ICT in Education Policy and Strategy for Saint Lucia
2019–2022

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Foreword by the Minister

Technology is now fully pervasive in the global context. Digital technology in particular, has become central to how we communicate, work, live and learn. A 21st Century Education System must prepare learners to be fully functional in a rapidly changing digital environment. My Ministry has set out on some ambitious targets for technology in education, that are in keeping with the Government's broader vision for improving sustainable and equitable access to technology, while improving student performance, opportunities for lifelong learning and increasing opportunities for employment in Information and Communication Technology (ICT) services.

This ICT in Education Policy and Strategy for Saint Lucia clearly outlines the guiding philosophy that shaped the development of the policy document. Our vision for "*A literate, creative, productive, inclusive and competitive society engendered though the use of appropriate digital technologies*" is undergirded by a set of values and principles that place Equity, Access, Creativity, Capacity Building, Partnership and Community Development in sharp focus. The strategic framework stands on the four Policy Priority Areas of Gender Equity, Student Success, Accessible and Affordable Education for All and Community Development. This document clearly articulates the policy statements under each of these four Policy Priority Areas.

As a guide, this policy and strategy outlines what my Ministry believes is the best path to achieving sector wide and national goals for ICT in Education. Consistent with the Education Sector Development Plan (2015 – 2020), the principle herein is the same, as this policy espouses "education as the vehicle for economic and social change." My Ministry is fully cognizant of Saint Lucia's context, the implications of the cost of technological resources and capacity development. For these reasons, the strategy embraces the smart use of technology to lower cost and develop sustainable gains by leveraging technology in ways that make optimal use of available resources.

I am thankful for the Commonwealth of Learning (COL) for guiding and supporting the development process of this ICT in Education Policy and Strategy for Saint Lucia. Their continued support will no doubt, be very valuable in helping to realize many of this policy's strategic goals. The staff of the Ministry and I are very grateful for the generous contributions of the many stakeholders who participated during the consultation period.

As the Minister responsible for Education, Innovation, Gender Relations and Sustainable Development, I am pleased to endorse and adopt this new guide and framework for the integration of ICT in Education Policy and Strategy in Saint Lucia. I acknowledge that there have been other attempts before to adopt or implement similar policies. This is an opportunity that cannot be missed for my Ministry to embark on a more surefooted approach to the effective integration of ICT. I therefore pledge my commitment and my Ministry's support to achieving every policy outcome in this ICT in Education Policy and Strategy.

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Minister responsible for Education, Innovation, Gender Relations and Sustainable Development

Acknowledgements

Acronyms

CCTI	Commonwealth Certificate for Teachers
CFT	Computer Framework for Teachers
COL	Commonwealth of Learning
CSEC	Caribbean Secondary Examinations Certificate
CXC	Caribbean Examinations Council
ECE	Early Childhood Education
EMIS	Education Management Information System
ESDP	Education Sector Development Plan
GE	Gender Equity
GOSL	Government of Saint Lucia
ICT	Information and Communication Technology
ICTE	Information and Communication Technology in Education
ISP	Internet Service Provider
IT	Information Technology
LMS	Learning Management System
MOE	Ministry of Education, Innovation, Gender Relations and Sustainable Development
NICT	National ICT Centre
ODL	Open and Distance Learning
OECS	Organisation of Eastern Caribbean States
OER	Open Educational Resources
PPA	Policy Priority Area
PSM	Policy Success Model
SALCC	Sir Arthur Lewis Community College
SNL	Special Needs Learners
STEM	Science, Technology, Engineering and Mathematics
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
USF	Universal Service Fund

Executive Summary

This document represents the commitment of the Ministry of Education, Innovation, Gender Relations and Sustainable Development (MOE), Government of Saint Lucia, to have in place a strategic approach to the integration of ICT in Education (ICTE) for Saint Lucia.

The development of the policy reflects a strategic partnership between the MOE and the Commonwealth of Learning (COL). Over the past decade and a half, there have been several attempts at establishing an ICTE policy for Saint Lucia. Whilst draft policies have been prepared, none were fully ratified nor implemented. The challenges of policy formulation and implementation as a key concern of the MOE eventually led to an engagement with COL, which facilitated the development of the ICTE policy.

The development of the policy adopted a multi-stakeholder approach. Some of the activities undertaken included: desk research; review of past policy documents; stakeholder online surveys; and stakeholder face-to-face consultations. Stakeholders included a wide range of participants: students, principals, teachers, policy officers, curriculum specialists, administrators, non-governmental organisations and the business community. Stakeholder engagement took place over a six-week period with the goals of soliciting input on the vision of integrating ICTE in Saint Lucia and helping to articulate a guiding philosophy and a set of strategic priorities for the policy that address local needs and global standards.

The policy is organised into several sections. The background and policy context in Section 1 provides the rationale for the need for an ICTE policy for Saint Lucia. It is widely accepted that the desired educational outcomes in the 21st century have significant implications for the role of ICTE and that countries choosing to ignore this reality do so at their peril. It is inconceivable that effective education in a digital age can take place without leveraging the capability of ICT. The 2015–2020 Education Sector Development Plan for Saint Lucia, cognisant of such a reality, calls for an expanded role for ICTE as a tool to improve educational outcomes for learners and as a means of improving efficiencies throughout the education system.

Section 2 outlines what is referred to as the policy success model (PSM). The PSM articulates the guiding philosophy of ICTE, including vision, mission and values. Section 3 outlines the strategic framework for the ICTE policy, describes the strategic policy priority areas (PPAs) and enablers, and presents a policy strategy map as a logic model. The strategic policy results, including seven policy priority areas (Gender Equity, Special Needs Learners, STEM Disciplines, Early Childhood Education, TVET, Digital Citizenship and Community Development), are outlined in Section 4. The policy results are otherwise known as policy objectives, and the initiatives are also known as policy statements.

While the policy priorities, the policy results and their corresponding initiatives articulate the parameters of success, there are several "internal" drivers or enablers that must be optimally configured to support the strategic policy results. The policy enablers are outlined in Section 5. These enablers cover several important dimensions, which include: infrastructure and connectivity; teaching, learning and assessment; management and administration; human resources and capacity building; open educational resources; online learning and licensing;

policy governance; and e-waste. Each policy priority area and its accompanying policy results will implicate one or more of these enablers. Hence, a set of corresponding policy statements are articulated for each policy result.

The potential of an ICT policy can only be realised if it is successfully implemented. Section 6 presents the implementation strategy for the policy and identifies key activities to be performed, the resources needed and the assumptions.

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Introduction and Policy Context

Background

Saint Lucia's education system is in transition from its colonial legacy to a system being transformed to serve the plethora of needs of the country as a developing economy. Over the years, several shifts have taken place towards that goal:

1. The movement away from Cambridge and London Ordinary Level (O Level) examinations to Caribbean Secondary Examinations Certificates (CSECs), administered by the Caribbean Examinations Council (CXC). This move has allowed for a more culturally and regionally relevant curriculum.
2. The replacement of Advanced Level (A Level) Certificates with the Caribbean Advanced Proficiency Examination.
3. The implementation of universal secondary education, which saw a growth in the number of schools and teachers. Saint Lucia now has 23 secondary schools nationwide with over 1,023 teachers.
4. The amalgamation of a number of colleges, co-located at Morne Fortune, into Sir Arthur Lewis Community College (SALCC). The college has five divisions with ten departments offering: the final two years of high school; associate degrees in a number of technical, vocational and professional fields; and, in collaboration with the University of the West Indies, baccalaureate programmes in a limited number of areas.

During this period of transformation, several trends have been noted (Government of Saint Lucia, 2016), including:

1. Declining school enrolment in public primary and secondary schools. Several primary schools around the island have surplus capacity.
2. Declining academic performance in many subject areas, particularly in mathematics and English at the CXC level.
3. A higher percentage of dropouts amongst boys at the secondary level. At the primary level, boys also make up a larger percentage of repeaters.
4. A growing disparity between the number of male and female teachers in the school system, particularly at the primary level.
5. A growing disparity in the academic performance of boys and girls.
6. Declining investment in education as a percentage of the national budget.
7. An increasing number of learners with special needs.

While the above trends are not unique to Saint Lucia, they require a deliberate strategy to avert any potential negative impact on outcomes for learners.

The statistics reported in the education digests published by the Ministry of Education (MOE) or the Organisation of Eastern Caribbean States (OECS) do not delve into concerns about the education system from the viewpoints of its various stakeholders. In 2014, surveys[1] of teachers, students, administrators and other stakeholders on various aspects of the education system, including quality of education, student achievement, quality of teaching and learning, and adequacy of physical resources, revealed a significant level of dissatisfaction with these and other elements of the education system. Many of the survey participants called for major innovation, revamping of curriculum, broadening of pedagogical approaches, teacher development, improved facilities, enhanced digital literacy, and better student achievement. The integration of ICT in education was seen as a strategy that could have a positive long-term impact on the quality and effectiveness of education in Saint Lucia.

The 2015–2020 Education Sector Development Plan (ESDP) of the MOE asserts that quality education "cannot be fully accomplished by remaining attached to antiquated teaching methods and technologies" (Government of Saint Lucia, 2014, p. 15). The ESDP identifies several priorities, including technology integration and innovation in teaching and learning. Two key objectives are using ICT to enhance student performance and to lower the costs of learning resources and educational administration, given the dearth of financial resources for investment in education. The formulation of an ICTE policy is therefore imperative if the potential of ICT is to be harnessed by the education system in Saint Lucia.

Policy Context

Regional and International Forces

The need for an ICTE policy is influenced by national, regional and international factors. At the international level, Saint Lucia embraced the UN's Sustainable Development Goals (SDGs). Goal 4 of the 17 SDGs is: "Ensure inclusive and quality education for all and promote lifelong learning."[2] Prior to this, Saint Lucia had committed to the six Education for All (EFA) goals that were to be achieved by 2015.[3] The significance of these goals is that each of them can be positively impacted by strategically leveraging ICT as a tool. Given the scope of the goals, an ICTE policy for Saint Lucia must note the lack of financial resources to support major investment in education, the ubiquity of Internet-based technology, the potential of ICT to expand access to education, and the opportunity to use ICT to lower the cost of education.

At the regional level, the 2012–2021 OECS Education Sector Strategy articulates several strategic imperatives and cross-cutting priorities. One cross-cutting theme calls for "integrating technology in the classroom and in education" (OECS, 2012, p. 28).

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[1] Surveys were conducted by Dr. Harvi Millar of Management Technologies as part of a process for the development of the 2015–2020 Education Sector Development Plan for Saint Lucia.
[2] http://www.un.org/sustainabledevelopment/education/
[3] UNESCO, Education for All (EFA) Goals, Retrieved from
http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-all/

National Forces

In 2010, Saint Lucia developed and ratified a National ICT Policy and Strategic Plan. The policy emphasises the role of ICT in education. The policy objective specific to education states: "To foster the use of ICT in education to develop human capacity, enhance competitiveness, modernize the teaching and learning environment, facilitate equity of access, and to develop individuals who are capable of functioning effectively in a technologically driven society" (Government of Saint Lucia, 2010, p. 10). Eight policy statements commensurate with the objective are articulated.

Since 2000, the MOE has undertaken the development of Education Sector Development Plans (ESDPs) to guide its activities. The 2000–2005, 2009–2014 and 2015–2020 plans all call for the integration of ICT in education. It is therefore clear that a national commitment to ICTE exists and needs to be encapsulated in a ratified policy framework and implementation plan.

Recognising the value of ICTE, the MOE since 2002 has made several attempts to develop, ratify and implement a national ICTE policy. ICTE policies were drafted in 2002, 2004 and 2013. This current policy builds upon the principles embodied in the earlier drafts, taking into consideration that a lot has changed in terms of the scope, capability, cost and accessibility of ICT.

ICT Potential in Education

In today's world, the ubiquity of technology cannot be ignored. ICT has become a part of our daily lives, so there is the expectation that ICT should feature significantly in the process of educating our citizens. The present policy is predicated on the widely held view that ICT can be a major catalyst in achieving meaningful outcomes across various segments of the education system, which include but are not limited to: administration and management, student achievement, access to quality educational resources, professional development for teachers, and the development of locally relevant content. Achieving these outcomes requires sufficient resources as well as the proper application of ICT.

In early childhood education (ECE), for example, ICT can be used to support a range of learning and development processes in children: communication skills, language skills as well as the ability to collaborate through children learning and playing together. ICT use for children is not without risks, such as physical and safety risks, exposure to harmful content, and invasion of children's privacy (Umayahara, 2014). These risks can be minimised with proper supervision and limitations on the duration of use. Other research (Drigas & Ioannidou, 2013) shows that ICT can positively impact learning outcomes for learners with special needs (who benefit tremendously from independent learning), and learning outcomes in STEM- and TVET-related courses. ICT can facilitate new and innovative pedagogy and andragogy that promote active learning. ICT can help to improve access to quality global educational resources across the educational spectrum. Also, ICT use can help achieve efficiencies in school administration and management, lower transaction costs and improve the level of integration throughout the education system.

Status of ICTE

There are several ICTE initiatives in place in Saint Lucia. Some of these are reported below, based on the latest report on the status of ICTE in Saint Lucia.[4]

Laptop Programme
Saint Lucia had a laptop programme which involved providing students in Form 4 with a free laptop. Teachers were also provided with laptops. The programme received mixed reviews regarding its effectiveness and sustainability.

Infrastructure
Over the past decade there have been significant improvements in the ICT infrastructure in schools. Practically all primary and secondary schools have computer labs. All schools have access to some level of broadband Internet connectivity. However, the bandwidth is inadequate.

A significant portion of the ICT hardware at several schools is not operational. In cases where some schools are located near the sea, salty air has caused significant levels of corrosion, leading to equipment malfunction. There is a plan afoot to improve bandwidth to over 100 Mbps in the near future; this is an intended deliverable under the CARCIP program.

In addition to the quality of the equipment, the quantity is insufficient. The current aggregate student-to-computer ratio has improved from 19:1 in 2010 to 11:1 in 2016 but is still quite inadequate. If disaggregated by school level, the ratios improve as we go from primary to tertiary. Teachers indicate that it is difficult to conduct ICT courses or integrate ICT when each student does not have access to a computer. Most computer labs have an average capacity of 17–19 students. Class sizes are significantly higher, requiring classes to be split.

Professional Development
Both teachers and principals cite several gaps in their ICT competence and hence identify professional development as a critical priority. The MOE has recently implemented a professional development programme aimed at improving the ICT skills of teachers at the primary and secondary level.

ICT-related Activities
Though both teachers and principals believe ICT can positively impact learning, their engagement with ICT is at relatively basic levels. Principals do not take full advantage of ICT to improve their efficiency and productivity in administrative functions such as record keeping, student performance analysis, student report cards and communicating with parents. There is significant opportunity for principals to leverage the power of ICT.

Teachers also show limited use of ICT. The activities undertaken are focused largely on activities that serve the teachers directly, such as: doing presentations, searching for materials for

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[4] Millar, H. (2017). *The status of ICT in education in Saint Lucia*. Submitted to the Commonwealth of Learning (unpublished).

class preparation, sending emails and sourcing materials to explain concepts to individual students. Integration of ICT in activities that are focused on higher-level cognition does not seem to be prevalent.

Both teachers and principals indicate several barriers to ICT integration. These include, amongst others: insufficient numbers and poor quality of computers; the lack of meaningful educational resources loaded onto the computers provided to students; low bandwidth; the lack of interactive whiteboards; the inadequacy of their ICT competence; and the lack of pedagogical knowledge on how best to integrate ICTE.

Issues for ICT Integration in Education

Some of the issues that the ICTE policy would address include:

- **A disjoint ICT Curriculum:** Curriculum reform must address integration across all subjects to include ICT and not just as ICT as a separate course.
- **Inadequate Commitment to ICT:** Improving the level of buy-in for ICT integration among all stakeholders and mitigating poor connectivity, addressing the lack of access to computers, lack of knowledge, etc.
- **Insufficient Resources and ICT Support:** Improving the level of resources and ICT support in schools for effective utilisation of ICTs.
- **The Continuing Need for Professional Development for Teachers:** Developing a critical mass of ICT-trained teachers to effect a magnitude level of improvement in ICT integration in education.
- **Lack of ICT for Special Needs:** Using ICTs to improve learning outcomes for learners with special needs.
- **Underappreciation for Monitoring and Evaluation of ICT Impact:** ICT integration requires significant levels of investment in time and money. Monitoring and evaluation of ICT initiatives must be paramount.
- **Insufficient and Inadequate Educational Software:** Beyond access to computers and bandwidth, teachers must become familiar with ICT-related educational resources, such as education management information systems (EMISs), learning management systems (LMSs) and the myriad of tools for engaging students using free and open source software.
- **Delay in Mainstreaming Open Educational Resources:** A critical factor for success is the creation of local open educational resources (OER). Fostering the use and creation of OER is important for sustainable integration of ICT in education.

The 2015–2020 Strategic Educational Priorities

The 2015–2020 ESDP (Government of Saint Lucia, 2014) articulates a number of strategic priorities related to ICTE. Some of these are highlighted with implications in Tables 1 and 2.

Table 1. Summary of ESDP Cross-cutting Themes.

2015–2020 ESDP Cross-cutting Themes	ICT Implications
Alignment of purpose for the Education System **Service Excellence and System Integration** **Educational Leadership, Governance and Accountability** **Resource Stewardship and Risk Management**	The education system must help to enable the country's national development agenda. That agenda, as articulated in the National ICT Policy, requires the building of a knowledge society in which ICT plays a pivotal role. The effective deployment of ICTE can: contribute to alignment with the national economic agenda; create efficiencies in the education system and enhance the quality of service delivery to all stakeholders (learners, parents, teachers and administrators); improve governance and accountability by enabling improved system integration through data analytics and knowledge management; and assist with better resource stewardship by enabling an enterprise-wide resource view of the education system.

Table 2. Summary of ESDP Subsector Themes.

2015–2020 ESDP Subsector Themes	ICT Implications
Education as a Human Right **Learner Achievement** **Quality of the Education System** **Education Infrastructure and Capacity**	ICT can play a strategic role in the democratisation of education by improving access to quality education nationally, regionally and internationally. The ubiquity of ICT makes it possible to bridge the divide between rich and poor and allows ability and aptitude to become greater determinants of student success than social class or wealth. The effective harnessing of ICT can assist in-school and out-of-school learners, the working and the unemployed, the young and the old. All can accomplish their educational goals. The traditional brick-and-mortar notion of educational infrastructure is fast becoming a thing of the past. With eLearning as a critical component of national education systems everywhere, ICTE in Saint Lucia must meet the growing demand for online learning.

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The Policy Success Model

The policy success model (PSM) articulates a guiding philosophy for ICTE, a vision and mission statement and core values that must underpin the use of ICTE, and a set of priorities that is evidence based. The ICTE policy must be supported by a strong philosophy on ICTE and a values framework that will guide behaviours and norms with respect to ICT use. The policy priority areas are the principal dimensions of focus that will drive the vision and mission for ICT use in education. The PSM reflects the collective wisdom and viewpoints of the various stakeholders engaged throughout the policy development process.
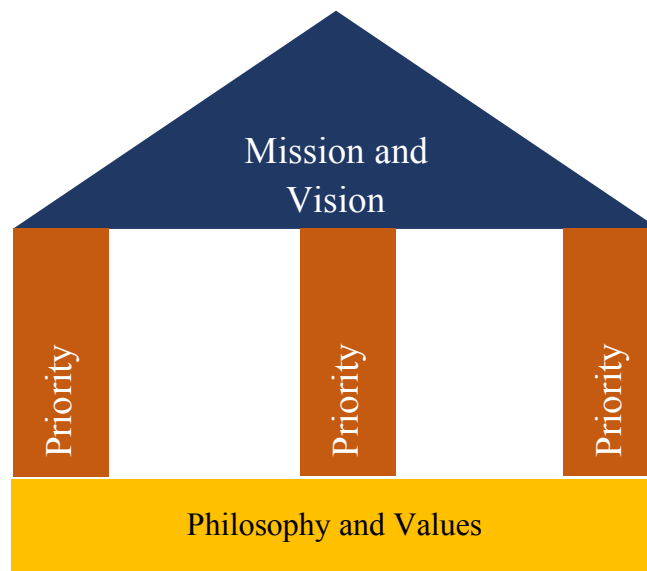
Figure 1. The policy success model

Guiding Philosophy for ICTE

A critical success factor for system-wide adoption and deployment of ICTE is the existence of a guiding philosophy that makes very clear to all engaged and impacted what are the core beliefs regarding ICTE. Embracing the philosophy will nurture synergy, commitment, consistency and efficiency in the application of ICTE. The following philosophical statements embrace and build upon the foundations of the previous draft ICTE policies.

- Accessibility to and utilisation of knowledge are fundamental to national development.
- All students must have access to modern computer-based tools to make viable contributions to society.
- ICTE facilitates lifelong learning as well as new and innovative ways of thinking.

- The effective deployment of ICTE can help to democratise education, thereby promoting equity and education for all.
- The integration of ICT in the education system has significant potential for positively impacting Saint Lucia's economic growth.
- Knowledge creation and development and the assimilation and utilisation of indigenous knowledge are also essential to citizens' development.
- The integration of ICTE will increase the creation of knowledge and technologies, in particular software solutions and information systems that are relevant and instrumental in the development processes of all sectors of society.
- ICT using innovative methods allows students greater control over their learning and thus enables them to develop skills at their own level and pace.
- The potential of all individuals, including learners with special needs, adult learners, etc., can be enhanced through the effective use of ICT.
- ICT can promote co-creation in education amongst students, between students and teachers, and amongst teachers. Co-creation of digital resources can without difficulty be scaled beyond national boundaries.
- The utilisation of computerised management tools can strengthen the institutional capacity of the MOE, district education offices and schools.
- The implementation and sustenance of ICT projects in the education system must be done by a partnership approach involving the community, private and public organisations, and funding agencies.
- ICT can help to lower the costs associated with the delivery of quality education.
- The copyrights laws of Saint Lucia must be respected by all individuals involved in the incorporation of ICT into the education system.
- Releasing educational materials developed with public funds under open licences is useful for sharing and creating new educational materials without duplication of effort and respects the rights of the copyright holder.
- ICTE prepares students to be ready for the digital world.
- Technology can be used to make the teaching–learning process more interactive and engaging, leading to improved learning outcomes.
- ICT can enhance the efficiency and effectiveness of educational delivery.

Vision

A literate, creative, productive, inclusive and competitive society engendered though the use of appropriate digital technologies.

Mission

To enhance and extend access to quality teaching, learning and administration across the entire education system, thereby enabling every learner to be skilled in digital learning and contribute significantly towards national development.

Values/Principles

Equity and Access
Equal access to information and resources for all is fundamental to the development of the citizens of Saint Lucia. To this end, each learner must be provided with access to up-to-date ICT tools. All educational materials developed with public funds will be released under an open licence to enable sharing.

Creativity and Personal Development
ICT resources can be used to enhance the creative potential of all individuals and to allow students greater control and flexibility over their learning, thus enabling them to develop skills at their own level and pace.

Economic and Social Development
ICT is a critical asset for any developing nation and a catalyst for overcoming the challenges faced by small open economies. This underscores the importance of investing in the integration of ICT in the education system.

Reform and Capacity Building/Change Management
The introduction of ICT in the education sector — in curriculum, pedagogy, andragogy and management — necessitates enhancing the knowledge and skills of all education officers, principals and teachers in the system by continuous professional development.

Partnership and Community Involvement
The implementation and sustainability of ICT initiatives in the education system will be accomplished through a partnership approach involving the community, private and public organisations, and international development agencies and partners, such as the Commonwealth of Learning, European Union, World Bank, and UNESCO.

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The Strategic Framework

Policy Priority Areas

Analysis of the data on the status of ICTE in Saint Lucia, coupled with feedback arising from wide stakeholder engagement via online surveys and face-to-face meetings, reveals several areas or dimensions within which policy results are to be framed. For the purposes of this policy, we refer to these broad dimensions or categories as policy priority areas (PPAs). Within each PPA are several desired objectives linked to the current status of ICT deployment in the education system; we will refer to these objectives as desired policy results (DPRs). Hence, in terms of traditional nomenclature, PPAs are the policy goals and DPRs are the policy objectives. The PPAs for this policy are divided into two broad categories. One category focuses on strategic outcomes for ICTE, whilst the other focuses on the operational outcomes (enablers) that drive the strategic outcomes.

Strategic PPAs

Gender Equity: The deployment of ICTE must embrace gender equity and in so doing must ensure that both women and men have access to ICTs for teaching and learning. Further, given ICT's potential role as a tool for development, and given that in developing economies, women face particular challenges in terms of poverty, under-education, parenting, etc., there is a need to go beyond prohibiting discrimination to a more proactive stance on using ICT as a tool to better the lives of women in Saint Lucia.

Student Success: One of the major responsibilities of the education system is to empower all learners to succeed and become productive contributors to the national economy. Enabling learners to succeed requires a renewal of the education process, which is engendered through the transformation of teaching and learning practices. Such transformation must attempt to retain progress to date whilst recognising that the "cohort-based" model limits the education system's ability to recognise and cater to the unique characteristics and learning styles of individual learners. Hence, student success will require a collaborative learning process wherein students are placed at the centre and educators become facilitators and mediators, guiding learners through authentic experiences that empower them to succeed.

- *Learners with Special Needs:* These learners can realise unique opportunities to add value to their learning experiences through the use of ICT.
- *STEM Disciplines:* The declining performance of students in STEM-related courses is of concern to the MOE and parents alike. ICT can provide tremendous opportunities for experiencing STEM courses in new and innovative ways. A number of ICT tools have been

developed for STEM education (Derby & Gras-Velasquez, 2016). Making learning fun and active and effectively deploying ICT tools can significantly improve student achievement.

- ***Early Childhood Education:*** There is much debate in the literature on the use of ICT in ECE. Well-trained, ICT-skilled ECE educators can engage children in problem solving, discussions, creative activity and collaborative work. Risks such as cyberbullying, violation of privacy, social isolation, the physical effects of prolonged computer use, and exposure to harmful content, including sexual content and violence, all need to be managed.
- ***TVET and Lifelong Learning:*** Technical and vocational education and training offers tremendous potential for leveraging ICT (Latchem, 2017). The ability to use ICT to facilitate distance teaching and learning is extremely beneficial to individuals who are typically not able to attend daytime classes. The completion of programmes through eLearning offers a solution. ICT in TVET can also facilitate administrative duties, access to international experts, and prior learning assessment, amongst other activities.

Accessible and Affordable Quality Education for All: Saint Lucia has embraced the philosophy of "Education for All," and in pursuit of that goal, the Government of Saint Lucia (GOSL) has implemented universal secondary education. However, issues such as poverty, physical location, family structures, gender, etc. often mean that not everyone has the same access to affordable quality education. Not all schools are equal in their resource profiles, physical structures, teacher quality or administrator quality. A potential strategy for accelerating parity in the education system involves leveraging ICTE to develop and share OER as well as to expand the time–space continuum through open and distance learning (ODL). Additionally, ICT use can help to improve the affordability and accessibility of education.

Community Development: Communities throughout Saint Lucia face the perennial challenge of improving the living conditions of their members. The power of ICTs can be exploited to promote local development and trade with the outside world. In addition to physical communities, there are marginalised/under-served communities of people whose lives need to be improved. These groups include but are not limited to women, persons with disabilities, the unemployed, the poor, youths and the elderly. Many of these under-served communities are being addressed through a network of National ICT Centres (NICTs) around the country. There are still significant gaps between demand for ICT-based services and supply. ICT integration in education must therefore serve the needs of marginalised/under-served communities.
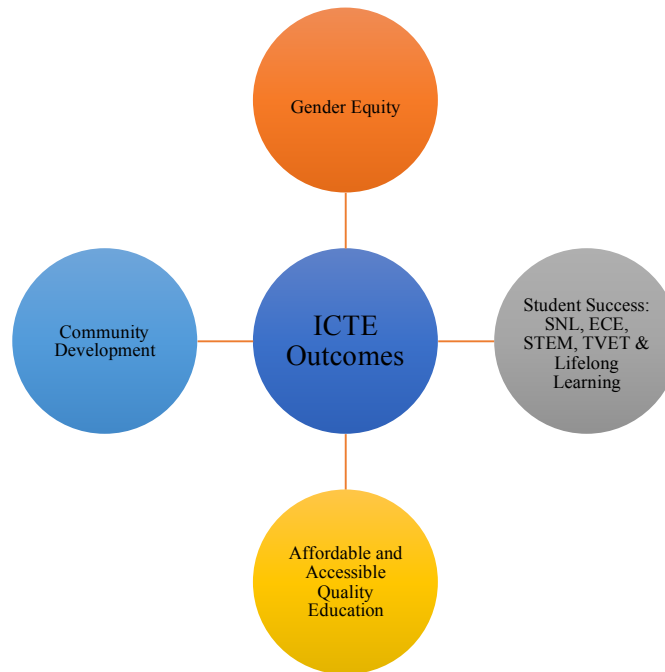
Figure 2. Strategic PPAs for ICTE

Enablers

Infrastructure and Connectivity: Effective use of ICTE requires sufficient quality infrastructure and connectivity. The report on the current state of ICTE[5] cites infrastructure and connectivity issues as critical barriers to success. There is a need to improve the bandwidth available to schools, the number of functioning computers in schools, and the availability of technical resources to repair and maintain equipment in schools.

Teaching, Learning and Assessment: ICTE must support and enable innovative pedagogy and student assessment. The capacity amongst teachers to fully integrate ICT in teaching and learning is currently inadequate. Whilst the need for continuous capacity building of teachers is strong, it is also important to motivate them to use ICTs effectively. There is a need to rethink assessment practices in the light of the e-tests to be introduced by the CXC.

Management and Administration: The opportunities for achieving efficiencies in administration and lowering operating costs are numerous. The potential for the use of the EMIS to gather and analyse data on student performance, conduct system-wide research to guide education policy, and evaluate investments in new programmes, technologies and education strategies is significant.

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[5] Millar (2017).

Figure 3. Policy enablers for ICTE

Human Resources and Capacity Building: It goes without saying that without sufficient capacity and skills depth amongst educators and administrators, the task of realising ICT integration in education will be a daunting if not nearly impossible one. To date, the MOE has commenced a programme focusing on the development of ICT skills amongst teachers at the primary and secondary school levels. The goal is to develop capacity throughout the entire system.

Open Educational Resources and Open and Distance Learning: As the Internet continues to grow and schools become better equipped, teachers and administrators become better trained, and as communities become better served with ICT resources, there will be a tremendous opportunity to facilitate online learning for several constituencies (the poor, the elderly, the unemployed, the underemployed, etc.). Further, as educators become better skilled, the opportunity to create and license local content will be significant. Educators will have the opportunity to collaborate in producing OER for consumption across the education system.

ICT Governance: The long-term sustainability of the ICT infrastructure in the education system requires effective governance and oversight. Currently, there is a single individual within the MOE responsible for ICTE, and a small group of technicians responsible for maintenance and repairs. There is a need to strengthen ICT for governance, with strategic oversight for ICTE. Given the complexity of ICT integration in education, ICT governance must be given attention.

Digital Citizenship: Digital citizens are those who use the Internet regularly to engage in society, politics, and government — in other words, regular users of the Internet. Digital citizenship in the context of the education system involves the creation of a culture of safe and responsible use

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of technology in and out of school. As schools move towards greater integration of ICT in teaching and learning, they become responsible for ensuring good digital citizenship amongst students (Ribble, 2015).

E-Waste: The sustained use of physical ICT resources in education will lead to electronic waste. It is important to educate users (students, teachers and principals) about the responsible disposal of digital tools, especially batteries, microchips, etc., that can add to e-waste.

Strategic Alliances: The GOSL's desire to fully integrate ICTE requires significant levels of investment, and in order to implement the policy effectively, there is need for creating strategic partnerships with donors, ISPs, community organisations, local businesses and the like. Given the resource reality of Saint Lucia, the GOSL also needs to develop strategic partnerships with international technology providers, inter-governmental agencies and donor organisations.

The Policy Strategy Map

The ICTE policy will play the role of a catalyst to realise the priorities articulated in the Education Sector Development Plan 2015–2020. As a strategic vehicle, the ICTE policy must be constituted in such a manner that its components show the internal consistency necessary to allow a cause-and-effect hypothesis to be formulated around the impact and value of the policy. Figure 4 shows the policy strategy map.

The ICT policy must drive a mission and vision of ICT integration in education and must be predicated upon a philosophy and values framework that will allow it to succeed. Effective governance of the overall strategy is also critical for success. The governance framework allows for oversight of the policy — its implementation, monitoring, evaluation and, ultimately, course correction. The interplay between the components of the policy framework shows the cause-and-effect relationships.
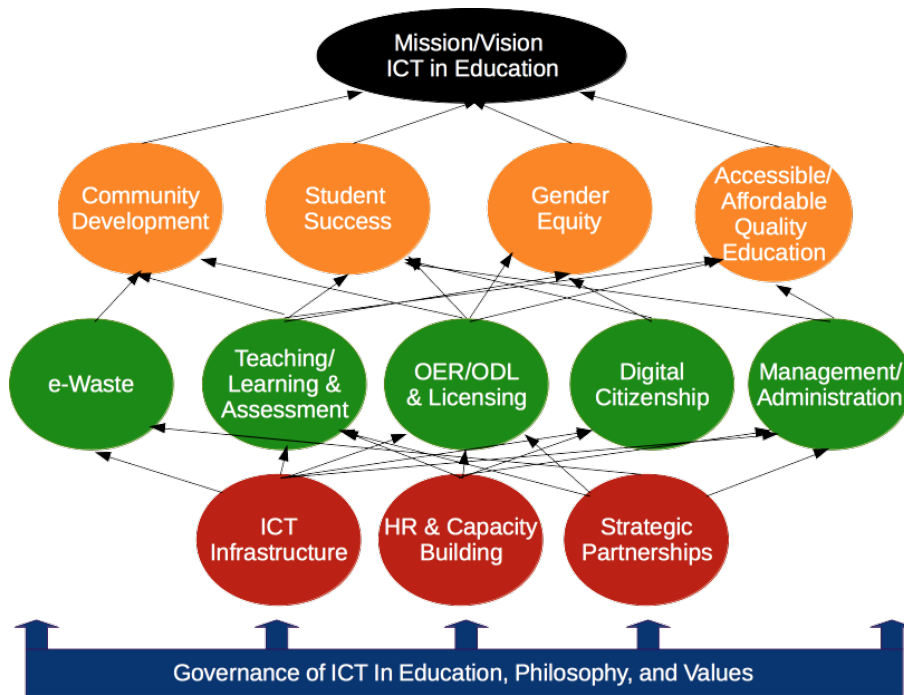
Figure 4. Policy strategy map

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Strategic Policy Results

The GOSL is committed to integrating ICT into its education system in ways that directly advance the key educational priorities outlined in the 2015–2020 ESDP. To do this, the government has identified a number of key policy objectives and corresponding actions, presented below. These will then be implemented systematically through an ICT policy action plan. The policy goals, desired policy results (objectives) and policy statements (initiatives) are articulated. A particular identification format is used to enable easy reference to policy results and policy statements. For example, the policy result GE-R1 refers to **gender equity** as the policy priority area (PPA) and R1 as the first policy **result** for that area; GE-R2 is the second result for gender equity, and so forth. The notation GE-S1.1 refers to the first policy **statement** (initiative) for result 1 (R1) for gender equity. GE-S3:2 refers to the second policy statement for the third result (R3) for gender equity.

Gender Equity

GOAL: *To foster an education system wherein women and men are treated equally and are provided with access and opportunity to realise their full potential.*	
Policy Results	**Policy Statements**
GE-R1: Women and men have equal access to ICTE.	GE-S1.1: The MOE will develop guidelines and core principles for all schools on gender equity as it relates to access to ICT and ICT integration in schools and in the National ICT Centres (NICTs).
	GE-S1.2: The MOE will adopt a practice of reviewing all ICT-based initiatives earmarked for the education system and the NICTs to ensure compliance with the gender equity guidelines and core principles for ICT integration.
GE-R2: Women and men pursue careers in ICT-related fields at the same rate.	GE-S2.1: Each school in its annual ICT integration plan will outline specific initiatives for promoting gender equity in ICT-related careers.
	GE-S2.2: The MOE will provide incentives to encourage the equal participation of male and female teachers in ICT skills development.

Student Success: Special Needs Learners

GOAL: *To empower special needs learners with appropriate ICT skills that will allow them to achieve their learning goals and enable them to contribute to Saint Lucian society in accordance with their potential.*	
Policy Results	**Policy Statements**
SNL-R1: Improved integration of ICT in special needs curriculum delivery — i.e., greater integration of assistive technology in teaching and learning	SNL-S1.1: Recognising the unique requirements of special needs education, the special education unit, in collaboration with the Curriculum and Materials Development Unit, will create an ICT curriculum that will cater to special needs learners whilst accomplishing the intended goals of universal education for all. SNL-S1.2: Educators in special needs schools will take full advantage of ICT to develop individual learning plans for students.
SNL-R2: ICT infrastructure is optimised for use by special needs learners	SNL-S2.1: The Advisory Group on ICT in Education Council, in collaboration with key partners such as ISPs, UNESCO, COL and local businesses, will conduct an ICT needs assessment of all special needs schools and will subsequently develop a comprehensive infrastructure strategy for the integration of ICT in special needs education. SNL-S2.2: The MOE will pursue partnerships with businesses that produce and provide equipment with adaptive technology to help procure equipment at reduced or zero cost. The MOE will explore possible support for low-income households. SNL-S2.3: The MOE will prepare a guidebook for parents on ICT tools that can be used at home with special needs learners to supplement their experiences at school. SNL-S2.4: The MOE will work with strategic partners to equip each special needs school with an ICT lab that houses a suite of technology resources, such as tablets, phonetic spelling software, talking calculators, interactive smart boards, videotapes on social skills, variable speed recorders, audio players and audio recorders. SNL-2.5: The MOE will facilitate the use of OER for learners with special needs.
SNL-R3: Special needs educators skilled in ICT use	SNL-S3.1: The MOE will recommend that SALCC review its current teacher education curriculum to ensure that teachers are trained how to integrate ICT in teaching and learning. SNL-S3.2: SALCC will ensure that the compulsory course on ICT integration in teaching and learning will incorporate modules that specifically address ICT for educating special needs learners.

GOAL: *To empower special needs learners with appropriate ICT skills that will allow them to achieve their learning goals and enable them to contribute to Saint Lucian society in accordance with their potential.*	
	SNL-S3.3: The MOE will invest in the training of special education teachers to use ICT in instruction and will revise the curriculum to include more ICT integration for learners.
SLN-R4: Submission and collection of statistics and information by GE & SN educators to a national database	SNL-S4.1: Encourage schools to leverage the EMIS to collect relevant data for use in improving services provided to special needs learners. The Special Needs Unit, in collaboration with schools, will specify the type of data to collect. SNL-S4.2: Update/modify school information systems to better manage data related to special needs that can inform decisions and investment in priority areas.

Student Success: STEM Disciplines

GOAL: *To leverage ICT integration as a viable strategy for enhancing student achievement in STEM-related courses.*	
Policy Results	**Policy Statements**
STEM-R1: A better and deeper understanding of and appreciation for STEM disciplines	STEM-S1.1: The MOE will encourage the use of ICTs in classrooms to support the mastery of numeracy, literacy, problem-solving skills and creative-thinking skills. STEM-S1.2: Educators will be encouraged to use collaborative learning in a digital classroom, making use of electronic linkages with national and regional institutions with similar or related interests and resources. STEM-S1.3: The MOE will promote local and regional collaboration in the development of OER in STEM fields. STEM-S1.4: The MOE will prepare guidelines for allowing students to use personal mobile devices in the classroom in support of learning activities that leverage ICT. STEM-S1.5: The MOE will promote the sharing of best practices by teachers locally and regionally by establishing and recognising district-level ICT councils of teachers.

Student Success: Early Childhood Education

GOAL: *To engender amongst early learners an early appreciation for learning with technology.*	
Policy Results	**Policy Statements**
ECE-R1: Enhanced appreciation for the potential of ICT amongst early learners, particularly in discovery and problem solving	ECE-S1.1: The MOE will introduce ICTs systematically for ECE. ECE-S1.2: ECE teachers will involve early learners in more practical problem-solving and tactile activities.
ECE-R2: Improved effectiveness in achieving learning outcomes for pre-K students (literacy and numeracy skills)	ECE-S2.1: The MOE will design specific ICT programmes for early learners so that they can acquire basic computer skills. ECE-S2.2: The MOE, working with the Division of Teacher Education at SALCC, will develop training modules for ECE educators that can be taught as part of the teacher certification curriculum or can be offered online as professional development training. ECE-S2.3: The MOE will create and design materials and multimedia content using educators and children from around the country. ECE-S2.4: The MOE will develop standards, activities and materials for all pre-schools and day-care facilities which align with primary education and will make them easily accessible and available.
ECE-R3: ECE-friendly ICT infrastructure	ECE-S3.1: The MOE, with assistance from ECE educators, parents and service providers, will develop a model of the child-friendly, ICT-enabled classroom.

Student Success: TVET and Lifelong Learning

GOAL: *To create the opportunity to expand national capacity in skilled personnel.*	
Policy Results	**Policy Statements**
TVET-R1: Enhanced opportunity for credentialing lifelong learners as a means of improving their employability	TVET-S1.1: The MOE will use ICT to enhance access to opportunities for certification that is comparable to that of or accredited in other countries. TVET-S1.2: Curriculum specialists in the TVET Department of the MOE will incorporate ICT training in TVET programmes to enhance the development of entrepreneurial skills. TVET-S1.3: All schools and institutions delivering programmes in TVET will develop the capacity to use ICTs to support the delivery of online courses as part of TVET training. TVET-S1.5: The MOE will review the content and the delivery models for TVET programmes to identify opportunities to leverage ICT for enhancing the efficiency and effectiveness of such programmes.
TVET-R2: Enhanced commitment to lifelong learning amongst students, teachers and the general populace of Saint Lucia through the use of ICT	TVET-S2.1: Tertiary institutions such as SALCC will develop a three-year strategy and implementation plan for offering online training, bearing in mind that not everyone can access face-to-face learning.
TVET-R3: Greater awareness of national capacity in TVET-trained individuals	TVET-S3.1: The MOE will work with the National TVET Council to establish a national database of trained TVET personnel who can be accessed by employers locally and regionally seeking qualified individuals for available jobs.

Affordable, Accessible Quality Education for All

Policy Results	Policy Statements
GOAL: *To leverage the ubiquity of technology to improve education access, affordability and delivery for all learners in every subsector.*	
AAE-1: Lower the cost of educational content	AAE-1.1: The MOE shall take steps to develop local content to reduce the cost of educational materials for learners. AAE-1.2: The MOE shall source, adapt, reuse and remix OER content for the local curriculum and deploy these to provide access for all learners. AAE-1.3 The MOE shall establish policies for the selection, implementation, monitoring and review of texts and OER content.
AAE-2: Increased access to education for vulnerable groups (poor, unemployed, special needs, institutionalised)	AAE-2.1: The MOE will encourage the creation of eLearning facilities for delivering courses and programmes. AAE-2.2: THE MOE will assist with designing online courses and programmes that respond to the specific needs of marginalised groups.
AAE-3: Improve the quality of learning materials	AAE-3.1: The MOE will engage local subject experts in the development of curriculum resources and OER textbooks.
AAE-4: Improve the quality of pedagogical practice	AAE-4.1: The MOE will train teachers in ICT integration skills. AAE-4.2: The MOE will train teachers to develop both learning materials and courses that are offered online.
AAE-5: Increased availability of local content for use in curriculum design	AAE-5.1: The MOE will encourage teachers to source content to support learning outcomes.

Community Development

GOAL: *To empower communities to shape their existence and create value for themselves in the knowledge economy.*	
Policy Results	**Policy Statements**
CD-R1: Enhanced support for community and economic development	CD-S1.1: The MOE shall ensure that ICT in the education system serves to support the provisions of the National ICT Policy and the overall National Social and Economic Development Plan, which will contribute to the establishment of an information- and knowledge-based economy.
CD-R2: Increased affordable access to ICT for communities across the country	CD-S2.1: The MOE will require educational institutions to make available, with effective monitoring, ICT facilities to the community. Further, the Ministry will endorse the use of revenue generated from the use of these facilities for maintenance, upgrade and sustenance, as long as such use does not compromise the access to and quality of services for learners. CD-S2.2: The MOE will use ICT to encourage collaboration between communities and foster the sharing of best practices to encourage greater community development.
CD-R3: Greater digital literacy amongst the Saint Lucian population (reduction of the digital divide)	CD-S3.1: The GOSL will expand community access to ICT by increasing the number of NICTs. The MOE will collaborate with the Centres to deliver programmes such as completion of a high school education diploma, CSEC courses of interest, or general interest courses, through a continuing education programme. CD-S3.2: The MOE will provide access to e-libraries and related services, such as training on how to properly utilise ICT and how to allow electronic access to historical documents and sources of information which need to be preserved for future generations.

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Enabling Policy Results

Infrastructure and Connectivity

Policy Results	Policy Statements
GOAL: *To create a modern optimal ICT infrastructure that will meet the educational needs of the country at all levels, from ECE to tertiary education and lifelong learning.*	
IC-R1: Ensure equitable access to ICT resources for all students and teachers	IC-S1.1: The MOE will develop a minimum standard for providing ICT access in schools and establish an appropriate organisational framework, including the development of a software evaluation manual and decisions on classroom layout, to implement and manage the integration of ICT into the education system.

IC-S1.2: The MOE will promote the use of open source software wherever possible and supply these tools to schools. This will reduce the total cost of ownership in comparison with paying for proprietary software.

IC-S1.3: The MOE will ensure the implementation of basic infrastructure at the classroom level, including cable connections for wireless networks, electrical outlets, physical security facilities where necessary, and flexible furnishing arrangements to enable the use of ICT in a wide range of educationally innovative and varied ways.

IC-S1.4: The MOE will ensure that all primary schools are equipped with an adequate network infrastructure as well as an effective, functioning computer lab. The ICT unit within the MOE will work in collaboration with the schools to establish minimum standards for the IT network and computer labs.

IC-S1.5: The MOE will promote the use of local networks and tools such as Aptus to share content in schools, thereby reducing the pressure on bandwidth.

IC-S1.6: The MOE, cognisant of the potential of harm that users may be exposed to after prolonged use of computers, will ensure that standard ergonomic principles are adhered to, including the proper design of computer workstations. |
| **IC-R2: Efficient and effective maintenance of the ICT infrastructure** | IC-S2.1: The MOE will develop technical support and maintenance protocols to service the ICT needs of all users and ICT resources in the education system.

IC-S2.2: The MOE will adopt an explicit strategy for the decentralisation of technical support (including preventative maintenance) to efficiently service the needs of all users and computers in the education system.

IC-S2.3: The MOE will make provisions for the frequent upgrading of all ICT tools, including software used for educational purposes. |

GOAL: *To create a modern optimal ICT infrastructure that will meet the educational needs of the country at all levels, from ECE to tertiary education and lifelong learning.*	
IC-R3: An optimised ICT infrastructure aligned with the needs of each school and the needs of the administrative units of the MOE	IC-S3.1: The MOE will assist principals of educational institutions in ensuring that records of all software and software upgrades acquired by their institutions are kept and that their institutions have the appropriate licences for the use of such software. Such a system can be developed over a virtual private network and centrally managed. IC-S3.2: The MOE, in collaboration with other stakeholders, will adopt a common set of standards for hardware and system architecture for use in the education system and procure such items centrally to take advantage of bulk purchase discounts. IC-S3.3: The MOE will consider other forms of equipment acquisition, such as leasing, which involve shared risk. IC-S3.4: The MOE will expand and improve connectivity and Internet access across the education system on an ongoing basis, with a particular focus on widening access to include classrooms (through wireless hotspots). IC-S3.5: The MOE will establish an Informatics Unit that will provide the necessary host infrastructure for systems. The infrastructure will include: a central education management information system; a learning management system to be used for supporting school learning; an open educational resource repository; and appropriate communication and social networking tools to facilitate interactions between key education stakeholders within the country.
IC-R4: The nation's libraries add significant value to the education system for lifelong learners, and for communities.	IC-S4.1: The MOE will support the digitisation of the West Indian collection at the central library, as the books in the collection are out of print and need to be preserved for future generations. IC-S4.2: The MOE will establish the infrastructure necessary to network all the nation's libraries as a way of ensuring equal access to digital content no matter where one is within the country.
IC-R5: Enhanced security of the ICT infrastructure in schools	IC-S5.1: The MOE will develop a comprehensive policy focusing on physical, software and hardware security. IC-S5.2: The MOE will identify rules and procedures for all individuals accessing and using ICT assets and resources, to protect hardware, physical and software security. IC-S5-3: The MOE will ensure the regular updating of software and virus protection facilities to secure the ICT infrastructure.

Teaching, Learning and Assessment

GOAL: *To support the transformation of curriculum development, teaching, learning and assessment in a manner that will enable all learners to succeed in the knowledge economy.*	
Policy Results	**Policy Statements**
TLA-R1: An enhanced role for ICT infusion in school curricula and pedagogy, relevant to the needs of a thriving society and economy in the 21st century	TLA-S1.1: Schools will ensure that all graduates are provided with the required ICT skills for employment or entry to specialised training in the information technology field. TLA-S1.2: The MOE will implement ongoing review and revision of the national curriculum at all levels, with strong emphasis on adjusting assessment strategies to assess wider range of competencies rather than just content recall.
TLA-R2: A culture of innovation for integrating ICT in teaching and learning	TLA-S2.1: The MOE will encourage principals, teachers and students to be involved in the development of applications and to use ICT meaningfully so as to enhance the teaching–learning process. TLA-S2.2: Schools will harness the power of ICT to promote flexible and self-paced learning online. TLA-S2.3: Schools will harness technology to provide remedial learning opportunities for at-risk students, help them keep pace with the curriculum and prevent them from dropping out of the system.
TLA-R3: Greater diversity in learning assessment modalities in preparation for online learning and testing	TLA-S3.1: The MOE will create the infrastructure necessary to support e-exams and establish a practice in schools of incorporating e-exams into student assessment. TLA-S3.2: The MOE will provide the necessary training for teachers to create the capacity for designing and implementing e-exams. TLA-S3-3: The MOE will use innovative assessment practice such as badges, e-portfolios and authentic assessment to validate competencies.

Management and Administration

<table>
<tr><td colspan="2">GOAL: To support the efficient and effective management and administration of the education system at all levels, including the MOE.</td></tr>
<tr><td>Policy Results</td><td>Policy Statements</td></tr>
<tr><td>MA-R1: Greater use of ICT to improve the efficiency and effectiveness of the management and administrative systems deployed in the education system</td><td>MA-S1.1: The MOE will seek to develop an integrated electronic system for the management of all relevant information on students, teachers, staff, school subject offerings, documents, ICT resources and educational institutions within the education system of Saint Lucia.</td></tr>
<tr><td>MA-R2: Greater use of the EMIS to add strategic value to the education system for all stakeholders (learners, educators, administrators, funders, parents, etc.)</td><td>MA-S2.1: The MOE will require the use of the EMIS to measure and track outcomes at the class, school, zone and Ministry level. The EMIS will include (i) management tools at the school level to facilitate the day-to-day management of schools, and (ii) automated uploading of data into the central EMIS. The EMIS will be used to measure the effectiveness of instruction and student learning, curriculum implementation and guide modifications.

MA-S2.2: The MOE and schools will use the EMIS to facilitate data collection that can assist with developing a better understanding of student performance nation-wide as well as registration of students for exams such as the MST and CXC.</td></tr>
<tr><td>MA-R3: Greater engagement of parents in the education system, thereby facilitating collaboration between parents and schools in managing student success</td><td>MA-S3.1: The MOE will facilitate an education network as a vehicle for networking schools and other relevant institutions and for keeping parents updated on what the school is doing. School websites will be used to connect with parents and keep them informed.</td></tr>
</table>

Human Resources and Capacity Building

<table>
<tr><td colspan="2">GOAL: To expand the core ICT competence of key stakeholders internal to the education system. Such stakeholders include MOE officials, school principals, educators and learners.</td></tr>
<tr><td>Policy Results</td><td>Policy Statements</td></tr>
<tr><td>HR-R1: To improve the learning and teaching processes in schools through training and the appropriate use of ICT</td><td>HR-S1.1: The MOE will adopt appropriate international ICT competency standards for students, teachers and education administrators and provide relevant professional development to ensure that students and teachers participate in a learning process associated with the effective integration of ICT in teaching and learning.

HR-S1.2: The UNESCO ICT Competency Framework for Teachers (CFT) will be adopted in Saint Lucia to guide all professional development of educators in the country.</td></tr>
</table>

GOAL: *To expand the core ICT competence of key stakeholders internal to the education system. Such stakeholders include MOE officials, school principals, educators and learners.*	
	HR-S1.3: Using the UNESCO ICT CFT, the MOE will seek to align and integrate all relevant current pre-service and in-service teacher training programmes to modernise them and include ICT adequately. This will include courses offered by the University of the West Indies, SALCC, the Ministry (through the Teacher Education Department and Curriculum Development Unit) and other support agencies, such as COL. Where necessary, existing courses will be reviewed to ensure alignment with the UNESCO ICT CFT. HR-S1.4: The MOE will work with COL to incorporate the ongoing use of the Commonwealth Certificate for Teacher ICT Integration (CCTI) in Saint Lucia. This advanced certificate in education will primarily be aimed at teacher educators initially, although enrolment will also be made available to any interested teachers. HR-S1.5: The MOE will provide specialised training for teachers on OER and ODL to help them offer ODL programmes and create OER for use nationally.
HR-R2: Significantly improved ICT skills and capacity amongst educators and administrators	HR-S2.1: The MOE will create a cadre of ICT educators with the requisite skills and competencies to use and promote ICT as a tool in the enhancement of the teaching–learning process. HR-S2.2: All education officers, particularly curriculum officers, within the MOE will provide support to schools through mentoring/coaching and making available opportunities for professional development. HR-S2.3: The Department of Teacher Education will be responsible for co-ordinating the training and retraining of teachers in alignment with this ICTE Policy and in partnership with other key agencies as appropriate.
HR-R3: ICT-ready teachers for the education system	HR-S3.1: The MOE will include computer literacy as a prerequisite for being recruited into the teaching service. HR-S3.2: The MOE will liaise with SALCC and other similar educational institutions to ensure that subject-specific pedagogy includes adequate coverage of the integration of ICT in the classroom. If necessary, courses may have to be modified or new courses introduced. HR-S3.3: The MOE will ensure that training of teachers in computer literacy and the educational uses of ICT will precede the introduction of equipment into the classroom. HR-S3.4: The MOE will provide in-service training to teachers throughout the education system on an ongoing basis to ensure ICT skills become second nature to educators and administrators.

OER, ODL and Licensing

GOAL: *To enhance access to quality education for all, regardless of gender, class and ethnicity, by using ICT as a tool for democratising education in terms of both availability and affordability.*	
Policy Results	**Policy Statements**
OOL-R1: Availability of local digital educational content in K-12 subjects	OOL-S1.1: The MOE will work jointly with key partners to facilitate the development of instructional resources for use by students and teachers.
OOL-R2: Increased availability of OER published under a Creative Commons licensing framework	OOL-S2.1: The MOE will develop a repository of openly licensed resources, with a view to ensuring that all students in the country have free access to openly licensed resources of multiple media that are sufficiently comprehensive to enable them to successfully meet the requirements of the regional and national curriculum frameworks governing education in Saint Lucia. OOL-S2.2: The MOE will commit to opening access to educational materials produced in the country. All educational materials produced with government funds — including both research resources and teaching and learning resources — will be released under a suitable Creative Commons licence to facilitate their use, electronic sharing and adaptation by others. This will include resources of all media types, including print/text, audio, video and computer-based multimedia. OOL-S2.3: The MOE will adopt as a default licence for all products produced through government funding a Creative Commons (Attribution) licence. Likewise, it will encourage all development agencies and foundations operating in Saint Lucia to adopt a similar licence for all materials produced with development aid. In any cases where another licence is not explicitly mentioned, this default licence will be applied to any original materials produced with government funds. OOL-S2-4: All materials produced using other openly licensed materials shall be released with a suitable Creative Commons licence, following the licence compatibility provisions. OOL-S2.5: Authors of works produced with government funds will be entitled to apply additional licensing restrictions from the Creative Commons licence framework if desired but will then need to make this explicit by inserting the chosen licence in materials they have developed. OOL-S2.6: The MOE will work to ensure that every document released for distribution via the Internet (through its national repository) will clearly indicate the licensing conditions of the resource on the resource itself, using properly marked, machine-readable Creative Commons licences.

GOAL: *To enhance access to quality education for all, regardless of gender, class and ethnicity, by using ICT as a tool for democratising education in terms of both availability and affordability.*	
	OOL-S2.7: Responsibility will reside with the authors of works to ensure that any third-party materials incorporated in resources produced with government funds do not breach any relevant copyright laws, either nationally or globally.
OOL-R3: Increased integration of online and blended learning provision in teaching and learning	OOL-S3.1: SALCC will be encouraged to develop more programmes using online and blended learning modes. OOL-S3-2: The MOE will introduce innovative schooling opportunities for those needing to enhance their qualifications, to provide them with a second chance at learning opportunities.

Governance of ICT

GOAL: *To establish a governing framework that will ensure the long-term sustainability and viability of the national ICT infrastructure.*	
Policy Results	**Policy Statements**
G-R1: Harmonised activities, approaches and standards in the educational uses of ICT within the education system	G-S1.1: The MOE will establish appropriate mechanisms for the regular monitoring and evaluation of ICT initiatives to determine their impact on the education system and their alignment with similar initiatives in member states of the OECS.
G-R2: Effective management of the cost of the ICT infrastructure	G-S2.1: The MOE will give due consideration to the total cost of ownership whilst exploring feasible options in the procurement of ICT resources for the education system. **G-S2.2:** The MOE acknowledges that there are recurrent costs associated with the support of ICT in the education system and will endeavour to make all necessary annual budgetary allocation.
G-R3: Strategic oversight for ICTE infrastructure	G-S3.1: An inter-ministerial unit, The National ICT in Education Council, will be established, and that unit will be responsible for oversight of the ICT infrastructure as well as ICT integration in education across all educational institutions**.** G-S3.2: The MOE will be responsible for the installation and maintenance of equipment in schools, the development of curriculum and content, and the training of principals and educators. G-S3.3: The National ICT in Education Council will: maintain ownership of the ICTE Policy and oversight for its implementation; manage, monitor and evaluate the implementation strategy; submit an annual national budget for ICTE; co-ordinate project plans throughout the education system; approve and monitor ICT-related expenditures in

GOAL: *To establish a governing framework that will ensure the long-term sustainability and viability of the national ICT infrastructure.*	
	education; resolve conflicting priorities amongst stakeholders; and consider strategic issues that have implications for ICTE.
	G-S3.4: The National ICT in Education Council will assist every school with developing a Technology Integration Plan, which will act as a guide for that school's integration of ICT into its curriculum and administrative operations.

Digital Citizenship

GOAL: *To nurture healthy digital citizenship amongst all users of ICT in the education system.*	
Policy Results	**Policy Statements**
DC-R1: Heightened awareness of digital responsibility on the part of students, educators, administrators and parents	DC-S1.1: The National ICT in Education Council will develop a campaign to increase awareness about the appropriate use of ICTs by all.
	DC-S1.2: The MOE will develop a multi-level course on digital citizenship to teach students responsible use of the Internet and to raise awareness of critical issues such as cyber-bullying, Internet privacy, Internet etiquette, sexting, violence, sexual abuse on the Internet, etc.
	DC-S1.3: The MOE will work with other stakeholder groups to establish rules and procedures for the acceptable use of ICT in all areas of the education system.

e-Waste

GOAL: *Ensure the safe disposal of ICT equipment once it has reached the end of its life stage.*	
Policy Results	**Policy Statements**
EW-R1: Effective management and disposition of e-waste	EW-S1.1: The MOE will encourage educational institutions to partner with civil society and other organisations that support its efforts at promoting environmentally sustainable digital technology, including the efficient use of power and the appropriate disposal/recycling of technological waste.
	EW-S1.2: The MOE will take steps to develop guidelines on the management of e-waste in schools and educational institutions.
	EW-S1.3: The MOE will issue guidelines for the replacement of old equipment in consideration of its effective lifecycle and as far as possible will refurbish equipment for its optimal use.

Strategic Alliances/Partnerships

GOAL: *To leverage strategic alliances with national, regional and international partners in the provisioning of ICT capacity and capabilities in the education system.*	
Policy Results	**Policy Statements**
SAP-R1: Effective engagement of stakeholders in shaping ICT integration in education	SAP-S1.1: The MOE will engage with a variety of stakeholders for effective implementation of the ICTE Policy. Such engagements will be driven by the philosophy and values of the policy.
SAP-R2: Strengthened private-sector engagement in the funding of ICT integration in the education system	SAP-S2.1: The MOE will explore multiple arrangements with ISPs and the business community that include but will not be limited to equipment sourcing, equipment servicing, bandwidth provision and e-waste handling. SAP-S2.2: The MOE will establish mechanisms that foster collaboration between the private sector and educational institutions in the implementation of ICT initiatives. SAP-S2.3: The MOE will adopt a partnership approach with stakeholders in order to finance the initial investment and recurrent expenses associated with the use of ICTE. SAP-S2.4: THE MOE will adopt a partnership approach with the private sector to encourage internships at their establishments and thereby provide jobs for these interns and qualified workers for such establishments.

Monitoring and Evaluation

The cause-and-effect hypotheses inherent in the policy strategy map are based on a combination of historical evidence borne out in the research literature, and assumptions and forecasts about the impact of the interactions between the various components of the policy. Further, several underlying critical success factors must exist if the desired impact of ICT integration in education is to be achieved. It is therefore necessary to monitor and evaluate the deployment of the policy to answer the following questions:

1. Are the intended results being achieved and, if so, to what extent?
2. What factors are contributing to gaps between current and desired performance?
3. Is the policy being implemented as intended?
4. What course-correction actions are necessary to close the gaps between current and intended results?

To facilitate effective monitoring and evaluation of the ICTE Policy, the MOE will undertake the following:

GOAL: *To maximise the likelihood of success.*	
Policy Results	**Policy Statements**
ME-R1: Efficient and effective deployment of the ICTE Policy	ME-S1.1: The Education Informatics Unit within the MOE will develop a data collection framework and an EMIS to capture relevant data and create the information necessary to reliably evaluate the effectiveness of the policy and the efficiency of its implementation. ME-S1.2: The MOE will commission studies to explore and investigate particular issues pertaining to the ICT Policy's expectations and deployment. In addition, studies that look at successes and failures, national and international trends, and student performance as a whole but particularly in STEM courses will be facilitated by the monitoring of the ICTE Policy. ME-S1.3: The MOE will create an Advisory Group on ICT in Education, consisting of experts and stakeholders, to monitor and advise the Ministry on the implementation of the ICTE Policy. ME-S1-4: The Education Informatics Unit, working in collaboration with the Advisory Group, will produce an annual ICT Policy Performance Report. The report will identify successes and failures and will make recommendations to the MOE for course correction. ME-S1.5: The Education Informatics Unit, in collaboration with the Advisory Group, will develop and publish quarterly a performance dashboard based on the vital few indicators and measures that provide quick real-time information about the impact of the ICTE Policy.

6

Implementation Plan

To effectively implement the ICTE policy, the MOE will develop a detailed plan for monitoring and evaluation. It will appoint an Advisory Group on ICT in Education, comprised of experts and stakeholders, to monitor the progress and advise the MOE on the implementation of the policy. The Advisory Group will be responsible for oversight of ICTE at a national level, co-ordinating strategic planning, policy deployment, project and programme management, resource acquisition and sharing, and the monitoring and evaluation of policy-related outcomes.

Critical Resources and Investments

Kick-starting the policy implementation process will require certain key resources and investments early in the implementation time frame. The findings from the surveys and consultation conducted to inform this policy highlight four areas requiring key investments at the outset: (1) the national ICT infrastructure in educational institutions; (2) the human resource capacity for ICT integration in education; (3) teaching, learning and assessment; and (4) OER and ODL.

Table 3. Implementation Plan.

Brief Description	Tasks/Activities	Resources Needed	Key Assumptions
Strategic Objective 1: Improving ICT infrastructure in educational institutions			
Ensure equitable access to ICT resources for all students and teachers	• MOE undertakes a review of existing infrastructure in educational institutions. • MOE develops a standard set of equipment and connectivity to be supplied to all schools. • MOE procures and supplies hardware and software related to teaching and learning.	• Resources will depend on an understanding of the existing resources and the additional resources needed. • Use of open source technologies will assist in cost reduction.	• Availability of adequate funds to improve the infrastructure. • Additional funding support available from international donor agencies. • Time-bound conducting of the needs analysis.
Strategic Objective 2: Strengthening the capacity of teachers to integrate ICT in education			
Enhance the ICT competence of teachers to integrate ICT in teaching and learning	• MOE takes steps to adapt COL's CCTI for use in developing short-term courses for teachers and principals. • SALCC revises its teacher training curricula to integrate ICT in education. • MOE organises capacity building of teachers regularly to update them on ICTE.	• Low resource-intensive intervention. • Existing resources to be deployed.	• Support available from organisations such as COL to integrate ICT in education.
Strategic Objective 3: Integrating ICT in teaching and learning			
Transform curriculum development, teaching, learning and assessment to enable every learner to succeed in the knowledge economy, and enhance access to quality education for all regardless of gender, class or	• MOE takes steps to revise curricula to integrate ICTs. • Students are prepared through ICT training to use online learning and e-exams. • MOE provides support to SALCC to develop more	• Resources needed to set up the national online learning platform and repository. • Online course development at SALCC to be part of the institution's annual plans.	• Adequate number of master trainers available to provide ICT training to students. • Curriculum review to integrate ICT taken

Brief Description	Tasks/Activities	Resources Needed	Key Assumptions
ethnicity by using ICT as a tool for democratising education in terms of both availability and affordability	programmes using online and blended learning. • MOE facilitates the hosting of a LMS and an online repository of open learning materials to be shared amongst schools. • Teachers integrate ICT and OER in teaching and learning.	• Schools use the ICT infrastructure optimally to teach. • ICT training for students can be an ongoing project.	up in a phased manner. • International support available for setting up an online learning platform and OER repository. • Teachers are able to find appropriate OER.
Strategic Objective 4: Managing the ICTE implementation			
Efficient and effective deployment of the ICTE Policy	• Set up an advisory group on ICTE. • Develop an annual plan and targets. • Develop guidelines for the management of e-waste. • Develop a short course on digital citizenship and orient citizens about the benefits of ICTE. • Seek national and international collaboration and partnerships to strengthen ICTE in Saint Lucia.	• This is largely a low-cost activity and can be done by optimal use of internal resources.	• Availability of experts and co-operation of stakeholder to support the implementation of the ICTE Policy. • Support available from international agencies such as CARICOM, OECS, etc.

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