
Food, Nutrition and Health	3,592	3,140	87.4
French	6,064	3,589	59.2
Geography	8,894	5,295	59.5
Home Economics Management	1,122	970	86.5
Human And Social Biology	5,558	2,509	45.1
Industrial Technology (BUILDING)	1,087	845	77.7
Industrial Technology (ELECTRICAL)	793	609	76.8
Industrial Technology (MECHANICAL)	855	647	75.7
Information Technology	9,016	6,760	75.0
Integrated Science	5,211	2,816	54.0
Mathematics	30,036	15,712	52.3
Mechanical Engineering Technology	1,022	627	61.4
Music	1,433	954	66.6
Office Administration	4,236	2,732	64.5
Physical Education and Sport	4,008	3,522	87.9
Physics	6,933	4,765	68.7
Principles of Accounts	8,589	5,138	59.8
Principles of Business	12,574	9,707	77.2
Religious Education	1,571	1,043	66.4
Social Studies	13,095	7,464	57.0
Spanish	9,757	4,976	51.0
Technical Drawing	5,152	3,553	69.0
Textiles, Clothing and Fashion	820	557	67.9
Theatre Arts	1,592	1,294	81.3
Visual Arts	5,336	3,377	63.3
Total	**248,056**	**163,092**	**65.7**

Over the years, there has been concern that for the two subjects that are deemed essential for the job market and higher education (English and Mathematics), results have been consistently unsatisfactory. For the period 2010 to 2022, an average of 26 percent of the female students registered for CSEC **English A** and 30 percent of the males failed to obtain a passing grade. For the same period, an average of 48 percent of the female students who were registered for CSEC **Mathematics** and 47 percent of the male also failed to obtain a passing grade. Furthermore, in both subjects, among those who passed (obtained Grades I, II, or III), the largest proportion obtained the lowest acceptable grade (Grade III) (Tables 2_3 and 2_4).

Table 2_3: Entries and Passes for CSEC **English A** for 2010 to 2022 by SEX

Year	SEX	ENGLISH A					
		No. of Entries	OVERALL GRADE				
			I	II	III	% Passes	% Failed*
2010	F	1728	28.8	25.0	23.7	77.5	22.5
	M	1283	21.9	27.0	22.7	71.6	28.4
2011	F	1654	33.9	25.6	21.1	80.5	19.5
	M	1270	29.1	27.1	21.7	77.9	22.1
2012	F	1635	18.1	16.8	24.6	59.6	40.4
	M	1345	14.2	17.6	27.7	59.5	40.5
2013	F	1730	28.8	21.2	23.8	73.8	26.2
	M	1352	18.5	26.6	26.7	71.8	28.2
2014	F	1669	24.9	25.0	25.3	75.3	24.7
	M	1337	17.7	26.3	25.7	69.7	30.3
2015	F	1717	26.7	25.5	23.6	75.8	24.2
	M	1381	19.6	23.4	26.7	69.7	30.3
2016	F	1802	29.4	26.2	22.6	78.3	21.7
	M	1508	21.4	24.7	25.5	71.6	28.4
2017	F	1535	21.6	26.5	25.3	73.4	26.6
	M	1358	17.2	23.3	28.3	68.9	31.1
2018	F	1332	14.3	22.5	27.9	64.8	35.2
	M	1115	14.3	22.5	27.9	64.8	35.2
2019	F	1625	20.7	26.5	29.4	76.6	23.4
	M	1446	20.7	26.5	29.4	76.6	23.4
2020	F	1738	23.5	25.7	36.1	85.3	14.7
	M	1445	17.3	23.8	39.0	80.1	19.9
2021	F	1649	19.7	26.3	29.9	75.9	24.1
	M	1376	10.8	20.9	31.0	62.6	37.4
2022	F	1498	15.6	24.4	28.6	68.5	31.5
	M	1271	8.8	22.7	29.0	60.4	39.6

			I	II	III	% Passes	% Failed*
AVERAGE %	F		24	24	26	74	26
	M		18	24	28	70	30

* Includes deferrals, absentees, ungraded, cancelled, withheld, and those earning Grades IV to VI.

Table 2_4: Entries and Passes for CSEC **Mathematics** for 2010 to 2022 by SEX

Year	SEX	MATHEMATICS					
		No. of Entries	OVERALL GRADE				
			I	II	III	% Passes	% Failed
2010	F	1280	12.3	13.8	23.2	49.3	50.7
	M	951	12.7	16.9	26.7	56.4	43.6
2011	F	1230	7.4	13.7	23.6	44.7	55.3
	M	933	6.5	17.1	24.3	48.0	52.0
2012	F	1281	9.9	12.3	21.2	43.4	56.6
	M	977	11.1	13.5	21.4	46.0	54.0
2013	F	1285	9.4	14.2	25.2	48.8	51.2
	M	977	9.6	16.1	25.7	51.4	48.6
2014	F	1242	15.0	20.8	29.1	64.8	35.2
	M	1032	15.1	23.4	31.3	69.8	30.2
2015	F	1289	19.8	19.6	27.8	67.2	32.8
	M	1023	19.9	21.3	25.9	67.2	32.8
2016	F	1258	13.0	12.9	24.6	50.5	49.5
	M	1068	15.8	15.6	23.3	54.8	45.2
2017	F	1276	12.9	14.2	27.0	54.2	45.8
	M	1021	14.9	14.4	25.9	55.1	44.9
2018	F	1244	12.8	21.5	25.6	59.8	40.2
	M	952	13.7	24.3	22.7	60.6	39.4
2019	F	1367	8.6	17.6	23.8	49.9	50.1
	M	1020	9.9	19.4	23.6	52.9	47.1
2020	F	1248	12.7	21.6	24.4	58.7	41.3
	M	1020	12.1	17.9	22.7	52.7	47.3
2021	F	1395	8.8	15.6	19.6	44.0	56.0
	M	1118	6.9	14.2	18.0	39.1	60.9
2022	F	1385	7.9	11.9	19.1	38.8	61.2
	M	1164	6.1	13.7	19.5	39.3	60.7

			I	II	III	% Passes	% Failed*
AVERAGE %	F		12	16	24	52	48
	M		12	18	24	53	47

* Includes deferrals, absentees, ungraded, cancelled, withheld, and those earning Grades IV to VI.

Apart from English and Mathematics, there is also growing concern that students are leaving school without even basic knowledge and skills in **science**. This is not referring only to scientific facts, but also to skills such as observation, recording, analysing, hypothesising and predicting that can be developed and honed through the study of science. While there is no means of exploring student achievement is science at the primary school exit level (The primary exit examination focusses primarily on English and Mathematics. Science and other unexamined subjects are often not taught during the last year in primary school when the CEE is written.), students exiting secondary education may write CSEC examination in

science subjects, including Biology, Chemistry, Physics, Integrated Science, Agricultural Science, Human and Social Biology.

A look at the trends in entries for examinations and the outcomes in the science subjects over the period 2010 to 2022 indicates that each year, more female than male students registered for the CSEC science examinations. For the purpose of this exploration, the sciences were grouped under two headings: the "pure" sciences, which include Biology, Chemistry and Physics and the "other" sciences, comprising Integrated Science, Human and Social Biology and Agricultural Sciences. The "pure" sciences are the subject that traditionally been accepted in secondary schools as science subjects and are generally accepted for university matriculation for degrees in the sciences. The "other" sciences are those not traditionally considered to be "hard" sciences and are often considered to be softer option for those students who do not have the aptitude for the pure sciences. Table 2_5 below summarises the entries and results for these two categories of science subject over the period 2010 to 2022, by sex.

Of note is that for this period, an average of 31 percent of the female students and 34 percent of the male students who were entered to write the "pure" science subjects did not earn a passing grade. Also, 51 percent of the females and 47 percent of the males who were entered to write the "other" science subjects did not pass. Students who did were not awarded a passing grade earned grades IV, V, or VI; had ungraded work (UNG*, UNG-, UNG+); were absent; had the designation "Withheld", Deferred" or "Cancelled". Further, of those who received a passing grade (I, II, or III) across the sciences, in all cases, the largest proportion of the students obtained a pass at the lowest level (Grd III).

The question can be raised as to who the students are who are taking the "pure" and "other" science subjects. There is the sense that students in the schools with the grammar school history are more likely to be taking the "pure" sciences. The data were explored along these lines. The indication is that of the 22,299 students who wrote examinations in the "pure" science subjects, 85 percent were from the schools with the grammar school history; and of the 12,517 who wrote examinations in the other science subjects, only 30 percent were from these schools. This suggest that students attending the prestigious

secondary schools (those with the grammar school history) are more likely to write examinations in the “pure” science subjects tan are those attending the other schools.

Since the perception is that the students in the comprehensive schools are more likely to take subjects that traditionally require them to “work with their hands”, an exploration of these subjects was done.

Table 2_5: Proportion of Students with Passing Grades in Science Subjects at CSEC Level by SEX

Year	Science Type	Sex	No. of Entries	OVERALL GRADE				
				I	II	III	% Passes	% Failed
2010	"PURE" Science	F	939	20.0	20.9	35.5	76	24
		M	637	15.4	23.4	34.9	74	26
	"OTHER" Science	F	590	1.9	17.6	40.0	59	41
		M	500	4.8	21.6	41.4	68	32
2011	"PURE" Science	F	961	15.6	23.4	31.9	71	29
		M	658	15.0	21.7	32.8	70	30
	"OTHER" Science	F	591	6.3	12.9	32.5	52	48
		M	408	2.0	22.1	34.6	59	41
2012	"PURE" Science	F	901	17.5	22.6	28.1	68	32
		M	638	16.8	24.3	32.1	73	27
	"OTHER" Science	F	613	2.1	11.9	35.1	49	51
		M	400	3.5	22.0	40.0	66	35
2013	"PURE" Science	F	988	16.6	24.9	36.2	78	22
		M	718	15.9	24.7	31.5	72	28
	"OTHER" Science	F	609	4.8	23.0	38.4	66	34
		M	459	2.4	29.2	42.3	74	26
2014	"PURE" Science	F	1049	15.9	27.4	32.9	76	24
		M	649	18.0	24.2	30.0	72	28
	"OTHER" Science	F	496	4.0	14.5	35.5	54	46
		M	470	2.6	23.2	34.9	61	39
2015	"PURE" Science	F	1055	9.6	18.7	34.5	63	37
		M	724	8.4	21.5	26.7	57	43
	"OTHER" Science	F	542	0.7	9.2	33.2	43	57
		M	446	0.0	9.6	39.0	49	51
2016	"PURE" Science	F	1082	16.3	22.6	32.3	71	29
		M	734	9.7	24.4	32.2	66	34
	"OTHER" Science	F	552	1.1	10.9	33.3	45	55
		M	440	0.9	10.2	34.8	46	54
2017	"PURE" Science	F	1002	10.2	22.3	33.5	66	34
		M	768	9.5	21.7	33.6	65	35
	"OTHER" Science	F	459	1.3	10.5	30.3	42	58
		M	371	1.9	15.4	38.5	56	44
2018	"PURE" Science	F	1013	15.7	21.9	31.0	69	31
		M	703	12.7	26.0	27.0	66	34
	"OTHER" Science	F	561	1.2	10.3	31.2	43	57
		M	368	0.5	13.3	25.5	39	61
2019	"PURE" Science	F	1004	19.6	24.5	28.8	73	27
		M	640	17.2	22.3	30.5	70	30
	"OTHER" Science	F	591	0.5	10.7	30.6	42	58
		M	382	0.5	11.8	31.4	44	56
2020	"PURE" Science	F	1008	15.4	23.8	27.8	67	33
		M	649	15.4	20.8	29.1	65	35
	"OTHER" Science	F	605	2.5	14.4	36.9	54	46
		M	380	1.1	8.2	35.0	44	56
2021	"PURE" Science	F	1080	15.2	21.5	25.6	62	38
		M	742	13.1	15.5	25.6	54	46
	"OTHER" Science	F	531	3.4	17.1	32.0	53	47
		M	393	1.8	9.2	30.5	41	59
2022	"PURE" Science	F	1194	17.9	19.3	25.5	63	37
		M	763	9.7	15.5	24.4	50	50
	"OTHER" Science	F	426	2.6	10.8	25.8	39	61
		M	334	1.2	9.9	30.8	42	58
Average %	"PURE" Science	F	1021	15.8	22.6	31.1	69.5	30.5
		M	694	13.6	22.0	30.0	65.6	34.4
	"OTHER" Science	F	551	2.5	13.4	33.4	49.3	50.7
		M	412	1.8	15.8	35.3	52.9	47.1

There are 13 subjects that were categorised at falling under the **TVET** umbrella: 8 in the Industrial Arts [IA] (Building Technology (CONST); Building Technology (WOODS); Electrical and Electronic Technology; Industrial Technology (Building); Industrial Technology (Electrical); Industrial Technology (Mechanical); Mechanical Engineering Technology; Technical Drawing) and 5 in Home Economics [HE] (Clothing and Textiles; Food and Nutrition; Food, Nutrition and Health; Home Economics Management; Textiles, Clothing and Fashion). The CSEC entries and results for these two categories of TVET subject over 2010 to 2022 were explored for schools with the different historical backgrounds by SEX. The summary of the findings is presented in Table 2_6 below.

Table 2_6: Entries and Results for TVET subject categories by school type and sex (2010-2022)

School Type	TVET AREA	SEX	No. of Entries	GRADES			% PASSED	% FAILED
				I	II	III		
GRAMMAR-TYPE	TVET_IA	F	704	23.4	43.2	18.5	85	15
		M	5093	12.7	39.9	25.9	78	22
	TVET_HE	F	3163	20.1	55.0	20.6	96	4
		M	1198	9.8	46.5	32.6	89	11
COMPREHENSIVE	TVET_IA	F	675	9.2	32.9	27.0	69	31
		M	4934	4.2	28.2	25.7	58	42
	TVET_HE	F	4742	3.9	33.0	43.5	80	20
		M	988	2.0	24.1	46.3	72	28

These statistics suggest that generally, more students from the grammar-type schools were entered to write examinations in the TVET areas. Of note is that within both school types, a larger proportion of males than females were entered for the IA subjects, while the reverse is true for the HE subjects, where more females than males were entered. Also, even though the pass rates over the period were relatively high across both types of schools, they were higher for the grammar-type schools than for the comprehensive schools. Also of note, is that, except for the HE subjects for the comprehensive schools, the largest proportion of students with a passing grade obtained Grade II.

Since it is not usually expected that students in schools with a grammar-school history would take subjects that require "working with their hands", it was interesting to note that over the 2010 to 2022 period, similar numbers of students in both types of schools were entered for the TVET_IA subjects (5797 for schools with grammar school history and 5609 for comprehensive schools). The data were explored to determine how the students from the two types of schools were distributed over the subjects in this category. That distribution is presented in Tables 2_7a and 2_7b below.

Table 2_7a: Distribution of Student Entries over the TVET Subjects by SCHOOL TYPE (2010-2022)

TVET-IA Subjects	No. of Entries	Grammar-Type School Entries	Comprehensive School Entries	TOTAL %
		Percent	Percent	
Building Technology (Construction)	347	0.3	99.7	100
Building Technology (Woods)	1391	54.9	45.1	100
Electrical And Electronic Technology	759	61.5	38.5	100
Industrial Technology (Building)	1087	42.9	57.1	100
Industrial Technology (Electrical)	793	68.7	31.3	100
Industrial Technology (Mechanical)	855	46.1	53.9	100
Mechanical Engineering Technology	1022	46.2	53.8	100
Technical Drawing	5152	52.2	47.8	100
Total	11406	50.8	49.2	100

Table 2_7b: Distribution of Student Entries over the TVET Subjects by SCHOOL TYPE (2010-2022)

Subjects	**GRAMMAR-Type Schools**		**Comprehensive Schools**	
	No.	**%**	**No.**	**%**
Building Technology (Construction)	1	0.0	346	6.2
Building Technology (Woods)	763	13.2	628	11.2
Electrical And Electronic Technology	467	8.1	292	5.2
Industrial Technology (Building)	466	8.0	621	11.1
Industrial Technology (Electrical)	545	9.4	248	4.4
Industrial Technology (Mechanical)	394	6.8	461	8.2
Mechanical Engineering Technology	472	8.1	550	9.8
Technical Drawing	2689	46.4	2463	43.9
Total	**5797**	**100.0**	**5609**	**100.0**

Of note is that for both types of school, almost half of the student entries for TVET-Industrial Arts subjects were for Technical Drawing. Technical Drawing is often considered challenging for some students, especially those who struggle with geometry. An examination was done to determine the pass rate for this subject for the two types of schools, for the period of interest (2010-2022). The findings are presented in Table 2_8.

Table 2_8: Pass Rate for Technical Drawing for the Two Types of Schools (2010-2022)

School Type	No. of Entries	GRADES			% PASSED	% FAILED
		I	II	III		
Grammar-Type Schools	2689	17.7	34.6	25.2	78	22
Comprehensive Schools	2463	5.2	25.1	29.3	60	40

The findings show that for Technical Drawing, the pass rate for the former grammar schools is not as high as one might expect, with the largest proportion of those who passed obtaining Grade II. For the comprehensive schools, the largest proportion who passed obtained Grade III.

An investigation was done of the results for schools that traditionally take in the weakest of the students who take the CEE. These include Daryll Jordan Secondary (formerly St. Lucy Secondary); Grantley Adams Memorial; Princess Margaret Secondary; and St. George Secondary. These schools take in perhaps some of the most vulnerable students exiting primary school, the ones who are often expected to learn to “do things with their hands” since they are not academically strong. the data shows that over the period under consideration (2010-2022), a total of 539 students from these four schools were entered to do technical drawing. Of these, 162 were from Daryll Jordan Secondary/St. Lucy Secondary; 23 from Grantley Adams Memorial; 239; 239 from Princess Margaret Secondary; and 115 from St. George Secondary. The statistics from this exploration are presented below in Table 2_9.

Table 2_9: Entries and Pass Rates for Technical Drawings for Four Schools (2021-2022)

SCHOOL	No. of Entries	GRADES			% PASSED	% FAILED
		I	II	III		
Daryl Jordan Secondary	162	3.7	36.4	32.1	72.2	27.8
Grantley Adams Memorial Sec	23	0	0	0	0.0	100.0
Princess Margaret Secondary	239	6.3	31.8	31.4	69.5	30.5
St George Secondary	115	8.7	32.2	23.5	64.3	35.7
TOTAL	539	5.8	31.9	28.6	66.2	33.8

The relatively low cumulative number of students from these schools writing examinations in technical drawing over the 23 years (approximately 23 per year) is noteworthy.

A final subject area singled out for investigation is **Information Technology (IT)**. In the late 1990s, Barbados embarked on education reform that was, to a large extent, driven by the integration of technology in education globally. The reform, dubbed EDUTECH 2000, had four major components[5]:

- **Civil Works** - physical rehabilitation of school facilities to enhance the physical and learning environment;
- **Technological Infrastructure** - procurement and installation of hardware, software and technical infrastructure for the school system and the Ministry of Education;
- **Human Resource Development**
  - Teacher Training - training of teaching and administrative staff within the school system;
  - Institutional Strengthening - training and technical support for personnel from the Ministry and related institutions; and
- **Curriculum Reform -** revision of the curriculum to meet emerging needs within the Barbadian society.

The expectation was that IT would become an integral part of the school curriculum at all levels as teachers and students embraced to journey into the digital world. Indeed, there was the notion that IT would be taught at all levels and that students would be able to use

[5] Taken from the Ministry of Education's website https://mes.gov.bb/Departments/PCU/; retrieved 20 July 2024.

the knowledge and skills acquired to navigate the appropriate use of technology that was becoming and now has become prevalent in their lives.

The CSEC examination data were explored to ascertain the extent to which IT was being pursued as a subject in secondary schools, evidenced by students writing and passing the IT examination. Table 2_10 below presents the number of students who were entered to write the CSEC examination in Information Technology, and the results.

Table 2_10: No. of Students who were Entered to Write CSEC Information Technology over the 2010 to 2022 Period by SEX

Year	SEX	INFORMATION TECHNOLOGY					
		No. of Entries	OVERALL GRADE				
			I	II	III	% Passes	% Unsuccessful
2010	F	334	6.6	28.7	36.2	71.6	28.4
	M	317	10.4	32.5	32.5	75.4	24.6
2011	F	353	5.7	22.9	40.8	69.4	30.6
	M	311	9.3	22.2	30.2	61.7	38.3
2012	F	281	6.0	27.8	45.2	79.0	21.0
	M	319	6.6	26.0	32.6	65.2	34.8
2013	F	332	15.1	32.2	29.2	76.5	23.5
	M	379	18.5	27.2	30.3	76.0	24.0
2014	F	294	12.2	27.2	41.2	80.6	19.4
	M	395	18.0	31.1	30.1	79.2	20.8
2015	F	341	20.5	32.0	27.6	80.1	19.9
	M	375	24.3	25.6	21.1	70.9	29.1
2016	F	327	8.6	25.1	37.6	71.3	28.7
	M	340	14.4	22.4	28.8	65.6	34.4
2017	F	315	14.3	34.6	37.1	86.0	14.0
	M	365	20.8	30.1	26.8	77.8	22.2
2018	F	305	17.7	43.0	24.9	85.6	14.4
	M	384	19.8	35.7	25.8	81.3	18.8
2019	F	316	21.2	39.2	27.8	88.3	11.7
	M	390	32.1	30.0	21.5	83.6	16.4
2020	F	312	19.6	33.0	33.3	85.9	14.1
	M	322	24.5	23.6	30.7	78.9	21.1
2021	F	362	14.1	35.1	29.6	78.7	21.3
	M	453	15.0	31.3	23.6	70.0	30.0
2022	F	353	7.1	16.4	32.6	56.1	43.9
	M	441	7.9	20.6	33.3	61.9	38.1
AVERAGE %			I	II	III	% Passes	% Unsuccessful*
	F	325	13	31	34	78	22
	M	369	17	28	28	73	27

The results indicate that each year, between 600 and 800 students write the IT examination with an average annual pass rate of 75 percent.

When the data were explored by school type, it was found that the larger proportion of entries for the CSEC Information Technology examination over the 2010 to 2022 period were from the schools with the grammar-type history (Table 2_11).

Table 2_11: Distribution of Entries and Passes for CSEC IT from 2010 to 2022 by School Type

School Type	ENTRIES		PASSES	
	No.	%	No.	%
School with a GRAMMAR School History	6200	68.8	5201	76.9
Secondary Modern/Comprehensive School	2816	31.2	1559	23.1
TOTAL	9016	100.0	6760	100.0

The evidence suggests that just close to 70 percent of the entries and just over three-quarters of the passes for this subject come from the former grammar schools.

As mentioned earlier, in the late 1900s/early 2000s, there was education reform that had a heavy focus on integrating technology in education. During this innovation, there were six secondary schools in the pilot phase. These schools were the ones that experienced the technology component of the reform the longest. Considering that an expected outcome of the reform was that more students would show competencies and interest in information technology, the data were explored to ascertain the number of students who have written the IT examination were from these schools. In this analysis, there were only five of the Phase 1 schools: three of which are former grammar schools, two comprehensive schools. The sixth school was closed before 2010.

The data shows that 72 percent of the entries for CSEC IT were from non-Phase 1 schools (6449) and the other 28 percent (2567) from the Phase 1 schools. Furthermore, for the period 2010 to 2022, the pass rate for the non-Phase 1 schools is 79 percent while the pass rate for the Phase 1 schools is 66 percent (Table 2_12).

Table 2_12: Pass Rate for CSEC Information Technology for Edutech Phase 1 and Non-Phase 1 Schools

School Type	No. of ENTRIES	No. of PASSES	PASS RATE
Non-Phase 1 Schools	6449	5067	78.6
Phase 1 Schools	2567	1693	66.0
TOTAL	9016	6760	75.0

The findings explored in this section seem to suggest that the assessment practices in education in Barbados maintain the hierarchy of schools that divide the countries citizens and marginalise large proportions of the youth rather than support promote the unity and community-spiritedness needed for national growth and development. Furthermore, the over-emphasis on paper and pencil assessment may be a strong contributor to the low entries and pass rates for some schools, namely those that customarily take in students who leave primary school with inadequate skills to fully benefit from the highly academic programmes offered in secondary schools.

Teacher Recruitment and Preparation

In this section, practices relating to the recruitment of teachers and professional development for those in the service will be examined briefly. There is evidence to suggest that for education systems that support national economic and social growth, the quality of teachers and the extent to which they have opportunities to improve their knowledge, skills and competencies as teachers are significant contributors. Teacher recruitment practices in Barbados, as is the case in other places in the sub-region, have been influenced by its colonial past and challenges often faced by small island states.

Teacher recruitment in the Barbados evolved from a system that was established in the days of the British colonisers in the 19th century. Since education was mostly associated with religious denominations, teachers tended to be recruited from among the members of the denomination, often imported from Britain. With the abolition of slavery in 1830s, the approach to teacher recruitment and training evolved. As access to elementary education became available to children of former slaves, the need for local teachers became greater. To meet this need, a *pupil-teacher* system was adopted. With this system, able students from

the upper primary school level, sometimes as young as 13 years old, were recruited as teachers to teach students at lower levels. These individuals were students for part of the time, and teachers in lower grades, under the guidance of a more seasoned teacher, for part of the time. As students, these individuals were tutored in subject content to raise their academic levels, but they were also trained in pedagogy by their support teacher, and through an examination process, some of them were selected for formal training. Between 1912 and 1945 this was done on the island by the Rawle Institute, and from 1948 by the Erdiston Teachers' Training College. Thus, at this time, recruited teachers had no requirements of academic qualifications and initial training was had on the job.

With the expansion of secondary education standards for teacher recruitment also evolved. More than elementary education was now required. Persons recruited into teaching had to have completed secondary education and to have earned passing grades in at least 5 subjects, including English and Mathematics, at the secondary school exit level (e.g., Cambridge Ordinary Level Certificate or Caribbean Examinations Council Caribbean Secondary Education Certificate (CSEC) level or an equivalent). Around the 1908s, the aspiration was for teacher recruits, especially those going into secondary school classrooms to have advanced academic qualifications such as the Cambridge Advanced level certification, and later the Caribbean Advanced Proficiency Examinations level or the equivalent. Furthermore, teachers hired at the secondary schools were expected to have advanced academic qualifications in the area(s) that they were hired to teach. With the 1990s came the aspiration for persons recruited into the teaching service to have at least a first degree. However, despite the recognition that adequately qualified teachers are crucial to the achievement of national goals for providing quality education to promote economic and social growth within a country.

Historically, Barbados, like other small island states in the region, has experienced challenges recruiting suitably qualified persons to teach at both the primary and secondary levels. For example, when passes at the secondary level were required, it was often necessary to hire persons without the identified subjects. Thus, for example, persons recruited for the primary level often did not hold a passing grade in mathematics or a science subject (teachers at the primary level were expected to teach the core areas of

Language Arts, Mathematics, Science and Social Studies). Also, some hired to teach at the secondary level may be asked to teach in subject areas for which they had not advanced academic qualifications.

Data collected for a study of school factors that influence student achievement provides data that were explored to determine the academic qualifications of teachers in primary and secondary schools in Barbados. A sample of 101 teachers from 12 primary schools across the island, and 52 from 4 secondary schools, responded to a survey of teachers executed during in the period January to March 2024. One questionnaire item asked the teachers to indicate their degrees that they held and the subject area(s). Table 2_13 below presents the proportion of the primary and secondary teachers who reported holding at least a bachelor's degree.

Table 2_13: Proportions of Primary and Secondary Teachers Reporting that they Hold Degrees at Different Levels

Degree Level	Primary Teachers (n=101)		Secondary Teachers (n=52)	
	No.	%	No.	%
Associate	51	(50%)	-	-
Bachelor	91	(90%)	50	(96%)
Master	28	(28%)	17	(33%)
Doctorate (EdD)	0	0%	0	0%
Doctorate (PhD)	1	(1%)	1	(2%)
Other*	27	(27%)	12	(23%)

* For teachers at both levels, this category mainly included a diploma of education, which is initial teacher education for persons who already hold a first degree.

The data were examined to ascertain the areas in which the teachers held their first (bachelor's) degree. At the primary level, 86 of the 91 teachers who reported holding a first degree also reported the subject area in which the qualification was held. Since teachers at this level are usually required to teach the four core subjects (Language Arts, Mathematics, Science, Social Studies), the data were examined to determine whether teachers in this sample held qualifications in these subject areas or in any area related to education in general and primary education specifically. The outcomes of this investigation are presented below (Table 2_14).

Table 2_14: Areas that Primary Teachers Reported Holding their First Degree

Area	No. of Teachers	% of Teachers
Education	18	21
Primary Education	4	5
Language Arts/English	16	19
Mathematics	0	0
Science	2	2
Social Studies	5	6
Other Areas	41	48
TOTAL	**86**	**100**

Two features stand out here. First, none of the teachers hold a qualification at this level in mathematics or even mathematics education, and second, almost half of the teachers hold their first degree in an area not related to primary education. These areas include accounting, finance, computer science, sociology, social work, psychology and sports science.

A similar investigation was conducted using the data from the secondary school teachers. The expectation is that teachers at this level would be teaching in the area(s) in which they hold at least a first degree. Consequently, the data were explored to ascertain the match between these two variables. The results are presented in Table 2_15 below.

Table 2:15: No. of Secondary School Teachers in the Sample Teaching in the Area(s) in which they Hold AT LEAST a First Degree

Teaching in Area of Qualification	No.	%
Yes	33	63
No	10	19
Unk	9	17
	52	**100**

Thus, at the secondary level, more than half of the teachers hold a bachelor's or master's degree in the area(s) that they were teaching or in a closely related area, and almost one-fifth were not. Some of the teachers either did not report the areas in which thy hold their

degrees or did not indicate the subjects that they taught. Table 2_16 shows the cases where there was a mismatch between qualifications and subjects taught.

Table 2_16: Cases of Mismatch between Qualifications and Subjects Taught at the Secondary Level

Bachelor's Degree	**Master's Degree**	**Subject(s) Taught**
Hotel Management	-	Food & Nutrition
Social Sciences	Social Sciences	Mathematics
Business Administration	-	Physical Ed
French with Law	Educational Planning, Economics International Development	English
Language Arts	-	Spanish
History and Sociology	-	Social Studies
Biochemistry	-	Mathematics
Management	-	Mathematics
Economics and Management	Project Management and Evaluation	POA, POB
Hospitality and Tourism Management	Instructional Design and Technology	Food & Nutrition

The situation reported here raises questions about the extent to which teacher are sufficiently knowledgeable about the content of the subjects that they teach to be effective in the classroom.

But apart from qualifications that speak to content, there is also the notion of pedagogy. Teachers must also have the skills and competencies to engage their students in meaningful ways that would promote learning. These skills and competencies are usually acquired or honed in teacher education programmes. In the colonial past, under the pupil-teacher system, the young teachers received instruction in pedagogy (how to teach) from the school principal and other experienced teachers on the school's staff. They would then have to take an examination to seek a place in one of the institutions that provided training for teachers. Indications are that initially, these provisions were made for elementary teachers by the Rawle Institute from 1912 to 1945, and later by the Erdiston Teachers' Training College from 1948 onwards.

Through the Erdiston Teachers' Training College, opportunities for training for teachers were provided, especially from the 1950s with the opening of more secondary schools on the island. Over the years, these included:

- An induction course for new recruits to the teaching service;

- A one-year in-service course for experienced unqualified teachers
- A two-year full-time certificate programme that led to the qualified/trained teacher status. This was eventually replaced by the Associate Degre in Education that was offered by Erdiston in partnership with the School of Education at The University of the West Indies (The UWI) Cave Hill Campus.

Other opportunities for teacher training also became available in the 1970s. These include a Preliminary In-service Training course for teachers at approved secondary schools started at Erdiston and the Post-graduate In-Service Diploma in Education programme started at the University of the West Indies, School of Education. Today, teachers in Barbados can access initial training in the form of bachelor's degrees offered by both Erdiston and The UWI, Cave Hill School of Education. Teachers who possess a first degree in a subject area, but no training can enrol in the Post-graduate Diploma in Education (Secondary) administered by The UWI School of Graduate Studies and the School of Education but taught at Erdiston or the Post-graduate Certificate in Primary Education.

Apart from initial teacher education programmes, there are also opportunities for trained teachers to pursue professional development to update and upgrade their qualifications. For example, in the late 1980s, Erdiston introduced post-graduate diplomas in areas such as remedial education and physical education. Teachers may also update their qualifications by pursuing a Master of Education degree at the UWI Cave Hill campus School of Education.

In the survey of teachers in 2024, the respondents were asked to report on their professional status since it is well established that adequate training for teachers is a desirable characteristic for effective school systems that promote social and economic growth. Table 2_17 presents the findings from the data collected.

Table 2_17: Professional Status Reported by a Sample Primary and Secondary Teachers

Professional Status	Primary Teachers		Secondary Teachers	
	No.	%	No.	%
Trained Graduate	89	88.1	40	76.9
Trained Non-Graduate	3	3.0	0	0.0
Untrained Graduate	4	4.0	9	17.3
Untrained Non-Graduate	2	2.0	1	1.9
No Response	3	3.0	2	3.8
Total	101	100.0	52	100.0

Of note is that 91 percent of the primary teachers were trained as opposed to 77 percent of the secondary teachers. Though this sample is somewhat limited, it is believed that this pattern may reflect the general situation across the public school system in Barbados.

School Leadership

A very significant contributor to the effectiveness of schooling and student achievement, is the quality of the leadership. Hallinger (2015) suggests that there are measurable characteristics of principals that can be used to assess the quality of their leadership. He created a 50-item instrument that can be used to allow school principals to gauge their performance on ten functions of principals [(1) Frame the School Goals; (2) Communicate the School Goals; (3) Supervise and Evaluate Instruction; (4) Coordinate the Curriculum; (5) Monitor Student Progress; (6) Protect Instructional Time; (7) Maintain High Visibility; (8) Provide Incentives for Teachers; (9) Promote Professional Development; (10) Provide Incentives for Learning], which can be converted to three dimensions, namely (1) *Defining the School Mission* [a combination of the first two functions]; (2) *Managing the Instructional Programme* [a combination of functions 3 to 5]; and (3) *Developing the School Learning Climate* [a combination of the last 5 functions]. This instrument was administered to a sample of principals in Barbados in 2017 (prior to the COVID-19 pandemic) and again in 2024 (post-pandemic) in the study that investigated home and school factors that influence student achievement. A matching 22-item instrument (Hallinger, 2015) that assessed teachers' perceptions of the leadership of the principals on the three dimensions was also administered to a sample of teachers from the schools led by the principals who participated in the survey. On both instruments, ratings ranged from 1 to 5. The data were explored to determine how the principals rated their performance on the ten functions identified by Hallinger. A comparison was also made between the principals' assessment of their performance on the three dimensions and the teachers' assessment of their performance.

The principals' mean ratings, pre- and post-COVID, on the areas of functioning are presented below (Table 2_18).

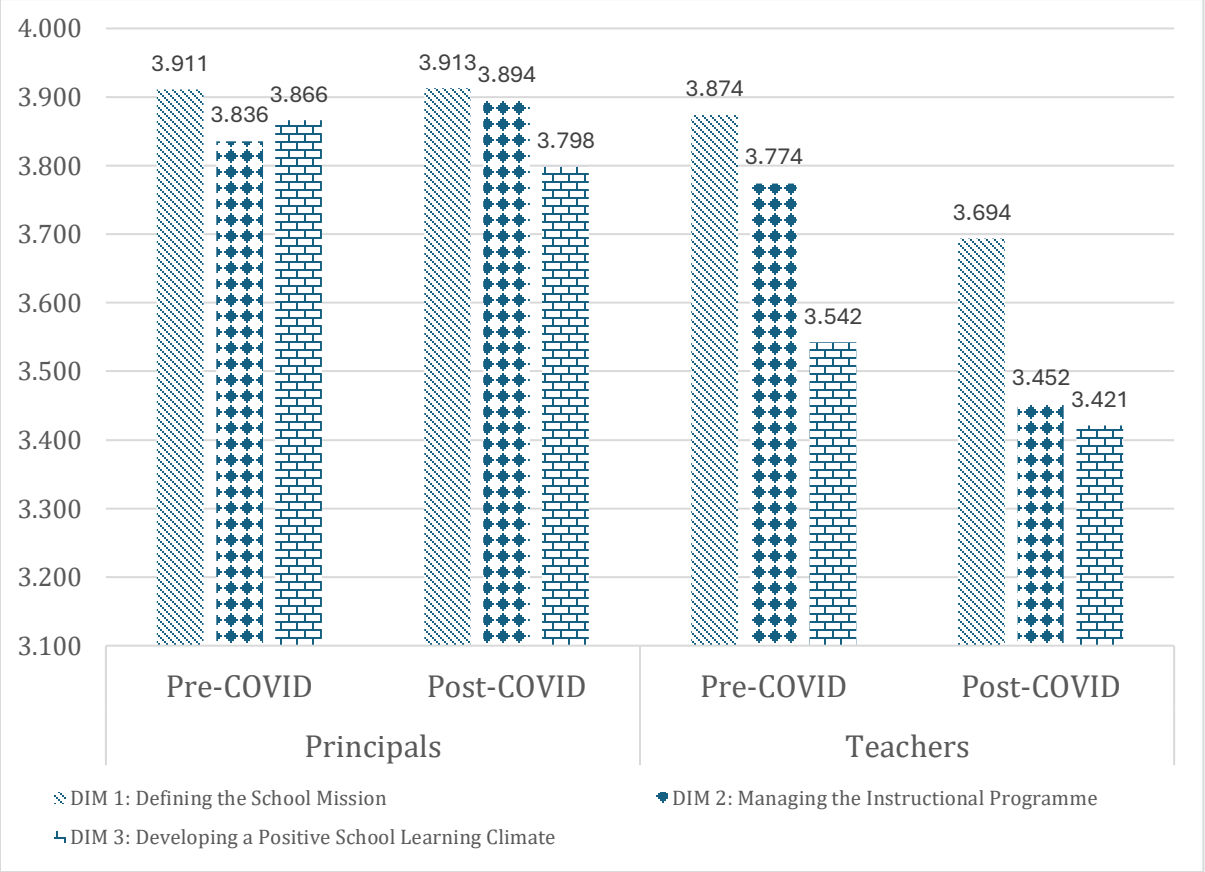
Table 2_18: Principals' Means Ratings of their Performance on Areas of Function (Pre- and Post-COVID

Areas of Functioning	Period of Data Collection	N	Mean	SD
Frame the School Goals	2017	10	3.98	0.678
	2024	14	4.04	0.643
Communicate the School Goals	2017	10	3.85	0.485
	2024	14	3.78	0.614
Supervise and Evaluate Instruction	2017	10	3.64	0.717
	2024	14	3.80	0.706
Coordinate the Curriculum	2017	10	3.88	0.527
	2024	14	3.98	0.600
Monitor Student Progress	2017	10	3.99	0.636
	2024	14	3.90	0.570
Protect Instructional Time	2017	10	3.79	0.638
	2024	14	3.69	0.515
Maintain High Visibility	2017	10	4.00	0.589
	2024	14	4.14	2.442
Provide Incentives for Teachers	2017	10	3.54	0.749
	2024	14	3.36	0.704
Promote Professional Development	2017	10	4.14	0.499
	2024	14	4.04	0.474
Provide Incentives for Learning	2017	10	3.87	0.383
	2024	14	3.76	0.540

The mean ratings suggest that generally, the principals perceived that their performance as school leaders to be somewhat average on all ten functions. The pre- and post-COVID means are similar, the post-COVID mean is higher than that for the pre-COVID period on four of the areas of functioning. However, a test of significance found no significant differences between the pre- and post-COVID means for any of the areas. This suggests that as a group, the principals did not perceive any significant changes in their behaviours relating the 10 areas of functioning identified by Hallinger (2015).

The data were also explored to ascertain how the principals' perceptions of their leadership behaviours compared to the teachers' perceptions on the three dimensions identified by Hallinger. The pre- and post-COVID means assigned by the two groups on these dimensions are presented below in Figure 2_1.

Figure 2_1: Comparison of Perspectives (Mean Ratings) on Principals' Instructional Leadership Profiles



Considering the perspectives of the principals, it is evident that the perceptions of their performance on the three dimensions of leadership pre- and post-COVID are somewhat similar. On DIM 1 and 2, the post-COVID scores are higher by 0.002 and 0.058 respectively, while on DIM 3 the post-COVID score is lower that the pre-COVID score by 0.068. for the teachers, there is a more noticeable difference between the pre- and post-COVID scores. For DIM 1 there is a difference of 0.180; for DIM 2, 0.322; and for DIM 3, 0.121. For all three dimensions, the post-COVID score is the lower score. This suggests for whatever reason, the teachers were less positive about the leadership of their principals during the pandemic and the period after the pandemic. Indeed, during the pre-COVID period, the difference between the principals' scores and those from the teachers is smaller than one-tenth for two of the dimensions (DIM 1 and DIM 2), and larger than three-tenths on DIM 3. However,

for the post-COVID period, the difference between the score for the two groups ranges between two-tenths and five-tenths for the three dimensions. The teachers seemed to be particularly at odds with the principals on the third dimension, Creating a Positive School Learning Climate.

The visible decline in the teachers' post-CVOID score may be an indication that the teachers were not satisfied with principals' leadership during and after the pandemic. This is perhaps an area for further investigation, as it may have implication for preparation and professional development for principals. It may be that attention may need to be paid to how they are prepared to lead in a time of crisis. This is of high importance since there is the expectation that natural disasters and other conditions that could interrupt schooling could be on the increase and the quality of education to which students might have access could depend heavily on the principals' ability to lead effectively in times of crisis.

This section explored the current status of the Barbados education system, highlighting conditions and practices that sprang from the days of its colonial past, and that threaten the quality of education provided for modern day students. Some of the existing conditions and practices appear to be antithetical to those that help students to develop the skills and competencies deemed necessary for social and economic development.

The next section presents the methodology adopted to explore the current status of schools in Barbados in relation to the incorporation of skills deemed necessary into the schools' curricula.

SECTION 3 METHODOLOGY

The Barbados Government embarked upon an innovative strategy to govern, coordinate, and grow the country's economy. The findings of an extensive literature review have determined that this new methodology is codified in several Country Missions that provide a framework for achieving excellence in human and societal development. This new strategy in Barbados aims to foster strong, inclusive social and economic growth that elevates living standards, reduces marginalisation (especially among youth), and enhances long-term income security for Barbadians, thus helping combat crime.

The initiative addresses critical development needs by ensuring a sufficient supply of healthy, affordable food, revitalising and sustaining the agriculture sector, and providing quality, affordable health care. Education has been identified as a key avenue to achieve these objectives. It is suggested that quality education can equip students with the attitudes, skills, and competencies necessary for national social and economic growth. These essential qualities extend beyond academic knowledge and certification to include 'soft' skills, such as effective communication, self-respect, respect for others, collaboration, critical thinking, and problem-solving, and multiple literacies.

To assess the extent to which the desired skills are currently integrated into existing educational programmes and to evaluate the potential for further development of the education system to support human and societal development and economic growth, the Caribbean Education Research Centre (CERC) and research assistants engaged by the Barbados Growth Council led a data collection initiative in Barbadian educational institutions. The Ministry of Education, Technological and Vocational Training endorsed the initiative.

Research Design

In order to carry out the investigation, a cross-sectional survey design was implemented. This approach was deemed appropriate for the research as it allows for the gathering of data from a large, widespread sample of data sources in a relatively short time. With the use of well-designed data collection tools, a cross-sectional survey can allow the researcher to obtain a good sense of the status of a phenomenon within a population by collecting data

from a sample of members of that population. For this study, the aim was to get a sense of the extent to education institutions at all levels have already integrated certain skills and competencies in their programmes and to evaluate the potential for further development to support social and economic growth in Barbados.

Participants

The population for this study included all public primary and secondary schools in Barbados, as well as post-secondary/tertiary education institutions. Since there are 68 primary schools, 21 secondary schools and approximately six post-secondary/tertiary education institutions in the country, and there were some resource constraints, it was not feasible to collect data from the entire population. Consequently, a decision was taken to select a sample of these in which to collect data.

Sampling Strategy

In order to select the schools to be included in the sample, the existing school districts (primary schools) and zones (secondary schools) were used. A list of the schools in Barbados was obtained from the METVT. At that time, the primary schools were divided into five districts[6]. Fifteen schools, (three from each district), representing 22 percent of the primary schools, were randomly selected. However, one of the schools could not be accessed during the data collection period, resulting in a sample of 14 primary schools (21 percent) participating in the study. At the secondary level, there were three zones of schools, and two single-sex schools that served all three zones. A sample of eight schools (two from each zone and the two single-sex schools) was selected. This represented 38 percent of the public secondary schools. However, owing to school events and busy school principals, data were only collected from four (19 percent) of these schools. This included one of the single-sex schools. A summary of the school sample is presented in Table 3_1 below.

[6] The number of districts vary from time to time, depending on the number of education officers available.

Table 3_1: Breakdown of the Sample of Schools involved in the Study

Primary Schools		Secondary Schools	
Districts	**No. of Schools Selected**	**Zones**	**No. of Schools Selected**
1	3	1	1
2	3	2	0
3	2	3	2
4	3	Single-Sex	1
5	3		
TOTAL	**14**		**4**

Though the focus was on compulsory school levels, post-secondary/tertiary education institutions were also included for data collection. Six such entities were included, but only four completed the questionnaire, namely the Samuel Jackman Prescod Institute of Technology; the Erdiston Teachers' Training College; the Barbados Institute of Management and Productivity, and The University of the West Indies (UWI) Cave Hill campus.

Data Collection

Data were collected from each school using a questionnaire. Permission to conduct the study in the sample of schools was obtained from METVT. Then, telephone calls were made to the principals in the sample schools to ascertain their willingness to participate in the data collection activities. After this, a follow-up email was sent with the details of the research, along with the correspondence with the necessary permissions from the METVT, and a copy of the data collection tool. Arrangements were made for the return of the completed tool, either by email or for a hard copy to be collected from the school by a member of the CERC team.

Instrument

The survey instrument was developed based on a literature review that identified factors in education systems that contribute to a country's social and economic growth. The detailed instrument aims to gather comprehensive data on various aspects of the educational landscape, including institutional demographics, skills integration in programs, resource adequacy for skills development, curriculum flexibility, and stakeholder engagement. The collected data will be instrumental in informing strategies to enhance educational programs and improve institutional operations, ensuring they meet the needs of students,

educators, and the broader community. The data collection tool comprised four sections, with a mixture of supply items (the schools inserted data) and select items (the schools selected the options that applied to them). Below is a detailed description of the data collection tool.

Description of the Data Collection Tool

The data collection tool comprised four sections.

Section 1 of the tool collected demographic information on the school level, types of programmes offered, types of certifications offered, the school's roll by sex; the number of students (by sex) registered in each department or programme at the school, the number of teaching staff (by sex) by employment status (part-time/full-time), and the highest academic qualification and professional status of teaching staff.

Section 2 aimed to ascertain the extent to which skills identified as being necessary for social and economic growth are integrated into school programmes in various formats (compulsory/optional specialised subjects/courses, workshops/seminars). Skills categories include Communication (oral and written); Digital Literacy (responsibility, productivity, information literacy); Financial Literacy (budgeting, saving, investing, debt management, taxation, insurance, retirement planning); Health and Wellbeing Literacy; Civic Knowledge and Skills; Entrepreneurial Skills; Basic Research Skills; Workplace Skills; and Other Important Skills (e.g., time management, critical thinking). This section also included an item designed to determine whether there are opportunities for students to gain hands-on, practical experience in each skill category. Context in which such experience can be obtained included labs and workshops, internships with partnering industries, community service, service-learning projects, virtual labs, and simulations.

Section 3 assesses whether the institution has adequate numbers of various human resources necessary to support skill development, including administrators/institutional leaders, trained instructors/teachers, technical support staff, curriculum specialists, career and guidance counsellors, educational technologists, teacher leaders, and student leaders. This section also evaluates the availability and adequacy of facilities that create an environment that supports skill development, including classrooms with appropriate

technology, specialist subject rooms (science labs, language rooms), computer labs, workshops with adequate equipment, access to subject-specific software, facilities supporting advanced technologies (AI/ virtual/augmented realities), sports facilities (indoor/outdoor), sick bays, student cafeterias/lounges, and other specialised facilities.

Section 4 investigates the organisation of academic programs in terms of content flexibility (fixed, somewhat flexible, fully flexible) and delivery options (compulsory fully online courses, optional fully online courses, blended mode courses, hybrid mode courses, and courses with online instructional support resources).

Section 5 measures the extent to which some key stakeholders in education (students, parents, and the community) are involved in institutional activities, including governance, and decisions about programmes, curriculum content, and the use of institutional facilities.

Data Analysis

The data from the questionnaire were compiled by school level in EXCEL files. The data from each section were summarised in tables generated by school as well as by category where appropriate. The tables were examined to ascertain the status of the individual schools in the sample, and this was taken as examples of what obtains in schools in Barbados. Apart from summarising, the data were also used in correlation analysis with a view to developing a model to predict social and economic growth in Barbados. Based on the data from the schools' reports, a model was developed to show how changes in certain conditions/characteristics could impact economic growth in Barbados.

Correlation Analysis

Given that our search of the literature has revealed no comprehensive survey of financial literacy in Barbados, establishing the level of financial literacy in the population was not possible. Like most of the Caribbean, the country is excluded from the S&P Global FinLit Survey and other similar studies. This presents a near fatal impediment to directly model changes in financial literacy levels on economic growth in Barbados. Instead, we rely on the results of other studies which have quantified the relationships between variables

discussed above in the literature review as a tool to demonstrate the possible impact on Barbados if the country were to successfully improve literacy rates.

Financial literacy is among the most important in terms of its relationship with financial and economic variables. Based on the studies conducted globally, the following are the main ways in which financial literacy contributes to economic outcomes:

i. *Improved Savings and Investment Behaviours* - Financial literacy enhances individuals' understanding of financial products and the importance of saving and investing. This leads to higher savings rates and more efficient allocation of resources, which are essential for capital formation and economic growth. Studies have shown that financially literate individuals are more likely to save regularly, invest in diverse financial instruments, and plan for retirement, contributing to higher levels of national savings and investment.

ii. *Enhanced Financial Inclusion* - Financial literacy plays a critical role in financial inclusion by increasing individuals' confidence and capability to use financial services. Financially literate individuals are more likely to open bank accounts, use digital payment systems, and access credit, which can improve their economic opportunities and productivity. Financial inclusion, in turn, supports economic growth by broadening the base of economic participants, increasing the volume of transactions, and enhancing the efficiency of financial intermediation.

iii. *Reduced Over-indebtedness and Financial Distress* - Financial literacy helps individuals understand the risks associated with borrowing and the importance of managing debt. This reduces the likelihood of over-indebtedness and financial distress, which can have significant negative impacts on individual well-being and economic stability. By promoting responsible borrowing and debt management, financial literacy contributes to a more stable and resilient financial system, which is conducive to sustainable economic growth.

iv. *Increased Entrepreneurship and Innovation* - Financial literacy is crucial for entrepreneurship, as it equips individuals with the skills needed to manage business finances, access credit, and make informed investment decisions. Financially literate

entrepreneurs are more likely to start and grow successful businesses, contributing to job creation, innovation, and economic diversification. Entrepreneurship is a key driver of economic growth, and enhancing financial literacy can help unlock the entrepreneurial potential of individuals.

v. *Improved Policy Effectiveness* - Financially literate populations are better able to understand and respond to economic policies and incentives. This enhances the effectiveness of policy interventions aimed at promoting savings, investment, and economic growth. For example, tax incentives for retirement savings are more likely to be effective if individuals understand the benefits and mechanisms of such incentives. Therefore, financial literacy is essential for the successful implementation of economic policies.

With these points in mind, we used the results of other studies of these variables to undertake what we are referring to as a correlation analysis. This analysis assumes the relationships quantified in other studies are applicable to the economy of Barbados. This allows to us model the impact of changes in variables such as financial literacy in the population on measures of economic growth. For example, if an increase in financial literacy results in a decrease in the non-performing loans (NPLs) in the financial system, which then leads to positive growth effects, this relationship is applied modelled for Barbados using data from the Central Bank of Barbados, International Monetary Fund (IMF) and the Financial Services Commission. This includes NPLs, Gross Domestic Product (GDP), income, and other financial variables.

SECTION 4: FINDINGS AND IMPLICATIONS

In this section, the findings from the research and the implications are presented. The summarised data that describe the status of selected features of primary and secondary schools are presented first, followed by the correlation analysis that attempts to make a tentative prediction of the impact of change in certain factors on the social and economic growth of the country.

The purpose of the data collection was to obtain a sense of the nature of offerings by education institutions at different levels in Barbados. Literature suggests that education systems that support social and economic growth in a country encompass certain features that prepare its young citizens to make meaningful contributions to its development. To get a general sense of the status of the education system in Barbados in relation to some key features, data were collected from a sample of primary and secondary schools, and postsecondary/tertiary institutions. Approximately 20 percent of the country's public 68 primary and 21 secondary schools were involved. Though not the focus of this research, data were also collected from 4 postsecondary/tertiary institutions in the country. Data collected focussed on characteristics such as the number and quality of teaching staff; the disciplines/subject areas offered on the curriculum; the extent to which certain skills deemed essential are incorporated into the curriculum; and the adequacy of human resources and facilities at the schools; and the degree to which certain key stakeholders in education are involved in the activities of the institutions.

Below is a summary of the data reported by the schools in the sample. The information is reported by school to allow for exploration of differences among the schools in the sample. The results from the primary schools are presented first, followed by those for the secondary schools. After the correlation analysis, a brief summary of the data from the post-secondary/tertiary institutions is presented.

STATUS OF FEATURES OF BARBADIAN EDUCATION: PRIMARY SCHOOL SAMPLE

There were 14 primary schools in the sample. Each school was assigned a unique identifier that is used here for reporting since the focus is to obtain a snapshot of what is available in schools at this level, and not on any identifiable school. All the schools included in the

sample are public schools that provide the typical primary level education that culminates in the common entrance examination (CEE) that is usually written by students in the final year of primary education (Class 4). The CEE provides a basis for transferring students to the next level, secondary education. Generally, primary schools are divided into two broad departments: Infants (Reception, Infants A and Infants B) and Juniors (Classes 1 to 4). In some schools, the Junior department is further split into Lower Juniors (Classes 1 and 2) and Upper Juniors (Classes 3 and 4).

Selected Teacher Characteristics - Primary

Here, attention is paid to teacher characteristics/conditions that can influence the quality of education provided. These include teacher to student ratio; teachers' academic qualifications; their professional status; and their employment status.

Table 4_P1 below presents the roll of the schools, by broad department, by sex. Of the schools in this sample, six may be considered small schools (roll less than 200); another six medium schools (200 to 400 students); and one, a large school (more than 400 students). [One of the schools in the sample did not provide data on the school's roll.] To determine the ratio of teachers-to-students, the schools were asked to report the number of teachers on staff. The schools reported having mainly full-time staff (Table 4_P2), with only two (Sch_04 and Sch_11) reported having part-time or adjunct staff (1 and 2 respectively). Based on the number of teachers and students at each school, the teacher-to-student ratios are relatively low, ranging from 1 teacher to 5 students to 1 teacher to 13 students (Table 4_P3). Of note is that of the 286 full-time teachers across the 14 primary schools, the majority (79%) are female.

The quality of teaching staff is also a strong contributor to the success of students in the classroom. The schools were asked to report on the academic qualifications and profession status of their teaching staff. The data reported indicates that 78 percent to 100 percent of the teachers in these schools hold a bachelor's degree or higher as their highest academic qualification (Table 4_P4). In the case of the school with only 78 percent of the staff in this category, the staff is small (9 teachers) and two of them hold an associate degree as their highest qualification. Though this study did not require an indication of the area in which

the teachers held their degrees, a previous study (CERC, 2024) found that at the primary level, approximately 35 percent of the teachers in that sample (101) held their degrees in areas unrelated to primary education, or education in general (e.g., law, tourism, business and graphic design). Thus, though most of the teachers in these schools hold at least a first degree, as to whether these schools meet the criterion of quality staff for effectiveness, caution must be advised until the nature (area) of the degrees is known.

The professional status (trained/untrained) of the schools' staff was also reported. Indications are that for these schools, in all cases, over 80 percent of the staff was trained (Table 4_P5). However, the schools were not required to indicate the period of initial training and any continuing professional development the teachers had undertaken since then. Though initial training is invaluable, to continue to be effective, teachers must periodically update and upgrade their skills and competencies to meet the needs of their current students. The schools were also not required to report if there are any systems for supporting teachers who need assistance with pedagogy, especially those who are inexperienced or newly qualified (for example, through coaching and mentoring). However, such systems are not a formal part of the education system, and though some schools may provide a measure of support of this nature, it tends to be inconsistent and ad hoc.

Table 4_P1: The Roll of the Primary Schools in the Sample

School Roll	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
No. of Students in INFANTS Department (Female)	59	45	29	62	64	45	23	0	33	8	NO DATA SUBMITTED	25	81	58
No. of Students in INFANTS Department (Male)	82	61	26	77	40	54	24	76	28	13		25	75	69
No. of Students in JUNIOR Department (Female)	111	65	33	93	56	50	27	0	38	13		57	73	77
No. of Students in JUNIOR Department (Male)	166	58	34	118	49	57	31	99	34	13		51	106	74
Total No. of Students (Female)	170	110	62	155	120	95	50	0	71	21		82	154	135
Total No. of Students (Male)	248	119	60	195	89	111	55	175	62	26		76	181	143
OVERALL SCHOOL ROLL	**418**	**229**	**122**	**350**	**209**	**206**	**105**	**175**	**133**	**47**		**158**	**335**	**278**

Table 4_P2: No. of Full-time Teachers by School - Primary

Employment Status of Teachers	No. of Full-time Teachers													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
No of FULL-TIME teaching staff (Female)	33	15	10	23	12	17	13	10	13	4	21	10	23	21
No of FULL-TIME teaching staff (Male)	5	5	3	5	9	3	2	8	2	5	3	2	5	4
Overall No. of Full-time Teaching Staff	**38**	**20**	**13**	**28**	**21**	**20**	**15**	**18**	**15**	**9**	**24**	**12**	**28**	**25**

Table 4_P3: Student to Teacher Ratio by School

	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Approximate No. of Students to ONE (1) Teacher	11	11	9	13	10	10	7	10	9	5	Insufficient data	13	12	11

Table 4_P4: Percentage of Teaching Staff with Different Qualifications as their Highest by SCHOOL

Highest Qualifications	Percentage of School Staff													
	Sch01	**Sch02**	**Sch03**	**Sch04**	**Sch05**	**Sch06**	**Sch09**	**Sch10**	**Sch11**	**Sch12**	**Sch13**	**Sch14**	**Sch15**	**Sch17**
% with PhD as highest qualification	0	0	0	0	0	0	7	0	NO DATA SUBMITTED	0	NO DATA SUBMITTED	0	0	0
% with EdD as highest qualification	5	10	0	11	0	0	0	0		0		0	0	0
% with Master's Degree as highest qualification	16	25	23	18	10	15	7	22		22		25	32	20
% with Bachelor's Degree as highest qualification	66	65	69	71	90	70	87	72		56		75	64	72
% with Associate Degree as highest qualification	0	0	0	0	0	10	0	6		22		0	0	4
% with Other Certification as highest qualification	0	0	8	0	0	5	0	0		0		0	0	0

Table 4_P5: Professional Status (Trained/Untrained) of Teaching Staff by School

Professional Status	**Sch01**	**Sch02**	**Sch03**	**Sch04**	**Sch05**	**Sch06**	**Sch09**	**Sch10**	**Sch11**	**Sch12**	**Sch13**	**Sch14**	**Sch15**	**Sch17**
No. of Trained teachers/instructors	36	19	13	25	21	20	14	18	14	8	NO DATA	10	23	24
% of Trained teachers/instructors	*95*	*95*	*100*	*93*	*100*	*100*	*93*	*100*	*93*	*89*		*83*	*82*	*96*
No. of Untrained teachers/instructors	2	1	0	2	0	0	1	0	1	1		2	5	1
% of Untrained teachers/instructors	*5*	*5*	*0*	*7*	*0*	*0*	*7*	*0*	*7*	*11*		*17*	*18*	*4*

Integration of Essential Skills - Primary

Apart from the staffing of the school, there are indications that the nature of the curriculum is also a crucial feature of education systems that support social and economic growth of a country. In this case, the focus is not solely on the subject content of the curriculum, but also on the types of skills and characteristics that they help the students to develop. For example, in today's context, it is deemed necessary for young people to develop competencies in areas such as effective communication, multiple literacies, creativity, problem-solving and critical thinking, and other skills that are beneficials for successfully navigating, for example, the workplace, personal and professional relationships, and other global contexts. It is vital therefore, that the curriculum has incorporated opportunities for the students to engage in activities that allow them to develop such skills and competencies. The study set out to determine the extent to which the schools incorporated such skills and competencies in the curriculum.

The questionnaire that the schools completed contained nine broad categories of skills (deemed to be essential for promoting social and economic growth), each with several sub-skills or associated characteristics. For each sub-skill, there were five different ways in which it could be incorporated into a programme. The schools were asked to indicate if each sub-skill was incorporated into its programmes and in how many ways. Thus, for example, under the broad category of communication skills, there were three sub-skills (Oral communication; written communication; and conflict resolution). There were five ways in which these skills could be incorporated are (1) In subject/courses; (2) Compulsory specialised subjects/courses' (3) Optional specialised subjects/courses; (4) Compulsory specialised workshops/seminars; and (5) Optional specialised workshops/seminars. To summarise this information, it was calculated that communication skills could be incorporated in 15 ways (3 sub-skills times 5 different ways). To determine the extent to which each school incorporates communication skills, a count was taken of all of the ways selected by that school. If the institutions indicates that oral communication is incorporated in the form of optional workshops, and written communication in the form of compulsory specialised subjects/courses and optional workshops, then the count of ways communication is incorporated for that institution would be 3. The summary of the ways in

which each of the fourteen schools incorporates the nine broad category of skills is presented in Table 4_P6.

Table 4_P6: The Number of Ways in Which Each Primary School Incorporates the Broad Categories of Essential Skills

Skills Incorporated in Programmes in Different Formats	No. of Ways Skills are Incorporated in School Programmes													
	Sch01	**Sch02**	**Sch03**	**Sch04**	**Sch05**	**Sch06**	**Sch09**	**Sch10**	**Sch11**	**Sch12**	**Sch13**	**Sch14**	**Sch15**	**Sch17**
Communication Skills (15 Ways*)	4	6	3	6	1	3	3	3	3	3	3	2	2	3
Digital Literacy Skills (15 Ways)	3	6	1	3	3	3	0	4	3	0	3	2	3	2
Financial Literacy (45 Ways)	4	0	0	0	3	1	0	0	0	0	0	0	1	0
Health & Wellbeing Literacy (35 Ways)	5	4	2	4	7	5	0	1	1	1	5	1	3	2
Civic Knowledge and Skills (35 Ways)	5	7	4	7	5	7	4	8	3	6	7	4	5	5
Entrepreneurial Skills/Characteristics (35 Ways)	5	3	2	1	3	6	5	10	5	4	4	0	4	2
Basic Research Skills (25 Ways)	4	0	0	0	1	3	2	6	2	0	4	1	0	0
Workplace Skills/Characteristics (25 Ways)	4	2	0	3	6	0	2	3	3	0	0	0	2	0
Other Important Skills (15 Ways)	3	1	0	4	3	3	3	4	2	2	3	0	2	1

* The number of sub-skills times five (the number of different ways the sub-skills could be incorporated)

Table 4_P7: No. of Different Contexts Institution Provided Opportunity for Learners to Practice Acquired Skills in the Broad Categories

Opportunities For Practical/Hands-On Experiences with Essential Skills	No. of Contexts in Which Students at the School Can Obtain Practical Experience to Develop Skills*													
	Sch01	**Sch02**	**Sch03**	**Sch04**	**Sch05**	**Sch06**	**Sch09**	**Sch10**	**Sch11**	**Sch12**	**Sch13**	**Sch14**	**Sch15**	**Sch17**
Communication Skills	1	3	1	1	1	2	1	1	0	1	1	0	1	1
Digital Literacy Skills	0	1	2	1	1	1	1	1	1	1	1	0	1	1
Financial Literacy Skills	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Health Literacy Skills	1	3	1	1	1	3	1	1	0	0	0	0	1	1
Civic Knowledge Skills	1	3	1	1	2	2	0	1	0	1	0	0	1	1
Entrepreneurial Skills	1	0	0	0	0	0	1	1	0	0	0	0	0	0
Basic Research Skills	1	1	0	0	1	2	1	1	0	0	1	0	0	0
Workplace Skills	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Other Important Skills	1	0	0	0	0	2	0	0	0	0	0	0	0	0

* A maximum of six different contexts were suggested

Evidence from Table 4_P6 suggests that in general, the identified essential skills are not featured prominently in the programmes offered in the schools in this sample. For example, only four of the schools reported having any of the sub-skills in the financial literacy category in their programmes, but even in these four cases, the number of ways in which such skills are incorporated is relatively small, ranging from 1 to 4 ways out of a total of 45 ways. It could however be argued that many of the essential skills listed on the questionnaire and the different ways in which they may be incorporated into programmes are not traditionally part of the programme(s) offered at the primary level. However, indications are that if such skills are to be developed and used by young citizens for their benefit and that of their community and country, students should be exposed to them from as early as possible, in a manner that is suitable for their age and developmental stage. This should not require burdensome addition of content to the curriculum but may speak to the nature of activities and practices that are implemented in classrooms.

Another crucial aspect of school curricula/programmes that support social and economic growth is the capacity of these programmes to provide opportunities for students to put into practice what they are earning. A much-heard complaint about the traditional programmes that are deemed to be failing students today is the limited time given for practical experiences related to the competencies that students are expected to acquire. To determine the extent to which the schools in the sample make available to their students, opportunities to put what they are learning into practice, the questionnaire contained an item that required the schools to indicate in which of six contexts - (1) In Labs and Workshops at the school; (2) On internships with partnering industries/employers; (3) Through community service; (4) Through service-learning projects; (5) With virtual labs and simulations; and (6) Other contexts - were students able to gain practical experience with the skills in the nine broad categories. Table 4_P7 shows how the schools reported.

Of note is that all except one of these primary schools indicated that students had at least some opportunities to practice some of the essential skills. Digging deeper into the data, indications are that certain categories of skills (communication, digital, health and civic knowledge) were reported to be practiced in most of the schools, while others (financial, entrepreneurial, and workplace) were apparently hardly accommodated (Table 4_P8).

Table 4_P8: No. of School Reporting that Students Have Opportunities to Practice Essential Skills

Categories of Essential Skills	No. of School Facilitating Practical Experiences
Communication Skills	12
Digital Literacy Skills	12
Financial Literacy Skills	02
Health Literacy Skills	10
Civic Knowledge Skills	10
Entrepreneurial Skills	03
Basic Research Skills	07
Workplace Skills	02
Other Important Skills	02

This result is perhaps not totally unexpected since the skills areas that are reportedly most practiced in whatever context are the ones that are traditionally included at the primary level in Barbados. On the other hand, those areas that are mentioned least are not usually focused on in primary schools in the country. However, indications are that in countries noted for significant social and economic advancement, students are exposed to knowledge and skills in areas such as these (financial, entrepreneurial, work ethics, investigative/research skills) from as early as possible, with activities that are pitched to age and level of development of the students. Such knowledge and skills are deemed as critical in the twenty-first century.

Another noteworthy finding relates to the actual context in which schools reported providing opportunities for students to practice or gain experience with the essential skills identified. On the questionnaire, five common contexts were given (In Labs and Workshops at the school; On internships with partnering industries/employers; Through community service; Through service-learning projects; and With virtual labs and simulations), with a sixth (Other) in the event that the schools used contexts that were not captured in the five provided. For each category of essential skills, there were six possible contexts. Thus, cumulatively across the 14 schools, for the 9 categories, there were 126 possible times (14 schools x 9 categories) that each of the six contexts could be selected. Table 4_P9 presents the number of times each context was selected by the 14 schools.

Table 4_P9: No. of Times Schools Selected Various Contexts in Which their Students Practices Essential Skills.

Context for Practical Experience	No. of Times Selected*
Practical experience in labs and workshops at institution	27
Practical experience in internships	4
Practical experience through community service	8
Practical experience through service-learning projects	5
Practical experience through virtual labs and simulations	3
Practical experience through other contexts	27

* Across the 14 schools, each context could have been selected a maximum of 126 (14*9) times

Labs and workshops at the school was the most common context across the schools. "Other" contexts were selected the same number of times (27) by the schools, but only two of the schools stated what these other contexts were. In these cases, the classroom was named. It is not surprising that the labs and workshops are the most common contexts that the schools reported using to provide practical experiences for their students. In Barbados, this is perhaps the most traditional of the options at the primary level. However, in harmony with the notion that real-life activities provide authentic spaces to put their knowledge and skills into practice, schools in Barbados must consider other options such as community service and service-learning for the primary level. This would allow the students to transfer what they learn in the classroom to their lives outside of the school thus making it more likely that the positive knowledge and skills that they learn would become part of their everyday "way of being".

Adequacy of Resources - Primary

Education systems that support economic and social growth ensure that schools are adequately resourced to provide the right environment to foster learning. Indications are that schools in countries with effective education systems are adequately equipped with staff and facilities that provide an environment in which students could develop the essential skills. To determine the extent to which certain resources (human and facilities) were available, the schools in the sample were asked to indicate if they had these resources and if they were adequate. For each resource listed, the school chose from three options: *Have Adequate Numbers* (1); *Have Some but Could Use More* (2); and *Have None* (3). Tables 4_P10 and 4_P11 presents the schools' responses.

Table 4_P10: Schools' Reports on the Adequacy of their Human Resources

Human Resources	Schools' Responses													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Administrators/Institutional leaders	1	1	2	0	2	1	1	1	1	1	1	2	1	2
Trained instructors/teachers	1	1	2	2	2	2	1	2	1	2	1	1	1	1
Technical support staff (e.g., lab technicians/assistants)	2	2	0	2	2	2	1	2	3	3	2	2	1	0
Curriculum specialists	1	2	3	2	2	0	1	2	1	3	1	0	2	1
Career counsellors	3	3	0	3	2	0	0	3	3	3	0	0	3	0
Guidance counsellors	2	3	3	3	2	2	2	3	3	3	0	0	2	1
Educational technologists	1	2	0	3	2	2	0	2	1	3	1	0	3	0
Teacher leaders	1	2	1	0	2	2	1	2	1	2	0	0	1	1
Student leaders	0	1	1	1	1	2	1	1	1	1	1	1	1	1
OTHER Human Resources	0	0	0	0	0	0	0	0	0	0	0	1*	0	0

Key: 1= Have Adequate Numbers; 2=Have Some but Could Use More; 3= Have None; 0=No Response

*** School Assistant**

Table 4_P11: Schools' Reports on the Adequacy of their Facilities

Facilities	Schools' Responses													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Classrooms with appropriate technology	3	2	2	3	1	3	2	2	1	3	3	1	2	2
Specialist subject rooms	3	2	2	3	1	3	2	2	3	2	3	1	3	3
Computer labs	3	2	2	2	1	3	2	1	3	2	3	0	2	1
Workshops with adequate equipment	3	3	3	3	3	0	0	3	3	3	3	0	3	0
Access to subject specific software	3	3	0	3	1	0	3	2	3	3	3	0	3	0
Facilities that support the use of advanced technologies	3	3	3	3	3	3	3	3	3	3	3	0	3	0
Sports facilities (for indoor sports)	3	3	0	3	1	3	3	3	3	3	3	3	3	3
Sports facilities (for Outdoor sports)	1	2	3	2	1	2	3	1	2	2	1	1	2	1
Sick bay	3	3	3	3	2	3	3	3	3	3	3	3	1	3
Student cafeteria/lounge	3	3	3	3	0	3	3	3	3	3	3	3	3	3
OTHER Facilities	0	0	0	0	0	3	0	0	0	0	0	1*	0	0

Key: 1= Have Adequate Numbers; 2=Have Some but Could Use More; 3= Have None; 0=No Response

*** Staff Room**

In relation to the human resources, most of the schools reported having at least some of the human resources needed to provide the environment in which students could develop the essential skills. But fewer schools reported having adequate facilities. In order to clear ascertain which human resources and facilities were reportedly present and in what quantities, the data were organised to show the number of schools reporting having adequate numbers, some, but not enough, and none of the identified resources. The summary of this information is given in Tables 4_P12 and 4_P13 below.

Tables 4_P12: No. of Schools Reporting Having Various Human Resources in Different Quantities

Human Resources	**No. of Schools**				
	Have Adequate Numbers	Have Some; Could Use More	Have None	No Response	Total
Administrators/Institutional leaders	9	4	0	1	14
Trained instructors/teachers	8	6	0	0	14
Technical support staff (e.g., lab technicians/assistants)	2	8	2	2	14
Curriculum specialists	5	5	2	2	14
Career counsellors	0	1	7	6	14
Guidance counsellors	1	5	6	2	14
Educational technologists	3	4	3	4	14
Teacher leaders	6	5	0	3	14
Student leaders	12	1	0	1	14
OTHER Human Resources: Teacher Assistant	1	0	0	13	14

Tables 4_P13: No. of Schools Reporting Having Various Facilities in Different Quantities

Facilities	**No. of Schools**				
	Have Adequate Numbers	Have Some; Could Use More	Have None	No Response	Total
Classrooms with appropriate technology	3	6	5	0	14
Specialist subject rooms	2	5	7	0	14
Computer labs	3	6	4	1	14
Workshops with adequate equipment	0	0	10	4	14
Access to subject specific software	1	1	8	4	14
Facilities that support the use of advanced technologies	0	0	12	2	14
Sports facilities (for indoor sports)	1	0	12	1	14
Sports facilities (for Outdoor sports)	6	6	2	0	14
Sick bay	1	1	12	0	14
Student cafeteria/lounge	0	0	13	1	14
OTHER Facilities: Staff Room	1	0	1	12	14

For most of the human resources, most of the schools reported having at least some, with 12 of the 14 schools indicating that they had adequate numbers of student leaders; 9 reported adequate numbers of administrators/leaders; and 8 felt that the number of trained teachers was adequate for the schools. Of note here, is that fewer than one-quarter of the schools reported adequate numbers of technical support staff (e.g., lab technicians), educational technologists, guidance counsellors and career counsellors. The reported inadequacy of guidance counsellors is of concern since more students at the primary level appear to be facing issues that could be addressed early by guidance counsellors on the premises. However, traditionally, neither guidance nor career counsellors have been part of the landscape of primary schools.

Apart from human resources, the schools' reports on facilities paints a picture of woeful inadequacy. The schools reported absence of what may be considered basic facilities for schools, including a sick bay and a space for students to relax and have meals (cafeteria/lounge). Indeed, in Barbados' primary schools, where school meals are served daily, students usually take their food to their classrooms to eat. Other facilities such as workshops, indoor sporting facilities, and facilities that support the use of advanced technologies were also reported to be absent from at least 10 of the 14 schools. Also noteworthy is the fact two school mentioned a staff room under the heading "Other", one school mentioned it as a facility that was present in adequate numbers, while another mentioned this facility as one that they did not have. These reports indicate that schools in the sample are not satisfied with the facilities available to them. If this is the case, then these schools could be viewed as not having the types of facilities that provide the environment for students to develop the essential skills deemed necessary social and economic development.

Flexibility of School Programmes/Curricula - Primary

The questionnaire also contained an item that sought to find out how the schools' curricula were organised. Indications are that school curricula that allow some degree of flexibility are better able to meet the diverse needs of students, thus providing more opportunities for them to develop the skills and knowledge to become contributing members of their

community. There was also an item that addressed the delivery of the school programme, and the use of online classes, either completely online, or in a blended or hybrid mode. These different modes help the students to develop the ability to learn in different environments from an early age. Such ability supports the notion of students as lifelong learners, able to access whatever knowledge and skills they may need from wherever it is available to meet their growth and development needs, whether personal or professional. Tables 4_P14 and 4_P15 below present what the schools in this sample reported.

Table 4_P14: Reported Organization of Schools' Programmes/Curriculum

Programme Organisation Options	Schools' Responses													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Academic Programme content is fixed (Students MUST take pre-arranged courses)	1	1	1	1	1	1	1	1	1	1	3	1	1	1
Academic Programme content is somewhat flexible (Some courses are fixed, but students can choose courses from other areas)	2	3	0	3	0	3	0	3	3	3	1	0	3	0
Academic Programme content is fully flexible (Students can build their programme of study, choosing courses from any area, under guidance)	3	3	0	3	0	3	0	3	3	3	1	0	3	0

Key: 1= Most of our Programmes; 2=A Few of Our Programmes; 3= None of our Programmes; 0=No Response

Table 4_P15: Reported Programme Delivery Options

Programme Delivery Options	Schools' Responses													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Programmes include at least ONE compulsory fully online course	3	3	0	3	0	3	0	3	3	3	3	0	0	3
Programmes include optional fully online choices	3	3	0	3	0	0	0	3	3	3	3	0	0	3
Programmes include courses delivered in a blended mode	2	2	0	3	1	0	0	1	2	3	2	0	2	3
Programmes include courses delivered in a hybrid mode	2	3	0	3	1	0	0	3	2	3	0	0	0	3
Programmes include courses with online instructional support resources	1	3	0	3	1	1	0	2	2	3	2	0	2	3

Key: 1= Most of our Programmes; 2=A Few of Our Programmes; 3= None of our Programmes; 0=No Response

Based on the reported data in Tables 4_P14 and 4_P15, the curricula followed by primary schools in the sample are mostly organised in fixed content, with all students taking pre-arranged courses. This is typical of schools at this level in Barbados. Table 4_P16 below summarises the number of schools reporting having their curricula organised in different ways.

Table 4_P16: No. of Schools Reporting Various Curricula Organisations

Programme Organisation Options	No. of Schools				
	Most Programmes	A Few Programmes	None of Our Programmes	No Response	TOTAL
Academic Programme content is fixed (Students MUST take pre-arranged courses)	13	0	1	0	14
Academic Programme content is somewhat flexible (Some courses are fixed, but students can choose courses from other areas)	1	1	7	5	14
Academic Programme content is fully flexible (Students can build their programme of study, choosing courses from any area, under guidance)	1	0	8	5	14

This suggests that for these schools, the organisation of the curricula leaves little space for students to pursue courses that are of interest to them that may not be included in the "regular" programme. Indications are, however, that school systems that support growth provide some, if not full flexibility to allow students to explore various interests and to develop any special talents that they may possess.

In terms of programme delivery, based on the schools' reports, taking courses online (either fully, or blended or hybrid) is not an integral part of their delivery system (Table 4_P17 below).

Table 4_P17: No. of Schools Reporting Using Various Online Modes for Programme Delivery

Programme Delivery Options	No. of Schools				
	Most Programmes	A Few Programmes	None of Our Programmes	No Response	TOTAL
Programmes include at least ONE compulsory fully online course	0	0	9	5	14
Programmes include optional fully online choices	0	0	8	6	14
Programmes include courses delivered in a blended mode	2	5	3	4	14
Programmes include courses delivered in a hybrid mode	1	2	5	6	14
Programmes include courses with online instructional support resources	3	4	4	3	14

Based on the schools' reports, none of them have compulsory online courses built into their programmes nor do they have fully online courses as an option for their students. Seven schools reported using a blended mode for some courses and three, a hybrid mode. Fifty percent of the schools in this sample reported using online instructional support resources. The reported use here reflects what is typical of schools at this level in Barbados, where online teaching and learning appears not to be fully embraced, even after the experiences during the COVID-19 pandemic. However, if lifelong learning and continuous professional development, which feature highly on the agenda of countries that provide opportunities for students to develop essential skills, are to be featured in Barbados, then students should become comfortable learning in environments in which online learning is incorporated.

Stakeholder Involvement - Primary

Stakeholder involvement is also a key feature in countries that are noted for having education systems that support social and economic development. In education systems that follow a traditional model, schools tend to be run by central or district administrators and schools' leadership teams (e.g., Principals, Deputy Principals, Senior Teacher, Department Coordinators). There tends to be little input from parents, the community or the students. An item on the questionnaire sought to ascertain whether or not these stakeholders were actively involved in major activities at the schools in the sample. A list of these activities was provided, and the schools were asked to indicate (Yes/No) if the stakeholders were involved. Four major activities were listed, but there was provision for the schools to add any other activities in which stakeholders were involved at their school. None were added. Table 4_P18 summarises their responses.

The evidence here suggests that the reported involvement of these stakeholders in the listed schools' activities is somewhat restricted. To shed greater light on this matter, the number of schools reporting involvement of the stakeholder groups in the listed activities was summarised (Table 4_P19). Indications are that except for parental involvement in institutional governance, across these schools, students, parents and the community had limited participation in key school activities. Of particular note is that none of these stake holders were reportedly involved in decisions about curriculum content. This may be linked

to the fact that schools tend to follow a centrally controlled curriculum, and schools may believe that they have no leeway to make decisions about its content and even less authority to involve students, parents or the community.

Table 4_P18: Schools' Reported Stakeholder Involvement in Institutional Activities

Stakeholder Involvement in Institutional Activities	Schools' Responses*													
	Sch01	Sch02	Sch03	Sch04	Sch05	Sch06	Sch09	Sch10	Sch11	Sch12	Sch13	Sch14	Sch15	Sch17
Students are involved in governance	0	1	0	0	1	1	0	0	0	0	1	0	1	1
Parents are involved in governance	1	1	0	0	1	1	1	1	1	0	1	0	1	1
Community is involved in governance	1	0	0	0	1	1	0	0	0	0	0	0	0	0
Students are involved in programme decision making	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Parents are involved in programme decision making	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Community is involved in programme decision making	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Students are involved in decisions about curriculum content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parents are involved in decisions about curriculum content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Community is involved in decisions about curriculum content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Students are involved in use of institutional facilities	1	1	0	0	0	1	0	1	0	0	1	0	0	0
Parents are involved in use of institutional facilities	1	1	0	0	0	0	0	1	1	0	1	0	0	0
Community is involved in use of institutional facilities	1	1	0	1	0	1	0	1	1	0	1	0	0	0

***Key: 0=No; 1=Yes**

Table 4_19: No. of Schools Reporting Stakeholder Involvement in Certain Institutional Activities

Institutional Activities	No. of Schools Reporting Stakeholder Involvement		
	Students Involved	Parents Involved	Community Involved
Governance	6	10	3
Programme Decision Making	2	2	1
Decisions about Curriculum Content	0	0	0
Use of Institutional Facilities	5	5	7

The evidence in the report from the 14 primary schools in this sample suggests that these schools, which are typical of primary schools in Barbados tend to be very traditional in they operations. There activities, resources and facilities may need to be revisited, reviewed, and updated to ensure that schools at this level in Barbados are better able to provide the services that students need to help them to develop the skills that are deemed essential for supporting social and economic development within the country.

STATUS OF FEATURES OF BARBADIAN EDUCATION: SECONDARY SCHOOLS SAMPLE

The school survey was also administered to a sample of secondary schools in Barbados. As with the primary schools, the general objective was to ascertain the extent to which these schools provided the conditions and environment to help students to develop the skills deemed essential for supporting social and economic development of the country. Below is a summary of the data reported by the four schools in this sample.

Selected Characteristics - Secondary

As with the primary school sample, data were collected from the schools about their students roll and how it was distributed. The schools reported on their student rolls in different ways. Below is a synopsis of their reports (Table 4_S1). As with the primary schools, each school was assigned a code.

Table S 4_S1: Schools' Reports on their Student Roll

Departments	Sex of Students	No. of Students			
		Sch07	Sch08	Sch16	Sch18
Overall	Female				412
	Male				428
English	Female	206	412	0	
	Male	196	393	940	
Mathematics	Female		419	0	
	Male		399	940	
Mathematics & IT	Female	235			
	Male	246			
Science	Female	208	406	0	
	Male	188	407	940	
General Studies	Female	148	432	0	
	Male	141	413	940	
Business Education	Female	40	136		
	Male	30	130		
Industrial Arts/TVET	Female	112	161	0	
	Male	43	100	940	
Foreign Language	Female	370	412		
	Male	321	393		
Arts/Music/Visual & Performing Arts	Female	146	143		
	Male	120	120		
PE	Female		370	0	
	Male		374	940	
Human Ecology	Female			0	
	Male			940	

One school (Sch18) reported its overall roll of female and male students but did not indicate how many of these students were taking classes in the various departments at the school. In addition, across the other three schools, based on the reports, it is evident that there are some departments that are in common (English, Mathematics, Science, General Studies, and Industrial Arts/TVET). Of note for example, is that only one school (Sch07) mentioned information technology, and that those schools that mentioned Business Education (Sch07 and Sch08), reported relatively low student enrolment compared to enrolment in other departments at the schools. This may be an indication of the lack of prestige afforded to these subject areas.

The schools also reported the types of qualifications that students could pursue with them. Table 4_S2 presents their responses.

Table 4_S2: Types of Qualifications offered by Schools in the Sample

	Schools' Responses*			
Type of Qualification	**Sch07**	**Sch08**	**Sch16**	**Sch18**
Caribbean Certificate of Secondary Level Competence (CCSLC) offered	0	1	1	0
Caribbean Secondary Education Certificate (CSEC) offered	1	1	1	1
Caribbean Advanced Proficiency Examination (CAPE) offered	1	1	1	0
Caribbean Vocational Qualifications (CVQs) offered	0	1	0	1
Associate Degrees	0	0	0	0
Professional Certificates	0	0	1	0
Diplomas	0	0	0	0
City and Guilds Qualifications	0	0	0	1
Other: Associated Board of the Royal Schools of Music Grade 3 Theory Examination	1	0	0	0

Key: 0=Not Offered; 1=Offered

Based on the reports from the schools, they all offered the Caribbean Secondary Education Certification (CSEC) examinations, done by students at the end of their secondary education phase. The three schools that offered optional post-secondary education in sixth forms also offered certification at the Caribbean Advanced Proficiency Examination (CAPE) level. Of note is that only two schools reported offering the Caribbean Certificate of Secondary Level Competence (CCSLC), a qualification that was introduced to provide evidence of basic secondary education for students who did not qualify to write CSEC examination by the time they had completed the years of compulsory education. Also

noteworthy is that only two schools reported offering CVQs, and only one school reported offering City and Guilds certification. This suggests that these schools may be focussing on certification in traditional academic areas but paying less attention to areas such as business and the technical and vocational education. However, as mentioned earlier, technical and vocational education is critical today as a means of helping students to acquire the knowledge and skills needed to foster social and economic growth. It seems imperative then that secondary schools in Barbados should do more to raise the profile of these areas to ensure that the stigma that is associated with these non-traditional areas is reduced.

Apart from the student roll, attention was also paid to the quantity and quality of the teaching staff of the schools. The schools reported on the number of full-time teaching staff and on their academic qualifications and professional status (Trained / Untrained). Table 4_S3 below summarises the reported number of full-time staff employed by the schools.

Table 4_S3: No. of Full-time Teachers by School - Secondary

Employment Status of Teachers	No. of Teachers			
	Sch07	**Sch08**	**Sch16***	**Sch18**
No of female full-time teaching staff	54	36	35	37
No of male full-time teaching staff	16	21	35	20
Total No. of Full-time Teaching Staff	70	57	70	57

*** Estimated from other information on the questionnaire; the school did not complete this item.**

Apart from the full-time teaching staff, Schools 07, 08 and 16 reported having part-time teaching staff (2, 5 and 4 respectively). No teacher to student ratio was estimated since the student roll for three of the schools could not be ascertained from the data submitted by the schools.

The study also considered the quality of the teaching staff at the four secondary schools in the sample. The schools were asked to indicate the number of teaching staff that held certain qualifications as their highest. Table 4_S4 shows what was reported.

Table 4_S4: No. of Teachers with Various Degrees as their Highest Academic Qualification

Highest Qualifications	No. of Teachers			
	Sch07	Sch08	Sch16	Sch18
No. of females with PhD as highest qualification	3	0	1	0
No. of males with PhD as highest qualification	0	1	0	1
No. of females with EdD as highest qualification	0	0	Missing Data	0
No. of males with EdD as highest qualification	0	0		0
No. of females with Master's degree as highest qualification	16	12	0	7
No. of males with Master's degree as highest qualification	0	5	0	6
No. of females with Bachelor's degree as highest qualification	26	24	35	27
No. of males with Bachelor's degree as highest qualification	10	16	35	12
No. of females with Associate degree as highest qualification	9	1	0	3
No. of males with Associate degree as highest qualification	7	3	0	1
No. of females with other certification as highest qualification	0	0	0	0
No. of males with other certification as highest qualification	0	1	0	0

Based on the schools' reports, over three-quarters of the teaching staff hold at least a bachelor's degree. But as with the primary teachers, since the schools did not report whether the areas in which the degrees were held matched the subjects that the teachers taught, it is possible that some of these teachers are teaching out of field.

Along with academic qualification, appropriate training is also necessary for teachers who meet the needs of their students. The schools in the sample were asked to indicate the professional status (Trained/Untrained) of teachers on the full-time teaching staff. Their reports are presented in Table 4_S5 below.

Table 4_S5: Reported Professional Status of Teachers at the Schools in the Sample

Professional Status of Teachers	**Schools' Reports**			
	Sch07	**Sch08**	**Sch16**	**Sch18**
No. of Trained Teachers	57	41	67	39
% of Trained Teachers	***79***	***69***	***96***	***68***
No. of Untrained Teachers	15	18	3	18
% of Untrained Teachers	***21***	***31***	***4***	***32***

Based on the reports, between 68 percent and 96 percent of the teachers in the four schools are trained. Again, as with the primary schools, no data was collected about the period of initial training or whether the trained teachers pursued any continual professional

development since then. As mentioned earlier, though training is invaluable, effective teachers periodically update and upgrade their skills and competencies to meet the needs of their current students. The schools were also not required to report if there are any systems for supporting teachers who need assistance with pedagogy, especially the inexperienced or newly trained teachers.

Integration of Essential Skills - Secondary

As with the primary schools, the data from the schools in this secondary sample were explored to ascertain the extent to which they were incorporating certain skills deemed to be essential for supporting social and economic growth in Barbados. The schools also completed the questionnaire item that presented nine broad categories of skills (each with several associated sub-skills) that are deemed necessary for social and economic growth. As before, the secondary schools were asked to indicate if each sub-skill was incorporated into its programmes and in how many ways. There were five ways in which the skills could be incorporated, namely (1) In subject/courses; (2) Compulsory specialised subjects/courses' (3) Optional specialised subjects/courses; (4) Compulsory specialised workshops/seminars; and (5) Optional specialised workshops/seminars. To determine the extent to which each school incorporates communication skills, a count was taken of all the ways selected by that school. As before, the data from the schools are summarised in Table 4_S6 below.

Table 4_S6: No. of Ways in Which Each Secondary School Reported that it Incorporates the Broad Categories of Essential Skills

Skills Incorporated in Programmes in Different Formats	No. of Ways Schools Reported that the Skills are Incorporated in Their Programmes			
	Sch07	Sch08	Sch16	Sch18
Communication Skills (15 Ways*)	3	3	4	3
Digital Literacy Skills (15ways)	3	1	0	3
Financial Literacy (45 Ways)	9	0	13	5
Health & Wellbeing Literacy (35 Ways)	4	1	2	4
Civic Knowledge and Skills (35 Ways)	7	5	5	6
Entrepreneurial Skills/Characteristics (35 Ways)	7	3	5	6
Basic Research Skills (25 Ways)	5	1	3	5
Workplace Skills/Characteristics (25 Ways)	5	3	4	7
Other Important Skills (15 Ways)	3	3	0	3

* The number of sub-skills times five (the number of different ways the sub-skills could be incorporated)

As with the primary schools, the secondary schools reported limited incorporation of the broad category of essential skills. A difference between the schools in the primary sample and those in this sample of secondary schools is that a greater proportion of the secondary schools reported incorporating skills in areas such as financial literacy, entrepreneurial skills, workplace skills, and other important skills. However, the number of ways of incorporation is relatively small. Of particular note is that in this age of technology and digitisation, the number of ways in which digital literacy skills were incorporated into the schools' programmes ranged from 0 to 3 out of 15 possible ways. Based on the schools' reports, it is evident that the incorporation of skills deemed essential for social and economic growth is inadequate.

Apart from the incorporation of essential skills, the secondary schools were asked to indicate the opportunities that were provided for students to practice skills in the nine broad areas. An item on the questionnaire required the schools to indicate in which of six contexts - (1) In Labs and Workshops at the school; (2) On internships with partnering industries/employers; (3) Through community service; (4) Through service-learning projects; (5) With virtual labs and simulations; and (6) Other contexts - were students able to gain practical experience with the skills in the nine broad categories. The schools' reports are summarised in Table 4_S7.

Table 4_S7: No. of Different Contexts Institution Provided Opportunity for Learners to Practice Acquired Skills in the Broad Categories

Categories of Essential Skills	**No. of Contexts in Which Students at the School Can Obtain Practical Experience to Develop Skills***			
	Sch07	**Sch08**	**Sch16**	**Sch18**
Communication Skills	1	1	2	1
Digital Literacy Skills	1	1	1	1
Financial Literacy Skills	1	0	0	1
Health Literacy Skills	1	1	2	1
Civic Knowledge Skills	1	1	2	1
Entrepreneurial Skills	1	1	0	1
Basic Research Skills	1	1	1	1
Workplace Skills	1	0	0	0
Other Important Skills	0	0	0	0

* A maximum of **six** different contexts were suggested

Of note here is that none of the schools reported more than two contexts in which the students had the opportunity to practice the essential skills in the broad categories. Furthermore, as with the primary schools, in almost all instances where there are opportunities to practice the essential skill, they are provided in lab and workshops within the schools (Table 4_S8).

Table 4_S8: No. of Times Secondary Schools Selected Various Contexts in Which their Students Practices Essential Skills

Context for Practical Experience	No. of Times Selected*
Practical experience in labs and workshops at institution	17
Practical experience in internships	2
Practical experience through community service	1
Practical experience through service-learning projects	2
Practical experience through virtual labs and simulations	0
Practical experience through other contexts	7

* Across the 4 schools, each context could have been selected a maximum of 36 times

None of the four schools reported what the "Other" contexts were. Also evident from these school reports is that activities such as internships, community service, service-learning are not commonly used. This may be an indication of the absence of involvement of the community in the schools' activities. This notion is explored later. It is also insightful that none of the schools reported providing practical experience through virtual means. This may be an indication of the very traditional uses to which technology is put in these schools.

Considering the observation that students need to have more hands-on experiences, this situation should be addressed urgently to ensure that students exiting secondary education are equipped with the skills to move on to post-secondary/higher education or to the workplace. For example, one complaint voiced by secondary school graduates in Barbados is that they transfer of theory into practice is inadequate. To address this concern, schools must be creative in finding ways for students to not only be exposed to the essential skills, but also to gain experience putting them into practice. Consideration should be given to the formation of alliances with, for example, business, community groups and other relevant entities that are willing to support initiatives that would allow students to gain practical

experience using the essential skills deemed invaluable for fostering social and economic growth.

Adequacy of Resources - Secondary

Indications are that education systems that support social and economic growth equip schools with the resources needed to provide an environment that helps the students to develop essential knowledge and skills. In light of this, the schools in the sample were asked to report on the presence and adequacy of certain human resources and facilities. Their responses in relation to the human resources are presented in Table 4_S9 below.

Table 4_S9: Secondary Schools' Reports on the Adequacy of their Human Resources

AVAILABLE RESOURCES FOR SKILLS DEVELOPMENT	Schools' Responses			
Human Resources	**Sch07**	**Sch08**	**Sch16**	**Sch18**
Administrators/Institutional leaders	2	1	0	1
Trained instructors/teachers	2	2	1	2
Technical support staff (e.g., lab technicians/assistants)	1	1	2	2
Curriculum specialists	0	1	1	2
Career counsellors	0	3	2	2
Guidance counsellors	1	2	1	2
Educational technologists	1	3	0	3
Teacher leaders	0	2	1	2
Student leaders	1	2	1	2

Key: 1=Have Adequate Numbers; 2=Have Some, but Could Use More; 3=Have None; 0=No Response

The reports suggest that generally, the schools have at least some of the human resources needed to support skills development. Of note is that none of the four schools indicated that they had career counsellors in adequate numbers, but they all reported having guidance counsellors, with two reported that they had adequate numbers of counsellors. Further, only one school reported having educational technologists in adequate numbers, with the other schools either reporting having none or not responding. Considering the emphasis being placed on technology integration, these reports suggest that more attention needs to be placed on equipping schools with personnel trained to support both teachers and students in the use of the technology for teaching and learning. In addition, the reported inadequacy of career and guidance counselling at a stage in their lives when our youth can benefit from such services as they transition from the school setting to higher education or the workplace.

Apart from adequate personnel, schools that support the development of essential skills for social and economic growth should also be equipped with appropriate facilities. The secondary schools in the sample were therefore asked to report on the presence and adequacy of some key facilities. Their responses are shown in Table 4_S10 below.

Table 4_S10: Secondary Schools' Reports on the Adequacy of their Facilities

Facilities	Schools' Responses			
	Sch07	Sch08	Sch16	Sch18
Classrooms with appropriate technology	2	2	2	2
Specialist subject rooms	2	2	1	2
Computer labs	2	2	1	2
Workshops with adequate equipment	2	2	2	1
Access to subject specific software	2	2	3	2
Facilities that support the use of advanced technologies	3	3	3	3
Sports facilities (for indoor sports)	1	2	2	3
Sports facilities (for Outdoor sports)	1	2	0	1
Sick bay	1	3	1	2
Student cafeteria/lounge	1	3	2	2

Key: 1=Have Adequate Numbers; 2=Have Some, but Could Use More; 3=Have None; 0=No Response

Based on the reports, the schools in the sample appear to have some facilities, but for the most part, not in adequate quantities. For example, only one school reported having adequate numbers of specialist subject rooms and computer labs. Only one school reported having an adequate number of equipped workshops. Again, with the emphasis on equipping students with skills in technology, none of the schools reported having facilities to support the use of advanced technologies. The fact is that without appropriate facilities for this purpose, the intention of helping students to develop skills facilitate the shift from being mostly consumers to also being creative producers in the field of technology is likely to be harder to achieve. In addition, the general inadequacy of facilities such as those for sports, sick bays and student cafeteria/lounge is also cause for concern since it paints a picture of schools as environments that may not be very student-friendly or accommodating.

As was done for the primary schools, these data were organised to show the number of school reporting having adequate numbers; some, but not enough; or none of the key resources. These summaries are presented in Tables 4_S11 and 4_S12 below.

Table 4_S11: No. of Secondary Schools Reporting Having Various Human Resources in Different Quantities

Human Resources	No. of Schools				
	Have Adequate Numbers	Have Some; Could Use More	Have None	No Response	Total
Administrators/Institutional leaders	2	1	0	1	4
Trained instructors/teachers	1	3	0	0	4
Technical support staff (e.g., lab technicians/assistants)	2	2	0	0	4
Curriculum specialists	2	1	0	1	4
Career counsellors	0	2	1	1	4
Guidance counsellors	2	2	0	0	4
Educational technologists	1	0	2	1	4
Teacher leaders	1	2	0	1	4
Student leaders	2	2	0	0	4

Table 4_S12: No. of Secondary Schools Reporting Having Various Facilities in Different Quantities

Facilities	No. of Schools				
	Have Adequate Numbers	Have Some; Could Use More	Have None	No Response	Total
Classrooms with appropriate technology	0	4	0	0	4
Specialist subject rooms	1	3	0	0	4
Computer labs	1	3	0	0	4
Workshops with adequate equipment	1	3	0	0	4
Access to subject specific software	0	3	1	0	4
Facilities that support the use of advanced technologies	0	0	4	0	4
Sports facilities (for indoor sports)	1	2	1	0	4
Sports facilities (for Outdoor sports)	2	1	0	1	4
Sick bay	2	1	1	0	4
Student cafeteria/lounge	1	2	1	0	4

As with the primary schools, the reported information here paints a picture of secondary schools that may need significant upgrading of their human resources and facilities to help students to develop the knowledge and skills required to promote social and economic growth.

Flexibility of School Programmes/Curricula - Secondary

As was done for the primary schools, issues related to the secondary schools' curricula and the programme delivery modes were explored. As mentioned earlier, indications are that curricula with some degree of flexibility are desirable for contexts in which the diverse

needs of students are to be met, thus increasing the likelihood of their developing essential skills for social and economic growth. The questionnaire contained an item that sought to find out how the schools' curricula were organised. There was also an item that addressed the delivery of the school programme, and the use of online classes, either completely online, or in a blended or hybrid mode. As previously mentioned, these different modes help the students to develop the ability to learn in different environments from an early age, and supports the notion of students as lifelong learners, able to access whatever knowledge and skills they may need from wherever it is available to meet their growth and development needs, whether personal or professional. Table 4_S13 below presents what the schools in this sample reported about the organisation of their programmes.

Table 4_S13: Secondary Schools Reported Organisation of their Programmes/Curriculum

Programme Organisation Options	**Schools' Responses**			
	Sch07	**Sch08**	**Sch16**	**Sch18**
Academic Programme content is fixed (Students MUST take pre-arranged courses)	2	1	1	2
Academic Programme content is somewhat flexible (Some courses are fixed, but students can choose courses from other areas)	2	1	2	1
Academic Programme content is fully flexible (Students can build their programme of study, choosing courses from any area, under guidance)	2	3	3	3

Key: 1=Most Programmes; 2=A Few Programmes; 3=None of Our Programmes; 0=No Response

Based on the schools' reports, all the schools have at least a few programmes that with fixed content (where students follow pre-arranged courses) and a few that are somewhat flexible (where content is fixed, but students may choose courses from other areas). Table 4_S14 below shows the number of secondary schools in the sample reporting having their curriculum/programmes organised in different ways.

Table 4_S14: No. of Secondary Schools Reporting Various Curricula Organisations

Programme Organisation Options	No. of Schools				
	Most Programmes	A Few Programmes	None of Our Programmes	No Response	TOTAL
Academic Programme content is fixed (Students MUST take pre-arranged courses)	2	2	0	0	4
Academic Programme content is somewhat flexible (Some courses are fixed, but students can choose courses from other areas)	2	2	0	0	4
Academic Programme content is fully flexible (Students can build their programme of study, choosing courses from any area, under guidance)	0	1	3	0	4

Of note is that only one school reported having a few programmes for which the content is fully flexible (where students can build their programme of study, choosing courses from any area, under guidance). Thus, there appears to a bit more flexibility at the secondary level than at the primary level, although that flexibility is somewhat limited.

In relation to programme delivery, based on the schools' reports, the focus was on delivery that involved online activity. Schools were asked to indicate where they offered programmes that included coursed delivered fully online or in a blended or hybrid mode. Table 4_S15 below presents the schools responses.

Table 4_S15: Secondary Schools' Reported Programme Delivery Options

Programme Delivery Options	Schools' Responses			
	Sch07	**Sch08**	**Sch16**	**Sch18**
Programmes include at least ONE compulsory fully online course	3	3	1	3
Programmes include optional fully online choices	3	3	2	3
Programmes include courses delivered in a blended mode	2	3	1	3
Programmes include courses delivered in a hybrid mode	3	3	2	3
Programmes include courses with online instructional support resources	2	3	1	3

Key: 1=Most Programmes; 2=A Few Programmes; 3=None of Our Programmes; 0=No Response

As with the primary schools, based on the schools' reports, online delivery of programmes or components of programmes is not an integral part of the practices at the secondary schools in the sample. Indeed, two of the schools (Sch08 and Sch18) offer no online delivery options for any of their programmes. Table 4_S16 below summarises the number of schools that reported using the various online options for programme delivery.

Table 4_S16: No. of Secondary Schools Reporting Various Online Modes for Programme Delivery

Programme Delivery Options	No. of Schools				
	Most Programmes	A Few Programmes	None of Our Programmes	No Response	TOTAL
Programmes include at least ONE compulsory fully online course	1	0	3	0	4
Programmes include optional fully online choices	0	1	3	0	4
Programmes include courses delivered in a blended mode	1	1	2	0	4
Programmes include courses delivered in a hybrid mode	0	1	3	0	4
Programmes include courses with online instructional support resources	1	1	2	0	4

Based on the evidence, as stated earlier, the flexibility of online delivery is not a rooted practices in the schools in the sample. This is typical of secondary schools in Barbados, where the online environment tends to be used primarily are a space for uploading notes and assignments for students to access out of school hours. There tends to be no structured programmes for students to access to flexible learning and online teaching and learning, despite the usage during the pandemic, has not been fully embraced by schools. This can have implications for students as they may continue to be uncomfortable learning in an online environment and this can limit their success as lifelong learners, and consequently as valuable contributors to the social and economic development of the country.

Stakeholder Involvement - Secondary

As mentioned earlier, stakeholder involvement is a key feature of education systems that support social and economic growth. As with the primary schools, the secondary schools in this sample were asked to indicate whether certain key stakeholders in education were involved in selected institutional activities (e.g., governance, and decision making about programmes offered, curriculum content, and use of school facilities). The schools' responses are summarised in Table 4_S17 below.

Table 4_S17: Secondary Schools' Reported Stakeholder Involvement in Institutional Activities

Stakeholder Involvement in Institutional Activities	Schools' Responses			
	Sch07	Sch08	Sch16	Sch18
Students are involved in governance	0	1	1	1
Parents are involved in governance	0	0	1	1
Community is involved in governance	0	0	0	0
Students are involved in programme decision making	0	0	1	1
Parents are involved in programme decision making	0	0	1	0
Community is involved in programme decision making	0	0	0	0
Students are involved in decisions about curriculum content	0	0	0	1
Parents are involved in decisions about curriculum content	0	0	0	1
Community is involved in decisions about curriculum content	0	0	0	0
Students are involved in use of institutional facilities	0	0	1	0
Parents are involved in use of institutional facilities	0	0	0	0
Community is involved in use of institutional facilities	0	1	1	0

Key: 0=No; 1=Yes

The responses in the table suggest that for at least one school (Sch07), none of the key stakeholders listed were involved in any of the institutional activities listed. While the other three schools reported some involvement, it is evident that this is limited. For greater insight, the number of schools reporting stakeholder involvement in each institutional activity is summarised in Table 4_S18 below.

Table 4_S18: No. of Schools Reporting Stakeholder Involvement in Certain Institutional Activities

Institutional Activities	No. of Schools		
	Students Involved	Parents Involved	Community Involved
Governance	3	2	0
Programme decision making	2	1	0
Decisions about curriculum content	1	1	0
Use of institutional facilities	1	0	2

The results here suggest that these schools may be missing out on the opportunity to form strong alliances with key stakeholder groups to the benefit of the students. For example, student involvement in decision making about programmes and curriculum content could ensure that the schools meet the learning needs and interests of the students, thus increasing the chances of students participating fully in school activities and in learning. It could also contribute to the lessening of the stigma attached to some areas of the curriculum as it is likely that students of different personal, cognitive and social

backgrounds could advocate for the inclusion of these areas in the curriculum, regardless of the type of school. In addition, the almost total exclusion of the community from institutional activities may be keeping the door closed to alliances that could benefit the schools in, for example, providing opportunities for student internships, for mentoring of students by community members, and for support in terms of assistance with resources. Parental involvement is also critical as they play a key role in the lives of the students outside of the school. Based on the findings here, it is apparent that secondary schools in Barbados may need to capitalise on the voices of the students, parents and the community to create a better environment in which students can develop the skills deemed essential for social and economic growth in the country.

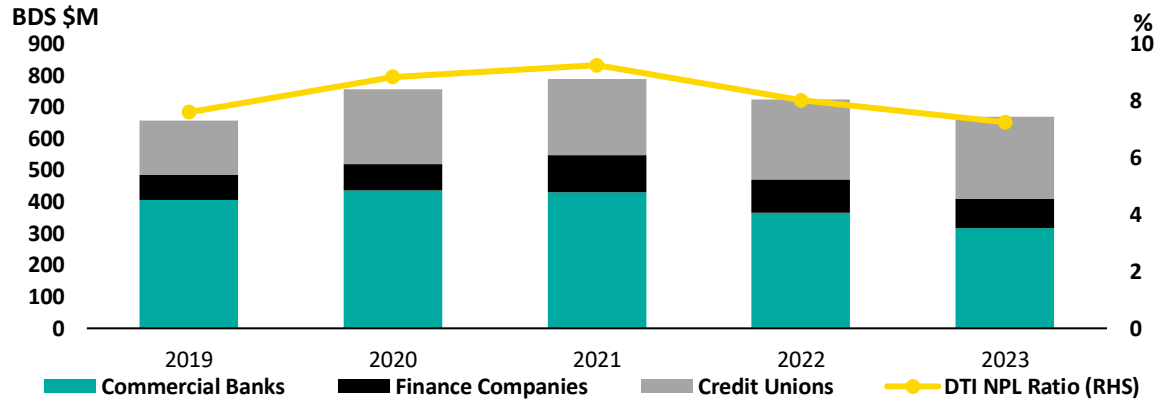
Results of Correlation Analysis

While the survey instrument and process collected data on a range of issues, for the purposes of this analysis, the focus is primarily on those variables which are linked in the literature to economic growth. These include those related to quality of education and the different types of literacy. For example, the resources available in the education system are often a key determinant of student outcomes, which then impacts the extent to which they can contribute to a nation's economy. The employment status, academic qualifications and training of teachers significantly impact the quality of education and the quality of workers in an economy.

The correlation analysis was run using variables described above.

NPLs - The literature has identified a correlation between financial literacy and NPLs. In Barbados, while total NPLs has been decline since 2021, credit union NPLs has increased BB$239.4 million in 2021 to BB$260 million in 2023 (Figure 4_1). In theory, improvement in the rate of financial literacy in the population should help reduce the rate of NPLs in the medium to long term. Zeng (2012) points out two economic consequences of NPLs. Initially, an increase in NPLs may lead to a slowdown in economic growth, thereby creating inefficiencies in resource allocation. Secondly, the expansion of NPLs will necessitate higher capital requirements due to capital depletion caused by funds being tied up in these institutions.

Figure 4_1: Total NPLs and NPL Ratio, Barbados (BB$ Millions)

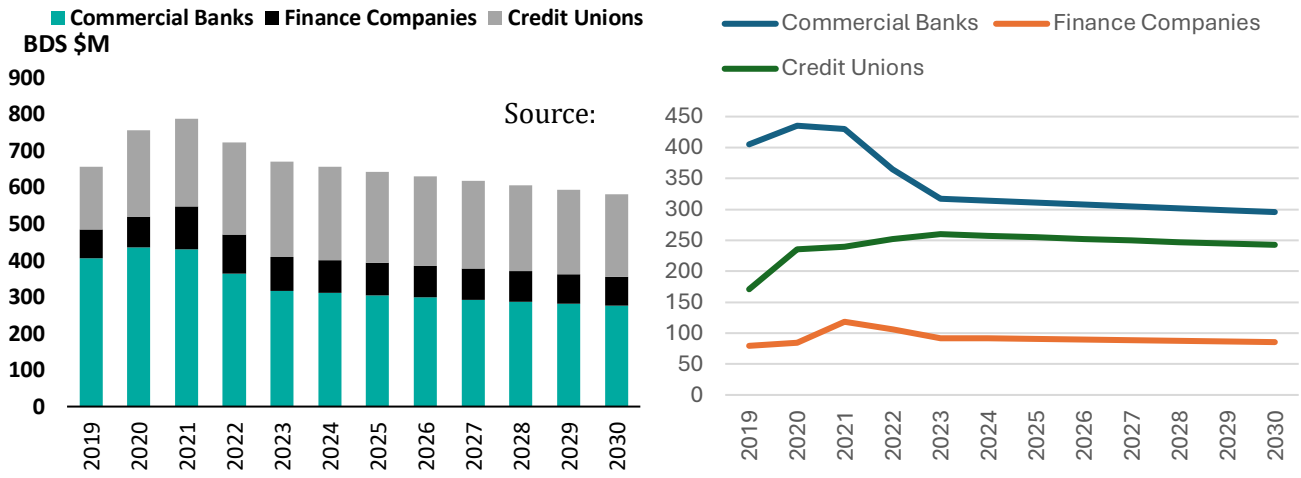


SOURCE: 2023 Financial Stability Report, Central Bank of Barbados

This situation poses challenges for banks in financing new, economically feasible projects (Baidoo, Yusif and Ayesu, 2020). Individuals who are more financially literate are more likely to repay loans received relative to their less financially literate counterparts. The marginal effect shows that answering one additional financial literacy question from the survey correctly increases the probability of successfully repaying loan received by 13 percentage points. To put this into context, Total NPLs in Barbados at the end of 2023 was BB$669.3 million. Reducing this by 13 percentage points would be equivalent to BB$87 million, taking Total NPLs to BB$582.3 million.

Based on this, some very conservative correlation analysis was performed by assuming that Barbados can increase the adult population's financial literacy rate of the next seven years (up to 2030). The impact of this increase was modelled on NPLs using 0 and 2%, all things being equal. This was done at the Total NPLs level as well as by type of financial institution (Commercial Banks, Finance Companies and Credit Unions). An annual decline of 1% produces a 7 percentage point decline by 2030, which is just over half of the impact estimated by Baidoo, Yusif, and Ayesu (2020) in Ghana, but over the space of 7 years.

Figure 4_2: 1% Annual NPL Reduction (2023-2030), Barbados (BB$ Millions)

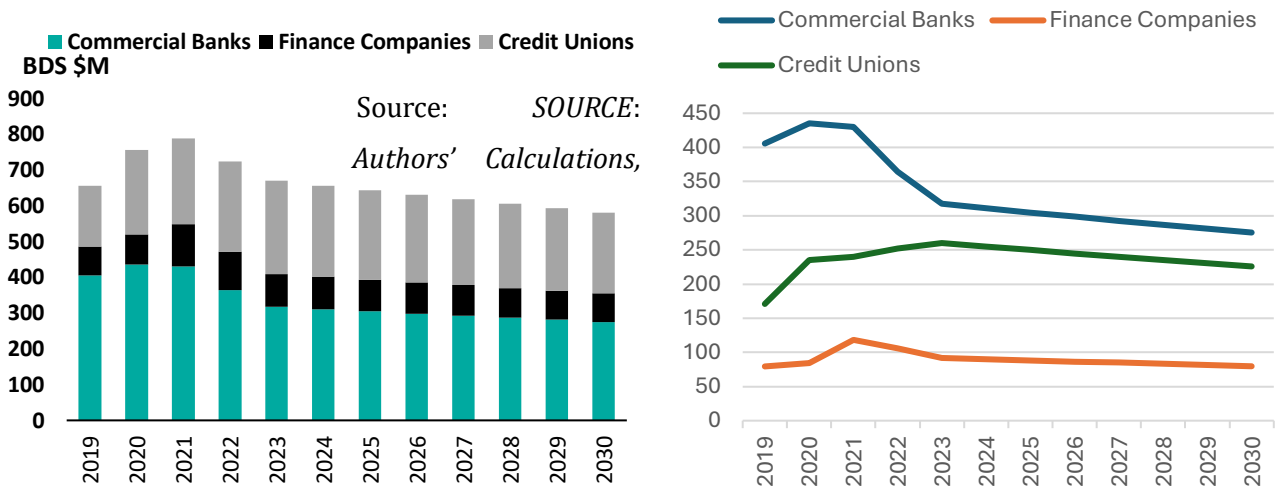


SOURCE: Authors' Calculations, Central Bank of Barbados

All other things remaining equal, the financial literacy impact could conservatively put Total NPLs on a downward trend, moving it from BB$669.3 million in 2023 to BB$623.8 million by 2030. Broken down by lender type, Commercial Bank, Finance Company and Credit Union NPLs would decline from BB$317.2 million, BB$92.1 million, and BB$260.0 million, to BB$295.65 million, BB$85.80 million and BB$242.34 million, respectively (Figure 4_2).

To better demonstrate the potential benefits of increasing financial literacy, it was also assumed that Barbados had been investing in programmes for its improvement for a long time before 2023, such that the critical mass of financially literate adults in the population allows the country to see a 2% annual reduction in the 2023 NPL stock up to 2030 (Figure 4_3).

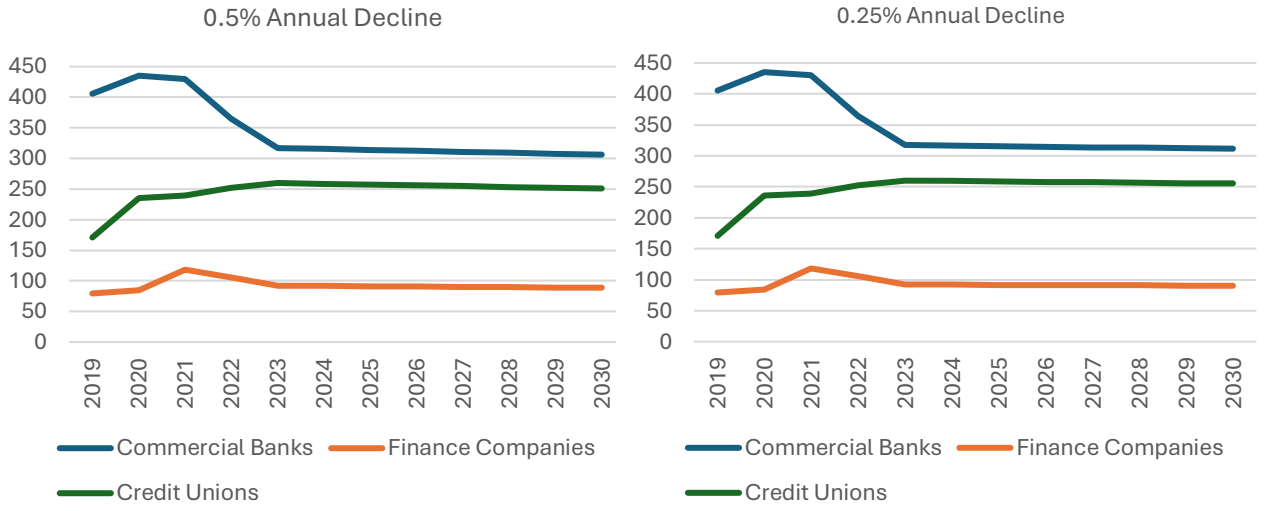
Figure 4_3: 2% Annual NPL Reduction (2023-2030) (BB$ Millions)



Source: *SOURCE*: *Authors' Calculations, Central Bank of Barbados Data*

Such an increase would have seen Commercial Bank, Finance Company and Credit Union NPLs decline to BB$275.37 million, BB$79.92 million, and BB$225.71 million by 2030, respectively. Total NPLs would reach BB$581 million. Figure 4_4 shows lower reduction in NPLs due to slower financial literacy improvement.

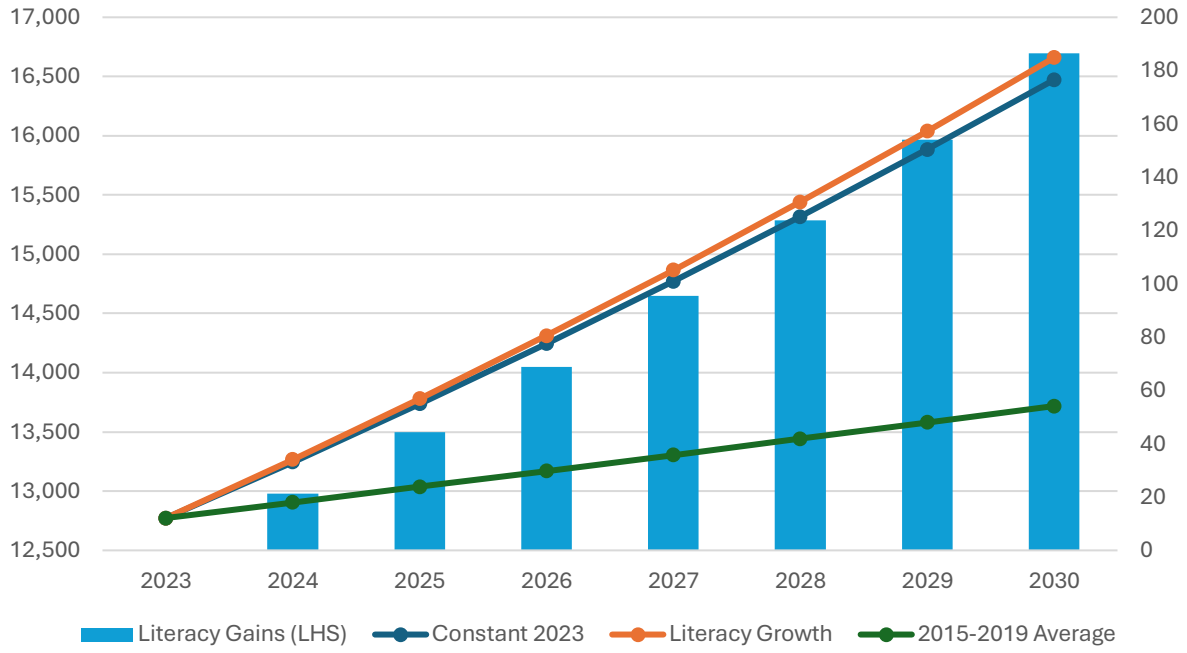
Figure 4_4: 0.5% & 0.25% Annual NPL Reduction (2023-2030) (BB$ Millions)



Economic Growth - The literature review above has identified several ways in which financial literacy can contribute to economic growth. Using the reductions on NPLs modelled above and taking into consideration the finding of Beaton, Myrvoda, and Thompson (2016) who found that changes in the NPLs explains about 1% of real GDP

growth over the medium term, this analysis attempts to show how financial literacy can impact growth. Moreover, Zhang et al. (2022) found that a 1% increase in financial inclusion (linked to increases in the rate of financial literacy and reductions in NPLs) causes a 0.167% increase in economic growth. For context, the Barbados Central Bank projects growth of 3.7% in 2024. In other words, if there were past investment/programmes to increase in financial literacy which manifest in a 1% gain in financial inclusion in 2024, this could push growth to 3.867%, all other things remaining equal.

Figure 4_5: Nominal GDP Growth 2023-2030 (BB$ Millions)



SOURCE: Authors' calculations using World Bank and Barbados Central Bank Data

In theory, if similar gains were repeated for the next seven years, Figure4_5 shows the literacy growth in nominal GDP, compared to constant growth of 3.7%, and 1.025%, the country's average GDP growth for the period 2015-2019 (pre-pandemic), all else remaining equal. Overall, the chart shows that while all scenarios predict GDP growth from 2023 to 2030, the "Literacy Growth" scenario results in the highest GDP, followed by the "Constant 2023" scenario, with the "2015-2019 Average" scenario showing the least growth. The

"Literacy Gains" shows the difference between first two scenarios. It is only BB$21.33 million in 2024 but grows to BB$186.58 million by 2030.

Business Performance - Another potential transmission channel for literacy to contribute to economic growth is business performance. For neighbouring Grenada, Payne (2022) found that for every one unit increase in financial literacy there would be increase in the small business performance of 0.595% as measured by a composite value which includes record-keeping improvement, financial reporting improvement, performance measurement, ability to be liquid, profitability, meeting financial obligations, bad debts reduction, and decision-making ability. Apart from job creation and the associated payroll taxes, another proxy to directly assess the impact of business performance is through corporate tax collection. However, in Barbados many small businesses are not limited liability companies and therefore do not pay corporate tax, and those that are typically pay a rate of 5.5%. Notwithstanding the impact of the reliability of this exercise, it is still useful to at least explore literacy gains in tax revenue. To compensate the issues raised, tax taken was conservatively increased by only 0.15%, all else remaining constant (see Table 4_C1).

Table 4_C1: Literacy Effects on Tax Revenue

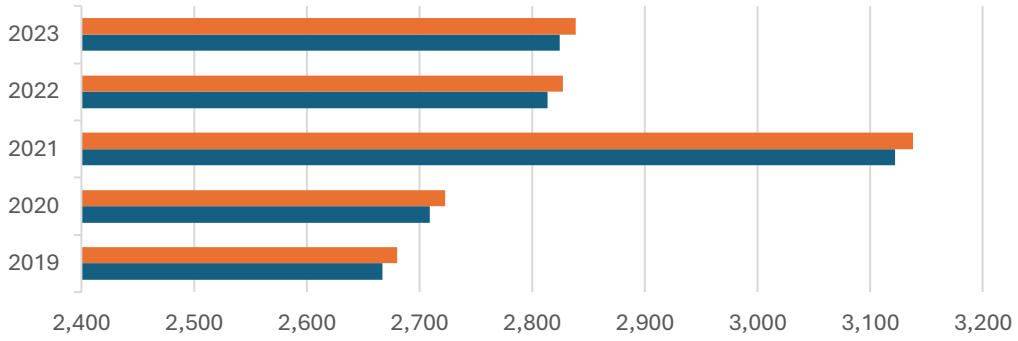
Tax Type	2023	2024	2025	2026	2027	2028	2029	2030
Personal (BB$ Mns)	443.30	443.96	444.63	445.30	445.97	446.63	447.30	447.98
Corporate (BB$ Mns)	563.10	563.94	564.79	565.64	566.49	567.34	568.19	569.04

SOURCE: Authors' Calculations using Central Bank Data

Retirement Planning – Research has found that the more financially literate are also those most likely to plan for retirement. Mitchell and Lusardi (2011) found that a marginal improvement in financial literacy by answering one additional financial question correctly is associated with a 3-4 percentage points higher chance of planning for retirement in countries including as Germany, the US, Japan, and Sweden; and by as much as 10 percentage points in the Netherlands. For Barbados, the value of pension funds in the country as at the end of 2023 was used to model a potential increase in persons planning for retirement as financial literacy theoretically increases. Figure 4_6 shows a scenario where actual total pension funds in Barbados for the period 2019 to 2023, are by half a

percent (0.05%) to reflect theoretical gains in financial literacy that were modelled as having begun to manifest at the start of the period.

Figure 4_6: Literacy Effects on Total Pension Funds



	2019	2020	2021	2022	2023
Literacy Growth	2,680	2,723	3,138	2,828	2,839
Pension Funds Baseline	2,667	2,709	3,122	2,814	2,825

SOURCE: Authors' Calculations using Central Bank and FSC Data

While the scenarios presented above are hypothetical, they are based on proven relationships that could be tested and quantified for the case Barbados by undertaking a comprehensive financial literacy survey. These scenarios represent conservative application of the quantitative correlations found by other researchers with variables such as NPLs, economic growth, business performance and pension planning. Several other similar relationships with other variables are identified in the literature but not modelled in this report.

Digital Literacy - Generally, the literature on the impact of increased digital literacy, points to potential economic benefits, particularly in terms of the rate of technology adoption, worker productivity, output gains, economies of scale through market optimisation, and household welfare through income gains. However, achieving digital literacy, especially in small states can be challenging due to socioeconomic factors such as low literacy levels, poverty, inadequate local content, a lack of infrastructure, and social inequality (Prayitno, Sahid, and Hussin 2022). Prayitno, Sahid, and Hussin (2022) found that digital literacy can

improve productivity, and the quality of output produced, as well as reduce the time taken to produce. While the size of the impact on economic growth varies by study, the magnitude generally falls within the ranges modelled above and are therefore not replicated here.

Health Literacy – While some studies have found that increased literacy causes demand for health services to increase resulting in increased health expenditure by government, this effect is documented more in short-run. In the medium to long run, higher health literacy in the population is correlated with gains to the economy. Friedland (1998), Spycher (2006) and Vernon et al. (2007) have found substantial costs to countries which are categorised as having low health literacy. For the US and Switzerland, they estimated this cost to be about 3 to 5 percent of the total health care spending on average. In other words, these countries could reduce the total cost of health care by 3 to 5 percent if health literacy in increased among the population. At the individual level, lower health literacy cost countries an additional US$143–US$7,798 per person per year, partly because of consumer inefficient mix of health care services, and higher usage of inpatient and emergency room services over their lifetime (Weiss and Palmer 2004; Howard, Gazmararian, and Parker 2005; Sanders, Thompson, and Wilkinson 2007).

Barbados currently spends about 7 percent of GDP on total health care costs (including government and private spending). With the exception of Trinidad and Tobago, St Kitts and Nevis, and St Lucia, the country has relatively higher out-of-pocket healthcare spending compared to the rest of the Caribbean and indeed other high-income countries globally (Table 4_C2). This means that the country stands to benefit more from cost reductions which can potentially manifest through increased health literacy in the population.

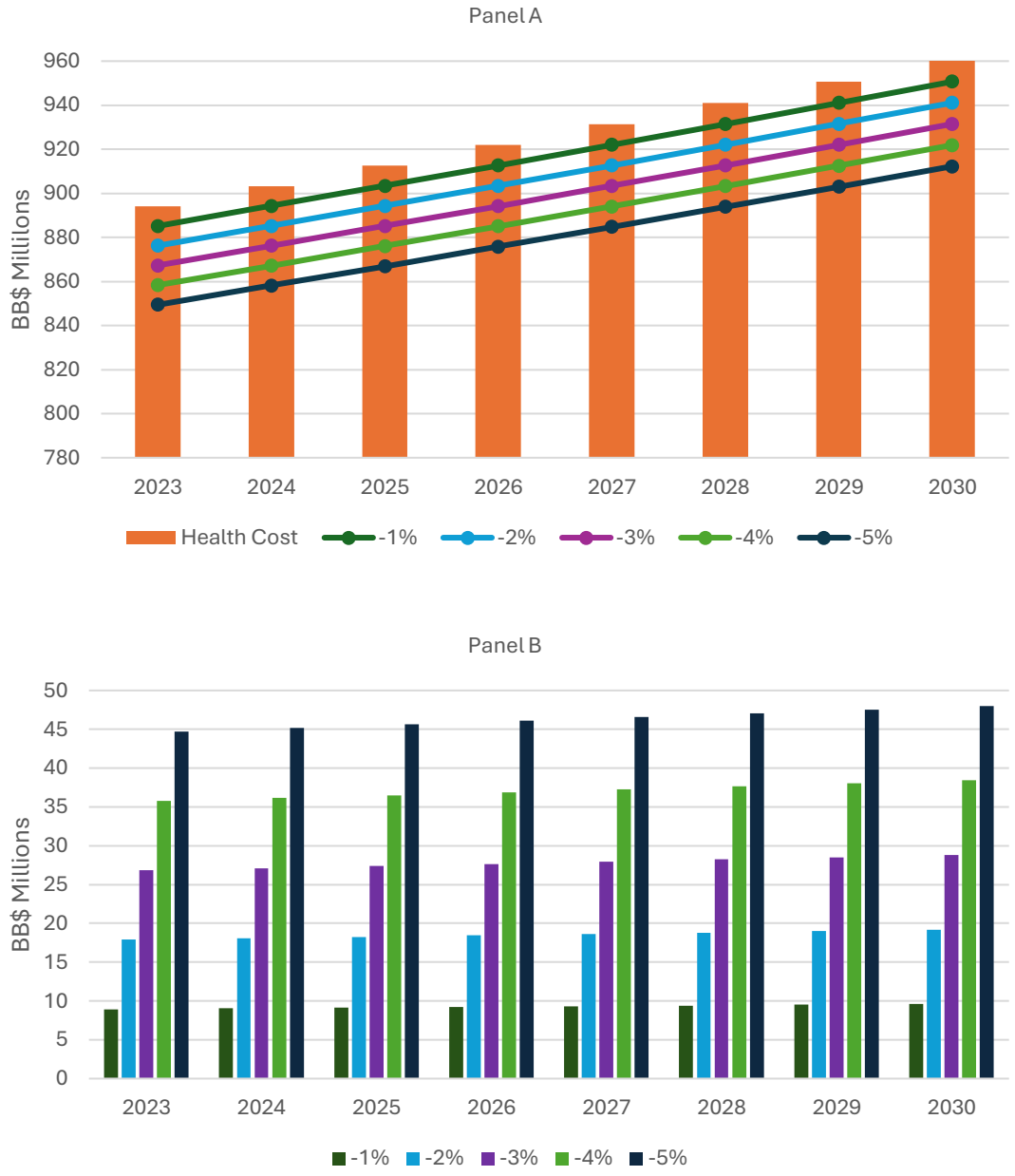
Table 4_C2: Caribbean Health Spending - Public and Private

Country	Current Health $ (CHE) per capita (US$)	CHE % GDP	Public Spending % CHE	Private Spending % CHE	Out of Pocket Spending % CHE
Barbados	1165	7	45	54	47
Dominica	491	7	65	33	32
Guyana	296	6	62	35	32
Jamaica	321	6	65	34	17
Trinidad & Tobago	1123	7	49	51	44
Antigua	875	5	56	44	29
Bahamas	2013	6	50	49	27
Belize	286	6	69	29	23
Grenada	475	4	38	59	54
St Kitts-Nevis	993	5	47	53	49
St Lucia	465	4	47	52	46
St Vincent-Grenadines	329	4	68	31	28
Suriname	474	8	66	32	20
AVERAGE	***843***	***6***	***56***	***43***	***34***

SOURCE: WHO Statistics, 2021

Based on the Central Bank of Barbados' nominal GDP estimate of BB$12.773 billion in 2023, 7 percent of the total cost of health is estimated to be BB$894.13 million in 2023. While the Bank is relatively optimistic about economic growth prospects for the medium and longer term, the average GDP growth rate for 2015-2019 is used to estimate GDP for the period 2024-2030 and to calculate the 7 percent health cost. From Friedland (1998), Spycher (2006) and Vernon et al. (2007), it is known that those countries could reduce the total cost of health care by 3 to 5 percent if health literacy is increased among the population. Since it cannot be concluded that this exact magnitude of relationship exists for Barbados, reductions of 1 to 5 percent are calculated to demonstrate potential cost savings to the country if past interventions in health literacy were theoretically now producing results (Figure 4_7). Panel A shows the total health care cost and potential reduced outlays, while Panel B shows the potential savings under this scenario (all else remaining constant). Under the 1% and 5% assumptions, Barbados could be saving just under BB$10 million and BB$50 million, respectively by 2030. The argument is that this money can did be redirected to other areas of spending in the economy.

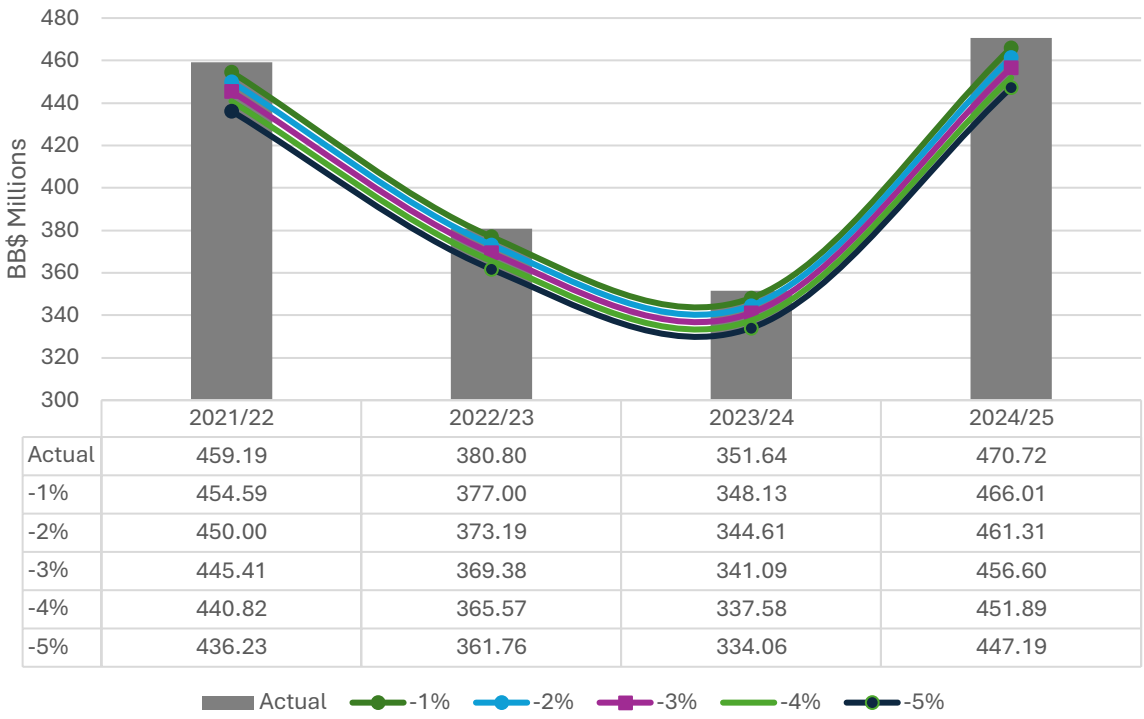
Figure 4_7: Potential Health Literacy Cost Savings (BB$ Millions)



SOURCE: Authors' calculations using WHO and Barbados Central Bank Data

Another important consideration is the public spending on health in Barbados, which is operationalised through the annual budget. Using the country's budget estimates for the period 2021/22 to 2024/25, a scenario where the government was able to reduce annual health spending by 1 to 5 percent was calculated, all else remaining constant (Figure 4_8).

Figure 4_8: Potential Health Literacy Cost Savings to Government (BB$ Millions)



	2021/22	2022/23	2023/24	2024/25
Actual	459.19	380.80	351.64	470.72
-1%	454.59	377.00	348.13	466.01
-2%	450.00	373.19	344.61	461.31
-3%	445.41	369.38	341.09	456.60
-4%	440.82	365.57	337.58	451.89
-5%	436.23	361.76	334.06	447.19

SOURCE: Authors' calculations using Barbados Government Budget Estimates

TERTIARY EDUCATION: A QUICK LOOK

Though the focus of this investigation is on the levels of compulsory education, primary and secondary levels, data were collected from a sample of post-secondary/tertiary institutions as well. These include the Samuel Jackman Prescod Institute of Technology (SJPIT), Erdiston Teachers; Training College (ETTC); the Barbados Institute of Management and Productivity (BIMAP), and The University of the West Indies Cave Hill (UWICH). The data from these institutions were examined to determine the extent to which the desired skills were incorporated into their programmes. This was deemed of interest since employers often complain that graduate of post-secondary/tertiary institutions often lack adequate knowledge and skills in some of these areas when they enter the workplace.

The questionnaire contained nine broad categories of skills, each with a number of sub-skills or associated characteristics. For each sub-skill, there were five different ways in which it could be incorporated into a programme. The institutions were asked to indicate if

each sub-skill was incorporated into its programmes and in how many ways. Thus, for example, under the broad category of communication skills there were three sub-skills (Oral communication; written communication; and conflict resolution). The five ways in which these skills could be incorporated are (1) In subject/courses; (2) Compulsory specialised subjects/courses' (3) Optional specialised subjects/courses; (4) Compulsory specialised workshops/seminars; and (5) Optional specialised workshops/seminars. To summarise this information, it was calculated that communication skills could be incorporated in 15 ways (3 sub-skills times 5 different ways). To determine the extent to which each institution incorporates communication skills, a count was taken of all the ways selected by that institution. If the institutions indicates that oral communication is incorporated in the form of optional workshops, and written communication in the form of compulsory specialised subjects/courses and optional workshops, then the count of ways communication is incorporated for that institution would be 3. The summary of the ways in which each of the four institutions incorporate the nine broad category of skills is presented below (Table 4_T1).

Table 4_T1: The Number of Ways in Which Each Post-Secondary/Tertiary Incorporates the Broad Categories of Essential Skills

Skills Integrated into Programmes Offered by the Institution	**INSTITUTIONS**			
	SJPI	ETTC	BIMAP	UWICH
Communication Skills (15 Ways)	4	3	10	10
Digital Literacy (15 Ways)	2	3	6	10
Financial Literacy (45 Ways)	2	9	35	14
Health & Wellbeing Literacy (35 Ways)	1	7	29	22
Civic Knowledge and Skills (35 Ways)	3	7	18	25
Entrepreneurial Skills/Characteristics (35 Ways)	3	7	24	16
Basic Research Skills (25 Ways)	3	5	25	17
Workplace Skills/Characteristics (25 Ways)	3	5	19	13
Other Important Skills (15 Ways)	3	3	13	12

The evidence in this table suggests that two of the institutions (BIMAP and UWICH) reported that most of the broad category of skills are largely incorporated into their programmes. On the other hand, the other two institutions reported very low counts of incorporated skills.

Another complaint about educational offerings at the post-secondary/tertiary level is that learners do not have adequate opportunities to practice the skills that they are expected to acquire. The questionnare that the institutions completed contained an item that asked them to indicate the contexts in which learners had the opportunity to gain practical experience. There were six options from which to choose: (1) In Labs and Workshops at the Institution; (2) On internships with partnering industries/employers; (3) Through community service; (4) Through service-learning projects; (5) With virtual labs and simulations; and (6) Other contexts. For each of the broad categories, the institution indicated which of the six contexts opportunities for practice were provided. A summary of their responses is presented in Table 4_T2 below.

Table 4_T2: No. of Different Contexts Institution Provided Opportunity for Learners to Practice Acquired Skills in the Broad Categories

Opportunities For Practical/Hands-On Experiences with Essential Skills	**Institutions**			
	SJPI	**ETTC**	**BIMAP**	**UWI**
Communication Skills	2	5	2	4
Digital Literacy Skills	2	4	2	3
Financial Literacy Skills	0	3	2	1
Health Literacy Skills	2	3	2	2
Civic Knowledge Skills	2	4	2	4
Entrepreneurial Skills	2	5	2	3
Basic Research Skills	1	5	2	6
Workplace Skills	2	5	2	4
Other Important Skills	2	0	0	4

SECTION 5 A MODEL FOR EDUCATION IN BARBADOS

INTRODUCTION

Currently in Barbados, the education system is tightly tied to high stakes examinations that support elitism and the marginalization of large proportions of the nation's youth, many of whom either do not complete a full course of education or even after having done so, leave school with nothing to show for it. This lessens their chances of becoming productive participating citizens who contribute to positive social and economic conditions for themselves, their families, their communities and by extension, their country.

In order to turn this situation around and to provide a system of education that is inclusive, meeting the needs of all students regardless of their background, aptitudes and interests, there is a need for a complete overhaul of the existing structure of education, where counterproductive elements are eliminated and students can feel valued, nurtured and respected; where collaboration is promoted rather than competition; where skills such as critical thinking, participation and learning are emphasized rather than memorization without understanding and passing examinations. Below is a proposed alternative to the existing system of education that is built on learning standards, flexible transfer and inclusion, and that can increase the chances of all children between the ages of 3 years and 18 years inclusive, obtaining a good educational foundation that can help them to become productive, participating, contributing citizens.

A MODEL FOR EDUCATION IN BARBADOS: INCLUSIVE, FLEXIBLE, CARING

The proposed model consists of four levels from Nursery to Senior Secondary education, namely Nursery, Primary, Secondary, and Senior Secondary. In the proposed model, schooling would be compulsory from Primary to Senior Secondary, spanning ages 4 years to 18 years. However, Nursery Education would be actively encouraged. Transfer between the different levels will be, for the most part, automatic. In addition, programmes at each level will be responsive to the needs of the individual students, with the recognition that while the bulk of students will be adequately served by the general programme in place, there will be those students who will require special attention in the form of individualized programmes. Furthermore, from Nursery to Secondary levels, assessment (not restricted to

the traditional testing but also including portfolios and informal assessments such as inventories, observation and interviewing) will be part of the students' regular classroom activities and will serve to indicate the extent to which they are reaching the set standards for learning and to identify areas in which they may need extra support. At the end of the Secondary school programme, students will be eligible to seek certification through the Caribbean Examinations Council's Caribbean Secondary Education Certificate (CESC) or a national certification, the Barbados Secondary Education Certificate (BSEC). BSEC will offer two strands: General Education and Technical Education. Whether they earn CSEC or BSEC certification, ALL students will move on to the Senior Secondary level for advanced education that prepares them for Tertiary level education or for the workplace. Students who opt for the workplace can continue to pursue additional courses at the Senior Secondary level or they can take advanced courses at the Tertiary level that can facilitate pursuit of studies at that level later. Below (Figure 5_1) is a summary of the proposed model. After the summary there are expanded explanations with the proposed details for each stage.

FIGURE 5_1: SUMMARY OF THE PROPOSED MODEL FOR EDUCATION IN BARBADOS

- A curriculum to enrich the children's background knowledge that will facilitate greater benefits from the primary education.

- A broad-based programme that includes core subjects such as Language Arts/Literacy development; Mathematics, Science, Civics/Social Studies, P. E., the Arts, TVET, and IT.
- Continuous assessment that is woven into the regular teaching and learning activities (teachers have access to a bank of standardized tools to assess students' progress to build a learning portfolio for each student.
- ALL students move on to the Secondary Education level.

- In-take from primary schools in the secondary school's catchment area.
- The First Form at ALL secondary schools will be a transition year, with a specially-designed programme that introduces the young students to this level of education in a measured way to facilitate transition.
- General education (core) curriculum, including English Language and Literature; Mathematics, a Science subject; Civics/Social Studies; IT, PE; A foreign Language and a TVET subject, with opportunity to take specialist courses in the higher grades.
- Opportunity to take enrichment courses or advanced courses from Senior secondary programmes.
- Continuous assessment that is woven into the regular teaching and learning activities leading towards certification in specific subject areas or in general/technical secondary education.
- Certification includes CSEC, BSEC (General Ed.), BSEC (Technical)

- ALL students go on to this level.
- Students can spend 1 to 3 years at this level, depending on their entry profile and their education goals.
- Programmes to be developed in modules…
- Opportunity for students to pursue advance Senior secondary education to prepare for higher education or the work environment.
- Along with the regular programme offered, schools at this level would work with BCC, SJPI, The UWI and even other regional and international institutions to allow students to take advance courses for the next level.
- After this level, students may opt to enter the work of work or go on the tertiary education.
- Even if students enter the world of work, they would still be able to pursue tertiary education later. They can take enrichment courses or advanced courses from tertiary programmes as needed.

* This name may be changed. For example, I see these as academies and the name for this level may reflect this.

This model was developed by S. Joel Warrican, and previously presented to the Barbados Ministry of Education, Technological and Vocational Training

EXPLANATORY DETAILS

Below are explanatory details to outline the proposed features of each level of education. It is worth noting that at each level certain cross-cutting skills will be incorporated into the offered programmes. These include soft skills such as communication, collaboration, conflict resolution, respect for self and others, critical thinking, resilience, and entrepreneurship.

Nursery Education (3-4 years old): It has long been recognised that children who tend to benefit most from primary education are those who have rich diverse experiences in their early years, years during which they develop for example, a wide vocabulary, language skills and other background knowledge on which they draw as they move to the primary curriculum and onward. It is also recognised that not all homes have the resources to provide these enriching experiences for their young children and that nursery schools or nursery classes in primary schools can fill this need. At this level, the programme will emphasize readiness skills for reading, numeracy development, vocabulary expansion, and social skills (e.g., communication, collaboration, sharing, respect). ***Transition*** from this level to Primary level will be automatic, and students will take with them a profile of their progress.

Primary Education (4-11 years old): This level can be separated into two tiers: Infants (4 years to 7 years) consisting of three class levels: Reception, Infants A and Infants B; and Juniors (7 years to 12 years) consisting of four primary classes: Class 1, Class 2, Class 3, and Class 4. Students at the Primary Education level would pursue a ***broad-based curriculum*** consisting of Language Arts/Literacy development; Mathematics, Science and Technology; Civics/Social Studies; P. E.; the Arts; TVET; and Information Technology. Integrated across the areas in the programme would be the cross-cutting skills mentioned earlier. The emphasis would be on helping the students to develop knowledge, skills, and competencies on which they can build at the higher grade levels. Where appropriate, links between the different content areas and between the content and real-life would be made. ***Assessment*** would be on-going, and would include non-traditional approaches such as inventories, observation, task performance, projects and interviews. A portfolio of the students work that demonstrate their growth and competencies would be maintained and would move

with them from class to class. A suite of standardized test would be made available to teachers who would use them to determine if students have attained an expected standard, and if not, to identify areas where students may need extra support. Students who meet the standards for their current class before the end of the school year, can pursue enrichment activities or can take advance activities for the next school year. Thus, for example, a student in Class 2 may be able to take some Mathematics (or some other subject) classes with Class 3.

Transition from Primary Education to Secondary Education* (A)**: Typically, students will automatically be transferred from Primary to Secondary education at Class 4. Safe transition from the Primary level to the Secondary level would be facilitated through the First Form at the Secondary Level[7]. The First Form would be configured to introduce the young students to the structure and rigours of secondary school. Thus for example, rather than 13 to 15 subjects common to the first form in the existing system, with the accompanying march of different teachers for each subject, the first form programme may be presented, for example, as a STEM component; the Humanities; the Creative/Fine Arts; Physical Education; Information Technology; and a Foreign Language, where as much as possible each area is facilitated by one appropriately-trained teacher. There would also be a programme of guidance and counselling to help the students to adapt. This would help to reduce the levels of stress and anxiety that are currently noticed among students moving from Primary to Secondary Education. Students would be transferred to the Secondary School that serves the ***catchment area in which their Primary School is located.

Though typically transfer from Primary to Secondary education would take place at Class 4, it is recognised that there will be some exceptional students who will attain the standards for Class 4 while still in Class 3. In such instances, these students can in essence skip Class 4 and move on to the Secondary Education level. Furthermore, students in Class 4 who may still not have attained the standard for that class level will still enter the transition year, but with an individualized programme to help them to catch up as much as possible.

[7] Ideally, we believe that this transition year should be facilitated at the Primary School to help the students to start their transition in a familiar, safe setting. However, we are told that many of the primary schools would not have the space to accommodate an extra class level (essentially, a Class 5, that can be renamed to indicate its purpose).

Secondary Education (11-16 years old): The in-take for each secondary school will come from primary schools in their catchment areas. Some existing secondary schools (e.g., Harrison College, Queen's College, Combermere School, The St. Michael School, The Lodge School or any schools as necessary), would be removed from the set of secondary schools and become part of the Senior Secondary Education institutions. Schooling at this level would run from First to Fifth Form (5 years), with the possibility of some students who may need extra time to spend an additional year in Fifth Form. Secondary Education may be separated into two tiers: Lower Secondary (Forms 1 to 3) and Upper Secondary (Forms 4 to 5).

Secondary Education would offer a core curriculum to be followed by all students. This curriculum would consist of English Language and Literature; Mathematics, a Science subject; Civics/Social Studies; Information Technology; Physical Education; a Foreign Language and a TVET subject, with opportunity to take additional specialist courses in the higher grades. Thus, for example, students in the Upper Secondary grades who may wish to go into a Science-related field may take additional Science courses along with the one that is part of the core curriculum. Furthermore, students will also be able to take enrichment courses or advanced courses from Senior Secondary programmes in the upper grades of the Secondary school.

Transition from Secondary Education to Senior Secondary Education **(B)**

Students can transfer from Secondary to Senior Secondary Education out of Fourth or Fifth Form. ALL students will move from the Secondary Education level to the Senior Secondary programme. The programme that they pursue at this level will depend on factors such as their CSEC and BSEC qualifications, their intended career path, and their immediate plans (higher education or workplace).

Senior Secondary Education (16-18 years old): At this level, students will be exposed to advanced knowledge, skills and competencies that prepare them for higher education or the world of work. The programmes at this level will be developed in a modular manner, thus allowing the students to either choose to concentrate on a particular area or to select from different areas to meet their needs as they leave secondary education. Students will

work towards specific certification such as the Caribbean Advanced Proficiency Examinations (CAPE), the National Advanced Proficiency Assessment (NAPA), which may have a general track or a technical track. Schools at this level may also work in collaboration with the Barbados Community College (BCC), the Samuel Jackman Prescod Institute (SJPI), The University of the West Indies (The UWI) and even other regional and international institutions to allow students to take advance courses that can help them to be better prepared for the workplace or that can give them advance placement in higher education programmes.

Typically, students would spend two years at the Senior Secondary level. However, students who pursued enrichment and advanced courses at the Secondary level may spend only 1 year at the Senior Secondary level to qualify to graduate. Furthermore, some students may need an extra year before they can move on. Thus, students may spend 1 to 3 years at the Senior Secondary level.

***Transition from Senior Secondary Education* to the Next Level (C)**

For this proposed model of education, compulsory education runs from Primary Education to Senior Secondary Education, that is for 14 years (4 years old to 18 years old), after which, they may move on to the world of work or to higher (university) education. However, even if students choose to seek employment, they may continue to take courses at the Senior Secondary level or with the BCC or SJPI or The UWI that can allow them to upgrade their knowledge and skills or to be used later for entry to higher education programmes.

ENABLING CONDITIONS

Below is a list of conditions to which attention and consideration must be given to support the implementation of the proposed model of education.

1. **Upgrade of Schools**: The physical plant of the primary and secondary schools on the island must be upgraded to ensure that they are all adequately resourced to provide the suggested programmes. For example, since Secondary School will take in

students from the Primary Schools in their catchment area, ALL secondary schools should have comparable facilities.

2. **Organization of Schools**: To facilitate the transition year for students moving from Primary to Secondary Education, consideration should be given to the organization of schools. For example, if, as I believe, the transition year is facilitated at the Primary Level, then additional space would have to be identified for the classes and departments would have to be created at the primary level to facilitate offering subjects in STEM, Humanities, Creative/Fine Arts, Foreign Languages, TVET, and IT.

3. **Finding Space in Primary Schools**: To free up space in primary schools to facilitate the transition year for secondary education, consideration may be given to removing Nursery classes from these schools. This would require that new Nursery schools be constructed to facilitate this level of education.

4. **Building a Non-Tradition Curriculum**: The proposed model would require a shift from the traditional type of curriculum to one that is less subject-focused, and that permits integration of the essential skills at all levels. There would need to be a radical change in how the school programmes are implemented. For example, learning should take place in classrooms or other spaces that allow students to engage in real-world activities that require immediate application of the skills learned. Thus, activities such as service-learning, project approaches, cooperative and collaborative learning, community service and internships should be included. Projects and learning activities that allow for the incorporation of the various essential skills/literacies should be prominent. For example, students may be required to work on a project that requires them to apply financial literacy skills, or digital literacy skills, or health literacy skills. They could be required to create and market a product from raw materials in their environment, giving them room to be creative and innovative. All of these must be included at all levels, but with age-appropriate activities and expectations.

5. **Professional Development for Teachers**: The proposed model would necessitate re-training of teachers and modification of teacher education programmes pursued

by teachers in Barbadian schools. There would be a need for teachers who are trained in specific areas (e.g., STEM education), and for teachers in general to be trained in alternative assessment approaches. Teachers would also need to develop competency in integrating the essential skills in their teaching. Thus, for example, teachers would have to learn how to integrate communication skills, financial literacy skills, health literacy skills, digital literacy skills, to name a few, into their teaching, regardless of their subject area. They would have to learn how to integrate the different subject content so that learning is not fragmented, and students are better able to make the connections between the content in different subject areas and how to draw on these to solve real-life problems. Through continuous professional development and in communities of practice, teachers would hone their skills and competencies in applying non-traditional teaching methods.

Furthermore, to ensure quality teaching, attention must be paid to teacher recruitment and preparation. Thus, for example, concerted efforts must be made to ensure that teachers who are recruited for the classroom have adequate subject content knowledge as well as pedagogical knowledge. Teachers should not teach out-of-field, and where teachers' content knowledge is weak, there should be appropriate opportunities for them to upgrade their knowledge and skills in this area.

6. **Online Courses**: Consideration should be given to allowing students to take some of their courses online, especially those taking enrichment or advanced courses. Since these courses may not fit neatly into the students' regular school day, the online setting may be a valuable option. Indeed, since online learning is becoming more acceptable mode for professional education and higher education, consideration should be given to make it compulsory for all students to take at least one online course at the Secondary and Senior Secondary levels. This way, online learning would become a normal avenue for learning.

There may be other factors to be considered for implementing the proposed education model, but the ones mentioned above are among the most critical.

The model of education proposed here removes elements that contribute to elitism, the marginalization of large proportions of youth who do not benefit from the current educational provisions and the overemphasis on high stakes examinations that create anxiety and other outcomes that have a negative impact on the Barbadian society. This proposed model may not the only viable alternative, but it could help to bring about the turnaround that is needed to lead to growth and development of the social and economic landscape of the country. It is also recommended that an integral part of the implementation of any alternative system should be research: research to determine what is effective, what may need to be revised and what should be discarded. Decision-making without adequate research evidence can lead to a waste of already limited resources that are available to small states such as Barbados.

SECTION 6 RECOMMENDATIONS

Based on the findings of this study, it is evident that the education system in Barbados can be considered of a traditional colonial structure, and unsuitable for preparing current and future students for the world in which they are expected to live. To address these issues, a number of recommendations are being made here.

- The process for recruiting and preparing teachers should be reviewed and revised. Teacher education should focus not only on content, but also heavily on pedagogy, helping potential teachers to develop strong competencies in integrating in their instructional practices, skills that are deemed necessary to help students to become contributing citizens.
- The curriculum for the different levels within the compulsory education range should be revised to be more integrated rather than subject-centred, with greater emphasis on skills development.
- The essential skills should be deliberately interwoven across the curriculum from the earliest grades, with activities pitched at the level of the students.
- Learning should be linked to real-life activities that allow students to practice the skills and competencies that they are expected to develop.
- Schools should be staffed with professionals who have the expertise to support the students in their learning and to guide them to develop positive attitudes, relationships and dispositions.
- Persons put in leadership positions in schools should be adequately qualified, with appropriate training. There should be some focus on continuous training for these leaders. For example, school principals should receive continuous training in instructional leadership, technological leadership, and in approaches for keeping staff engaged and accountable.
- Consideration should be given to support systems for teachers to guide them with the implementation of new school programmes. This will ensure the integrity of the implemented programmes, as a means of quality assurance.

- School facilities should be updated and upgraded to ensure that they are adequate to support the activities in which the students are expected to engage as they develop the essential knowledge, skills and competencies.
- Policies and guidelines should be developed to facilitate involvement of key stakeholders in the education process in the country. These would include students, teachers, parents, community leaders/groups, businesses, and NGOs. This engagement with key stakeholders should not only be for special occasions (e.g., consultation for projects), but on a continual basis, thus increasing the likelihood that these ones feel invested in the education process.

Considering the value of financial literacy and financial literacy that emerged from the correlational analysis, it is worthwhile to make a few recommendations related to these. It must be acknowledged however, that enhancing financial literacy requires a coordinated effort from governments, financial institutions, educational institutions, and other stakeholders. Likewise, attention should also be paid to health literacy, drawing on the expertise of relevant agencies to guide the integration of these skills into the curriculum. Bearing this in mind, the following policy recommendations can help improve financial literacy and health literacy with a view to supporting economic growth.

1. Integrate Financial Literacy and health literacy into Education Systems

   Integrating financial literacy and health literacy into school curricula is essential for equipping young people with the skills needed to make informed decisions about financial and health issues. This should be included at all levels of education, from primary school to university. For example, for financial literacy, programmes should cover topics such as budgeting, saving, investing, and understanding financial products and services. For health literacy, topics such as adopting healthy lifestyles, disease prevention, navigating health-care system, and applying health information over a variety of life events and situation should also be covered. Educators should be trained to effectively deliver financial literacy and health literacy content, and teaching materials should be tailored to the needs of different age groups.

2. Promote Financial Literacy and Health Literacy through Public Awareness Campaigns

Public awareness campaigns can help raise awareness about the importance of financial literacy and health literacy and provide individuals with information and resources to improve their skills in these areas. Campaigns can be delivered through various media channels, including television, radio, social media, and community events. Partnerships with relevant institutions, non-profit organisations, and other stakeholders can enhance the reach and impact of these campaigns.

3. Encourage relevant Institutions to Provide Financial and Health Education

Financial institutions have a critical role to play in promoting financial literacy, as do health-care agencies in relation to health literacy. For example, banks, credit unions, and other financial service providers should offer financial education programmes to their customers. These programmes can include workshops, seminars, online courses, and one-on-one financial counselling. Financial institutions should also provide clear and accessible information about their products and services, helping customers make informed decisions. Similarly, health-care agencies and associations can offer health-care education, specifically targeting students at all levels and their parents. While this may be currently being done, more focused programmes, integrated into school curricula, may be necessary to have the required effect.

4. Support Workplace Financial and Health-Care Education Programmes

Workplace financial education programmes can help employees improve their financial literacy and make better financial decisions. Employers should offer financial education workshops, seminars, and online courses as part of their employee benefits programmes. Topics can include retirement planning, debt management, budgeting, and investing. These programmes can help employees achieve financial security and reduce financial stress, leading to improved productivity and job satisfaction. Similarly, employers should foster a work environment that allows employees to practice healthy lifestyles. For example, where the workplace is a school, there should be adequate provisions for staff and students to eat healthy meals, to take refreshing breaks, to have places for quiet reflection to support well-being. Parents could also be trained to provide such spaces at

home for themselves and their children, so that they too can practice the skills that their children are expected to develop. Communities could also support the school in fostering health literacy by sponsoring seminars, workshops and other events that promote health literacy. Thus, not only would the students engage at school with information that helps them to develop health literacy skills, but also in their homes and communities. The more health conscious the population becomes, the less strain on health-care services, resulting in fewer cases of lifestyle diseases, fewer days away from work owing to health issues, a more productive workforce, all of which can contribute to a stronger economy.

5. Develop and Implement National Financial Literacy and Health Literacy Strategies

   Governments should develop and implement national strategies for financial literacy and health literacy that outline clear goals, objectives, and actions to improve these literacies. These strategies should be based on a comprehensive assessment of the needs of the population and should involve collaboration with various stakeholders, including relevant agencies, educational institutions, non-profit organisations, and the private sector. Regular monitoring and evaluation of the strategy's implementation and impact are essential to ensure its effectiveness and make necessary adjustments.

6. Enhance Access to Financial Services

   Improving access to financial services is critical for promoting financial inclusion and enhancing financial literacy. Governments should work to remove barriers to accessing financial services, such as high fees, lack of identification documents, and geographic barriers. Policies to promote digital financial services, mobile banking, and microfinance can help reach underserved populations and improve their financial literacy and economic opportunities.

7. Support Research on Financial Literacy, Health Literacy and Economic Growth

   Continued research on the relationship between financial literacy, health literacy and economic growth is essential to inform policy decisions and improve initiatives in these areas. Governments and research institutions should support studies that explore the impact of financial literacy on individual financial behaviour, financial inclusion, and macroeconomic stability, as well as the impact of health literacy on health behaviours

and choices and economic advancements. Research should also examine the effectiveness of different interventions and identify best practices for enhancing financial literacy and health literacy.

8. Foster International Collaboration

International collaboration can help countries share best practices and learn from each other's experiences in promoting financial literacy and health literacy. Governments should participate in international forums and networks focused on financial and health literacies and economic education. Collaborative initiatives, such as joint research projects, capacity-building programmes, and knowledge-sharing platforms, can enhance the global effort to improve financial literacy and health literacy, and support economic growth.

REFERENCES

2023. *European Commission.* September 12. Accessed October 10, 2023. https://eurydice.eacea.ec.europa.eu/national-education-systems/denmark/national-reforms-higher-education.

2023. *Kenan Institute of Private Enterprise.* May 1. Accessed September 22, 2023. https://kenaninstitute.unc.edu/kenan-insight/skills-in-the-workforce-why-they-matter-for-economies/.

Abreu, M., & Mendes, V. 2010. "Financial literacy and portfolio diversification." Quantitative Finance 10 (5): 515–28.

Acemoglu, D., & Autor, D. 2009. "Lectures in Labor Economics." *http://econ.lse.ac.uk/staff/spischke/ec53.*

Acemoglu, D., & Autor, D. 2011. "Lectures in Labor Economics." Manuscript. Http://Economics. Mit. Edu/Files 4689:22.

Afzal, M., Ur Rehman, A., Farooq, M. S., & Sarwar, K. 2011. "Education and economic growth in Pakistan: A cointegration and causality analysis." *International Journal of Educational Research 50* (5–6): 321–35.

Baidoo, S. T., Yusif, H. & Kojo Ayesu, E. 2020. "Improving loan repayment in Ghana: Does financial literacy matter?" *Cogent Economics & Finance 8* (1): 1787693.

Becker, G. S. 2009. *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Behrman, J. R., Mitchell, O. S., Soo, C. K., & Bravo, D. 2012. "How financial literacy affects household wealth accumulation." *American Economic Review 102* (3): 300–304.

Bejaković, P., & Mrnjavac, Ž. 2020. "The importance of digital literacy on the labour market." *Employee Relations: The International Journal 42* (4): 921–32.

Breton, T. 2014. "A human capital theory of growth: New evidence for an old idea." *Documentos de Trabajo: Economica y Finanzas.*

Buckingham, D. 2020. "Epilogue: Rethinking digital literacy: Media education in the age of digital capitalism." *Digital education review* (37): 230-239.

CEDEFOP. 2013. "European Center for Development and Training." *Piloting a European employer survey on skill needs: Illustrative findings.*

Chetioui, H., El Bouchikhi, Y., Sahli, M. M. & Lebdaoui, H. 2024. "An investigation of the impact of financial literacy on households' financial well-being: an emerging market study." *International Journal of Economics and Financial Issues 14* (3): 97–105.

Cinque, M. 2016. "'Lost in translation'. Soft skills development in European countries." *Tuning Journal for Higher Education 3* (2): 389–427.

Clichici, D., & Moagar-Poladian, S. 2022. "Financial literacy, economic development and financial development: A cross-country analysis." *Romanian Journal of European Affairs 22* (1).

Conrad, D. A. 2011. "The level-specific effects of education on economic growth: Evidence from four Caribbean countries." *The Journal of Developing Areas 45* (1): 279–90.

Copeland, M. 2005. *Socratic circles: Fostering critical and creative thinking in middle and high school.* Stenhouse Publishers.

DaSouza, D., & Jackman, M. 2023. "estimating the impact of education on growth in a small data-poor country: The case of Saint Vincent and the Grenadines." *Journal of the Knowledge Economy*, December. https://doi.org/10.1007/s13132-023-01589-y.

Dent, H. C. 1963. *The Educational System of England and Wales*. London: University of Oxford Press, p. 104

Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. 2023. *Future of jobs report 2023*. WEF. https://www.weforum.org/publications/the-future-of-jobs-report-2023/

Dixon, R. A. 2013. "Trends and issues in technology education in the USA: Lessons for the Caribbean." *Caribbean Curriculum 21*:47–79.

Dolphin, T. 2015. *Technology, globalisation and the future of work in Europe: Essays on employment in a digitised economy*. https://oms-www.files.svdcdn.com/production/downloads/academic/technology-globalisation-future-of-work_Mar2015.pdf

Ennis, R. H. 1964. "A Definition of Critical Thinking." *The Reading Teacher* 599-612.

European Commission. 2023. "Malta: Organisation of the Education System and of Its Structure." July 9, 2023. https://eurydice.eacea.ec.europa.eu/national-education-systems/malta/organisation-education-system-and-its-structure.

Friedland R. 1998. New estimates of the high costs of inadequate health literacy. In: *Proceedings of Pfizer Conference "Promoting Health Literacy: A Call to Action."* October 7–8, 1998, Washington, DC: Pfizer, Inc. pp. 6–10.

Gerardi, K., Goette, L., & Meier, S. 2013. "Numerical ability predicts mortgage default." *Proceedings of the National Academy of Sciences 110* (28): 11267–71.

Government of Malta. n.d. “Education.” Gov.Mt. Accessed September 27, 2023. https://www.gov.mt/en/Life%20Events/Pages/Moving%20to%20Malta/Education.aspx.

Grech, A. G. June 2015. “The Evolution of the Maltese Economy since Independence.” *MPRA Paper*. https://mpra.ub.uni-muenchen.de/68392/1/MPRA_paper_68392.pdf.

Grech, A. G., Micallef, B., & Zerafa, S. 2016. “Diversification and structural changes in the Maltese economy.” In *Understanding the Maltese Economy*, 15–24. Central Bank of Malta.

Hanushek, E. A. 2013. “Economic growth in developing countries: The role of human capital.” *Economics of Education Review 37*:204–12.

Higher Education Commission. 2022. “Higher education commission strategic plan 2022 - 2025: Building a responsive, relevant and resilient higher education sector.” *HEC*, 2022.

Hötte, K., Somers, M., & Theodorakopoulos, A. 2023. "Technology and jobs: A systematic literature review." *Technological Forecasting and Social Change* 194.

Howard, D. H., Gazmararian, J., & Parker, R. M. 2005. “The impact of low health literacy on the medical costs of Medicare managed care enrollees.” *The American Journal of Medicine 118* (4): 371–77.

ILO. 2020. *What is skills mismatch and why should we care?* https://www.ilo.org/skills/Whatsnew/WCMS_740388/lang--en/index.htm.

Johnston, R., & Kotzee, B. 2011. "Can't string a sentence together’? UK employers' views of graduates' writing skills." *Industry of Higher Education* 25 (1): 45-42.

Klapper, L., Lusardi, A., & Van Oudheusden, P. 2015. “Financial literacy around the world.” World Bank. Washington DC: World Bank 2:218–37.

Knight, J., & Motala-Timol, S. 2020. “Tertiary education in Mauritius: Increasing access through international program and provider mobility.” *Journal of Studies in International Education* 25 (3): 207–27. https://doi.org/10.1177/1028315320932321.

Kucharčíková, A. 2011. “Human capital–Definitions and approaches.” *Human Resources Management & Ergonomics 5* (2): 60–70.

Kyophilavong, P., Ogawa, K., Kim, B., & Nouansavanh, K. 2018. “does education promote economic growth in Lao PDR? Evidence from cointegration and granger causality approaches.” *The Journal of Developing Areas 52* (2): 1–11.

Leacock, C. J., Thompson, B. P., Burnett, A., & Obidah, J. 2007. *The Academic Achievement of Barbados Public Primary and Secondary Schools 1999 – 2005: A Comprehensive Report*. Education Evaluation Centre, UWI Cave Hill.

Lim, D. 1996. *Explaining economic growth: A new analytical framework*. Edward Elgar Publishing.

Lin, N. J. 2023. "How Singapore became an economic success, and what lies ahead" *Planner Bee*. August 17, 2023. https://plannerbee.co/learn-personal-finance/how-singapore-became-an-economic-success-and-what-lies-ahead/?campaignid=20387785186&adgroupid=&adid=&gclid=Cj0KCQjw7JOpBhCfARIsAL3bobfOgF6MW9qYNsumPCCvn9naz9MQjTG8nAQav6B5vCuZr7frmrN3rdEaAhAwEALw_wcB.

Loening, J. L. 2005. "Effects of primary, secondary and tertiary education on economic growth." Available at SSRN: https://ssrn.com/abstract=753647 or http://dx.doi.org/10.2139/ssrn.753647

Lusardi, A., & de Bassa Scheresberg, C. 2013. "Financial literacy and high-cost borrowing in the United States." National Bureau of Economic Research Working Paper. https://www.nber.org/papers/w18969

Lusardi, A., & Mitchell, O. S. 2014. "The economic importance of financial literacy: Theory and evidence." *American Economic Journal: Journal of Economic Literature 52* (1): 5–44.

Lusardi, A., & Tufano, P. 2015. "Debt literacy, financial experiences, and overindebtedness." *Journal of Pension Economics & Finance 14* (4): 332–68.

Malta Union of Teachers. n.d. "A Short Overview of the Education System in Malta." https://mut.org.mt/information/education-system-overview/.

Markhaichuk, M., & Panshin, I. 2022. "The Impact of digital literacy on labor productivity in the context of the educational environment transformation." *Eurasian Journal of Educational Research 97* (97): 86–102.

Mayhew, J. 2023. "Financial education in schools." UK Parliamentary Hansard, House of Commons. https://hansard.parliament.uk/commons/2023-09-06/debates/08AC85B5-1474-4AF7-A56B-6E77C5557D21/FinancialEducationInSchools.

Meeram, W. 2018. "The development of education national report of Mauritius by The Ministry of Education and Scientific Research." *Uom*, April. https://www.academia.edu/36457320/THE_DEVELOPMENT_OF_EDUCATION_National_report_of_Mauritius_By_The_ministry_of_Education_and_Scientific_Research.

Mehmood, B., Raza, S. H., & Mureed, S. 2014. "Health expenditure, literacy and economic growth: PMG evidence from Asian countries." *Euro-Asian Journal of Economics and Finance 2* (4): 408–17.

Menon, S. 2007. Singapore economy: An overview. MPRA Paper 4667, University Library of Munich, Germany, revised 15 Aug 2007. https://mpra.ub.uni-muenchen.de/4667/1/MPRA_paper_4667.pdf

Merriam-Webster. n.d. Accessed October 19, 2023. https://www.merriam-webster.com/dictionary/overeducated#:~:text=%3A%20having%20too%20much%20academic%20education,an%20advanced%20degree%20in%20math%20%E2%80%A6.

Ministry of Education - Government of Singapore. 2022. "Values in Action." MOE.Gov.Sg. February 18, 2022. https://www.moe.gov.sg/education-in-sg/our-programmes/values-in-action.

Ministry of Education - Government of Singapore. n.d. "Overview of Singapore Education System." Moe.Gov.Sg. Accessed September 26, 2023. https://www.moe.gov.sg/-/media/files/about-us/overview_of_singapore_education_system.pdf.

Mitchell, O. S., & Lusardi, A. 2011. "Financial literacy around the world: An Overview." *Journal of Pension Economics and Finance 10* (4): 497–508.

Mohamad, M. M., Saud, M. S., & Ahmad, A. 2009. "The need in training and retraining for TVET teachers in Malaysia." *Journal of Technical Education and Training* 1 (1).

Moore, T., & Morton, J. 2015. "The myth of job readiness? Written communication, employability, and the 'skills gap' in higher education." *Studies in Higher Education* 591-609.

Moore, W. 2006. "'A graduate in every household': The potential impact of a rise in the number of university graduates on output in Barbados." *Journal of Eastern Caribbean Studies 31* (3).

Moşteanu, N. R. 2020. "Using Internet and Edutech become a primary need rather than a luxury - The reality: A new skilled educational system - Digital University Campus." *International Journal of Engineering Science Technologies* 4 (6): 1-9.

Nutbeam, D. 2000. "Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century." *Health Promotion International 15* (3): 259–67.

Odhiambo, N. M. 2020. "Education and economic growth in South Africa: An empirical investigation." *International Journal of Social Economics 48* (1): 1–16.

OECD. 2017. "Education in Costa Rica: An engine for development", in *Education in Costa Rica*, OECD Publishing, Paris, https://doi.org/10.1787/9789264277335-5-en.

Paşa, A. T., Picatoste, X., & Gherghina, E. M. 2022. "financial literacy and economic growth: How Eastern Europe is doing?" *Economics 16* (1): 27–42.

Payne, Z. A. 2022. "Financial literacy and the business performance of Grenadian small business owners: A Non-experimental correlational study." Unpublished doctoral thesis, Northcentral University School of Business. https://www.proquest.com/docview/2719450157?pq-origsite=gscholar&fromopenview=true&sourcetype=Dissertations%20&%20Theses

Plane, P., & Da Piedade C. 2018. "Mauritius: When the impossible becomes reality." Entreprenante Afrique, December 6, 2018. https://www.entreprenanteafrique.com/en/mauritius-when-the-impossible-become-a-reality/

Prayitno, P. H., Sahid, S., & Hussin, M. 2022. "Social capital and household economic welfare: Do entrepreneurship, financial and digital literacy matter?" *Sustainability 14* (24): 16970.

Radivojević, V., Kahrović, E., Krstić, M. 2019. "Population skills as an indicator of European countries' competitiveness in the modern economy." *Vojno Delo 71* (5): 105–16. *DOI:10.5937/vojdelo1905105R* 71

Robels, M. M. 2012. "Executive perceptions of the top 10 soft skills needed in today's workplace." *Business Communication Quarterly* 75 (4): 453–465.

Sanders, L. M., Thompson, V. T., & Wilkinson, J. D. 2007. "Caregiver health literacy and the use of child health services." *Pediatrics 119* (1): e86–92.

Šetek, J., Alina, J., & Poláčková, E. 2018. "Economic connections of the public sector with the health literacy of the population." *Socio-Economic and Humanities Studies 8* (2): 45–59.

Skills & Employability. n.d. Accessed October 8, 2023. https://www.ilo.org/caribbean/areas-of-work/emp-promotion/skills/lang--en/index.htm.

Sofroniou, N., & Zukersteinova, A. 2013. *Piloting a European employer survey on skill needs: Illustrative findings. Research Paper No 36*. CEDEFOP-European Centre for the Development of Vocational Training.

Spycher, S. 2006. "Okonomische Aspekte Der Gesundheitskompetenz." BASS, Büro Für Arbeits-Und Sozialpolitische Studien, Berne. [Transl. Economic Aspects of Health Literacy." BASS, Office for Labor and Social Policy Studies, Berne]

Stango, V., & Zinman, J. 2009. "Exponential growth bias and household finance." The *Journal of Finance 64* (6): 2807–49.

Stiglitz, J. E. 2012. "The Mauritius miracle." Project Syndicate. July 22, 2021. https://www.project-syndicate.org/commentary/the-mauritius-miracle-2011-03.

The Centre for Social Justice. 2022. "On the money: A roadmap for lifelong financial learning." https://www.centreforsocialjustice.org.uk/library/on-the-money.

Thompson, B. P., Warrican, S. J., & Leacock, C. J. 2011. Education for the future: Shaking off the shackles of colonial times. In D. Dunkley (Ed.). *Readings in Caribbean history and culture: Breaking ground* (pp. 61 – 86), Lexington Books. pp. 67-69

UNESCO. 2016. "Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4." https://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf.

UNESCO. n.d. What you need to know about literacy. Accessed October 2023, 19. https://www.unesco.org/en/literacy/need-know#:~:text=Beyond%20its%20conventional%20concept%20as,rich%20and%20fast%2Dchanging%20world.

Vernon, J. A., Trujillo, A., Rosenbaum, S. J., & DeBuono, B. 2007. *Low health literacy: Implications for National Health Policy*. Washington, DC: Department of Health Policy, School of Public Health and Health Services, The George Washington University. https://hsrc.himmelfarb.gwu.edu/sphhs_policy_facpubs/172/

Warrican, S. J. 2005. *Hard words: The challenge of reading and writing for Caribbean students and their teachers*. Kingston, Jamaica: Ian Randle.

Weil, D. N. 2014. "Chapter 3 - Health and economic growth." In *Handbook of economic growth*, edited by Philippe Aghion and Steven N. Durlauf, 2:623–82. Elsevier. https://doi.org/10.1016/B978-0-444-53540-5.00003-3.

Weiss, B. D., & Palmer, R. 2004. "Relationship between health care costs and very low literacy skills in a medically needy and indigent Medicaid population." *The Journal of the American Board of Family Practice 17* (1): 44–47.

Wilson, R., & Briscoe, G. 2004. "The impact of human capital on economic growth: a review." *Third report on vocational training research in Europe: Background report.* https://www.cedefop.europa.eu/files/BgR3_Wilson.pdf

World Bank. 2023. "The World Bank in Costa Rica." October 2023. https://www.worldbank.org/en/country/costarica/overview.

Zeng, S. 2012. “Bank non-performing loans (NPLS): A dynamic model and analysis in China.” *Modern Economy 3* (01): 100–110.

Zervoudi, E. K. 2020. “Fourth industrial revolution: Opportunities, challenges, and proposed policies.” IntechOpen. doi: 10.5772/intechopen.90412

Zhang, P., Zhang, M., Zhou, Q., & Zaidi, S. A. H. 2022. “The relationship among financial inclusion, non-performing loans, and economic growth: Insights from OECD countries.” *Frontiers in Psychology* 13:939426. doi: 10.3389/fpsyg.2022.939426