



COMMONWEALTH *of* LEARNING

The Status of ICT in Education in Saint Lucia

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Acronyms

COL	Commonwealth of Learning
CSEC	Caribbean Secondary Examinations Certificate
EMIS	Education Management Information System
GOSL	Government of Saint Lucia
ICT	Information and Communication Technology
ICTE	Information and Communication Technology in Education
IT	Information Technology
IWB	Interactive Whiteboard
LAN	Local Area Network
LMS	Learning Management System
MOE	Ministry of Education
OECS	Organisation of Eastern Caribbean States
OER	Open Educational Resources
PC	Personal Computer
UNESCO	United Nations Educational, Scientific and Cultural Organization

Summary of Findings

This report examines the status of ICT in education (ICTE) in Saint Lucia. The study involved the examination of desk literature, followed by a survey of teachers, principals and students; 52 principals, 107 teachers and 15 students participated in the online surveys. We do not present statistical results for the students, but we summarise their responses to the open-ended questions. The purpose of the study is to use the resultant understanding of the status of ICTE to inform a national policy and strategic plan for ICTE in Saint Lucia.

National ICTE Policies

Saint Lucia has made several attempts at developing a national ICT policy. Drafts were prepared in 2002, 2004, 2011 and 2013. Unfortunately, none of these draft policies were ratified by the Government of Saint Lucia (GOSL).

National ICT Plan

Saint Lucia has a national ICT strategic plan that was ratified in 2010. The timeframe for the policy is 2010–2015. The policy speaks to the need for the integration of ICTE. As such, that policy will be used to inform the national ICTE policy.

Laptop Programme

Saint Lucia has a laptop programme which involves providing students in Form 3 with a free laptop. Teachers are also provided with laptops. The programme has 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. Students in upper secondary schools (from Form 4) were provided with laptops. All schools have access to some level of broadband Internet connectivity. However, the bandwidth is woefully 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 20 Mbps in the near future. The project is being funded by the Universal Service Fund.

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 run ICT courses 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 identify professional development as a critical priority. One criticism of the laptop programme is that there was little preparation of teachers to take advantage of the technology. Hence, students sat in classes with laptops while teachers did not know what to do with that new reality.

Recently, there has been some investment in basic ICT training for teachers. However, several teachers remain untrained. Further, the range of ICT skills amongst teachers is somewhat limited and needs to be expanded if the benefits of ICT integration are to be realised.

ICT-related Activities

Though teachers and principals believe ICT can positively impact learning, their engagement with ICT shows use to be at relatively basic levels. Principals do not take full advantage of how ICT could improve their efficiency and productivity in administrative functions such as record keeping, student performance analysis, student report cards and communications 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 largely ones that serve the teachers directly, such as: doing presentations, searching for materials for 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 that there are several barriers to ICT integration. These include: insufficient numbers and quality of computers; the lack of meaningful educational resources loaded onto the computers provided to the students; inadequate bandwidth; the lack of whiteboards; the inadequacy of their ICT competence; and the lack of pedagogical knowledge on how best to integrate ICT in education.

The Way Ahead

In forging ahead, several issues will need to be addressed. The following are a few of the plethora of issues that must be taken into consideration when drafting the new policy on ICT in education.

ICT Curriculum: The school curriculum is outdated and needs to integrate ICT across all subjects, not just in ICT courses.

Commitment to ICT: The level of buy-in for ICT integration is inadequate because of several mitigating factors, such as poor connectivity, lack of computers, lack of knowledge, etc.

Resource Sufficiency: The level of resources in many schools is simply insufficient.

ICT Support: Lack of technical support and maintenance of computers leads to high levels of equipment inoperability, prompting teachers to abandon efforts to integrate ICT in teaching and learning.

Professional Development for Teachers: Teachers' competence in ICT is improving but still too low. A critical mass of ICT-trained teachers needs to be created to achieve a magnitude-level improvement in ICT integration in education.

ICT for Special Needs: There is great opportunity to enable learning outcomes for learners with special needs.

Internet Connectivity: Bandwidth and Internet access for instruction must be improved.

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 EMISs, LMSs and the myriad of tools for engaging students.

OER: A critical factor for success is the creation of local open educational resources (OER). Once teachers' ICT competence has improved, a concerted effort must be made to create OER that can be shared amongst teachers and schools. Also, an objective of OER should be to lower the cost of education for citizens and the government.

Overview

This report presents a snapshot of the status of ICTE in Saint Lucia. The current period under study is the 2016/17 academic year. To obtain the snapshot, a desk study of past documents was first completed. In addition, three online surveys were administered to students, teachers and principals. The survey instruments included issues embodied in the UNESCO Indicators for ICTE.

In this section, we briefly describe several past initiatives that are linked to ICTE. These interventions — some more than others — will have some influence on the development of the new ICTE policy and strategic plan for Saint Lucia.

Draft ICTE Policies

There have been several attempts to establish and ratify an ICTE policy for Saint Lucia. Draft policies were developed in 2002, 2004, 2011 and 2013. To date, Saint Lucia has not ratified any of the draft policies on ICTE. The mitigating factors, unfortunately, are unknown.

ICTE Policy 2002¹

A draft policy on ICTE was prepared by the then IT Consultant within the Ministry of Education (MOE), Ms. Maria Plummer. The draft policy was the outcome of a two-day consultation with stakeholders, aimed at adapting the OECS Education Reform Unit's model for an ICT policy. The principal objectives for ICT articulated in the policy included:

1. Promote the harmonisation of activities, approaches and standards in the educational uses of ICT within the education system.
2. Encourage the principals, teachers and students within the education system to use ICT meaningfully to enhance the teaching–learning process.
3. Ensure equitable access to ICT resources for all students and teachers within the education system.
4. Demonstrate the MOE's commitment to ensuring that all students and teachers attain the skills necessary to be considered computer literate.
5. Ensure that all school leavers are provided with the required ICT skills for employment or entry into specialised training in the information technology field.
6. Foster the concept of lifelong learning amongst students and teachers and within the general populace of Saint Lucia.

¹ Plummer, M. (2002). *Integration of communication and information technology in education*. Castries, Saint Lucia: Ministry of Education, Youth and Sports.

7. Provide greater professional development opportunities for all ICT educators in Saint Lucia.
8. 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
9. Make provisions for the continuous upgrade of educators’ ICT skills.
10. Encourage and facilitate the use of the Internet as a research and communication tool, amongst students, parents, teachers, principals, other MOE officials and members of the community.
11. Provide an avenue for increased electronic networking and collaboration amongst educators and students in Saint Lucia, regionally and internationally.
12. Facilitate the implementation of information systems that enhance efficiency within school administrations.
13. Encourage partnerships between the various education sector stakeholders in undertaking IT-related ventures.
14. Make provisions for the frequent upgrade of all ICT tools, including software, used for educational purposes.
15. Increase awareness about intellectual property and copyright laws regarding the use of software and information in general.

A total of 45 policy statements were articulated, collectively addressing the 15 policy objectives. The draft policy was not accompanied by an action plan.

ICTE Policy 2004²

This draft policy built upon the work completed in the 2002 draft policy. The policy development process was shepherded by Mark Ernest, Maria Plummer and Cletus Bertin. The policy focused on four key result areas (KRAs):

1. access
2. creativity and end-user development
3. economic and social development
4. reform and capacity building

A total of 14 objectives were formulated across the four KRAs, along with 42 initiatives.

ICTE Policy 2013

Saint Lucia has yet another draft ICTE policy³ that was likely authored circa 2010/11. That draft policy represented an update of the 2002/2004 policy and was supported by the EU-funded Education Enhancement through ICT Project (EEICTP). The policy,

² Ernest, M., Plummer, M., & Bertin, C. (2004,). Draft policy for ICT in the education system. Castries, Saint Lucia: Ministry of Education, Youth and Sports.

³ Ernest, M. (2011). *Draft policy for ICT integration in education*. Castries, Saint Lucia: Ministry of Education.

however, was never ratified and approved by the GOSL. In 2013, an update of the policy on ICTE was initiated but not completed.

The policy goal was to fully integrate ICT into the educational system of Saint Lucia. The core objectives identified included:

1. To ensure that ICT becomes the critical element in national education development.
2. To integrate ICT in the management and operations of all aspects of the education system through the implementation of knowledge and information systems that enhance efficiency within administration.
3. To ensure that in schools the curriculum and pedagogy are fully relevant to the needs of a thriving society and economy in the 21st century.
4. To improve the learning and teaching processes in schools through training and the appropriate use of ICT.
5. To provide opportunities for all students, teachers and administrators to attain ICT competency standards that will allow them to fully function in the digital information environment.
6. To ensure equitable access to ICT resources.
7. To foster the practice of lifelong learning amongst students, teachers and the general populace of Saint Lucia through the use of ICT.
8. To establish and strengthen partnerships between the various stakeholders and schools which are policy and demand driven and consistent with the ICT philosophy and strategic outlook of the Ministry of Education.
9. Increase awareness about intellectual property rights, copyright laws and legislation, and policies regarding the acceptable use of ICT amongst students, teachers and parents in the education system.

More recently, the Commonwealth of Learning (COL) provided some technical assistance to examine the challenges associated with ICTE policy development and implementation in Saint Lucia and what needs to be done to enable the development, adoption and implementation of an ICTE policy. This report is the first step in that process.

National ICT Strategic Plan (2010–2015)

The national ICT policy was developed in 2010. The policy objective specific to education is as follows:

To foster the use of ICT in education to develop human capacity, enhance competitiveness, modernise the teaching and learning environment, facilitate equity of access, and develop individuals who are capable of functioning effectively in a technologically driven society.

The corresponding policy statements include:

1. Create an ICT environment in the education system that encourages creativity, innovation, critical thinking, communication, research and decision making.
2. Establish the appropriate organisational structure and provide professional development to plan, implement, manage and sustain the integration of ICT into the education system.
3. Establish a regulatory framework for ICT to harmonise activities and approaches and to develop standards for the use of ICTE.
4. Provide all students with the requisite ICT skills for employment and the educational grounding for pursuing continuous learning and specialised training.
5. Develop a teaching workforce in which all practitioners possess the requisite skills and competencies required to use ICT as a tool for enhancing the teaching–learning process.
6. Create smart partnerships that provide for global collaboration, increased electronic networking and enhanced stakeholder participation.
7. Use ICT to enhance management and administrative functions.
8. Foster the concept of lifelong learning, and develop and sustain strategies to encourage adults towards self-improvement through ICT skills and training.

Situation Analysis of ICT Services and Resources

In 2011, a study of ICT services and resources in the Saint Lucia educational system was conducted by Mark Ernest. The initiative was part of a larger project focused on building “a foundation for the sustainable economic, social and cultural development of schools and communities in Saint Lucia through the introduction and/or integration of Information and Communication Technologies.”⁴ Some of the findings included:

1. There was a correlation between teacher age, years of teaching and attitude towards and use of technology.
2. The level of readiness for ICT integration was lower for veteran teachers.
3. Attitudes towards the integration of ICT were very positive.
4. Amongst teachers:
 - a. there was a lack of clear direction on how to use ICT to enhance learning outcomes;
 - b. there was the perception that using ICT for classroom instruction took too much time; and
 - c. there was a lack of sound knowledge of computer applications appropriate for teaching.
5. There were several limitations and constraints to ICT integration:
 - a. lack of basic infrastructure to set up desired spaces;
 - b. inadequate technical support to assist with equipment installation;
 - c. integration of the in-time programme into the existing curriculum was too

⁴ Ernest, M. (2011). *A comprehensive situational analysis of services and resources in the Saint Lucian educational system*. Department of Education, GOSL

- disjointed and needed more input from curriculum specialists; and
- d. there were issues of proper security, ventilation and lighting in the targeted spaces.
 6. The level of e-readiness in schools was not taken into account in the distribution of hardware and software to primary schools for various ICT initiatives.
 7. There was a lack of awareness amongst study respondents about the available ICT resources.
 8. Administrators appeared to use ICT in the management of schools. Popular uses included instruction, assessment, monitoring student progress and communicating with colleagues.

Evaluation of the Laptop Programme

In October 2013, the GOSL began distributing free laptops to Form 4 students in secondary schools as part of a promise to enhance the integration of ICTE. The programme objectives included:

- to enhance the learning environment for students (reflecting the 21st-century classroom);
- to improve the quality of instruction via the infusion of ICT in teaching and learning;
- to develop 21st-century skills in students;
- to reduce inequity in access to computers and information amongst students;
- to raise student achievement through specific interventions (such as improvement through the use of education software); and
- to facilitate the development of collaborative teaching and learning (student/student, teacher/student, teacher/teacher).

Some 3,300+ laptops were delivered to students and teachers.⁵ In 2014, the programme was evaluated. The response to the programme was generally positive on the part of parents, teachers, students and principals. The programme no doubt had its shortcomings. There were issues with software limitations, inadequate educational content, perceived non-educational use of the laptops by students, the level of competence of the teachers relative to the students, etc. No evidence has been presented to the effect that student performance improved as a result of the laptop programme. Also, the programme evaluation did not seek to assess the extent to which the programme objectives were being met. Suffice to say that the evaluation cannot pronounce the programme a success or a failure unless the specific programme objectives are assessed. Doing this would require a clear set of performance indicators/metrics, along with baselines established prior to the initiation of the programme.

⁵ Department of Education. (2014, May). *Secondary schools laptop programme: Programme evaluation*. GOSL.

Some of the recommendations for the programme going forward include:⁶

- revision of the current software restrictions;
- the provision of greater Internet bandwidth;
- improvements to the school IT infrastructure and Wi-Fi network;
- prioritising of technology integration training for teachers;
- procurement of more subject-specific or educational content; and
- rethinking the access to ICT policy.

Country Needs and Challenges in Implementing ICT Integration in Education⁷

As a precursor to the present document, a report reflecting perspectives on the needs and challenges facing ICT integration in education was prepared by Germain M. Anthony, Curriculum Specialist – Information Technology/Technology Integration within the MOE. These challenges and needs have significant implications for any ICTE policy and as such must be accorded due consideration, particularly given that these needs and challenges speak to the present-day status of the education system. Some of the needs and challenges identified in the report are briefly summarised below:

1. The GOSL and the MOE have not yet finalised and adopted an ICTE policy and action plan, even after three attempts to develop an ICTE policy.
2. ICT curriculum standards and ICT assessment standards and strategies have not been developed and approved.
3. There is no specialised functional unit at the MOE that is committed to or functions to manage and sustain technology integration initiatives.
4. The Internet and Wi-Fi infrastructure remains mostly inadequate at all schools, particularly primary schools.
5. While the government laptop programme has helped, access to computers is still limited, particularly in primary schools.
6. The majority of teachers and school leaders are still in need of formal training in technology integration.
7. Access to quality digital learning resources and OER is still limited and expensive.
8. The uptake of education administration technologies — for example, EMISs — has been slow and inconsistent at best.
9. Technical support and maintenance for computers and other ICT resources has been a challenge, as the staff is small in number.
10. The absence of ring-fenced or secured funding for ICT means that long-term planning is never possible.

⁶ Ibid.

⁷ Anthony, G. (2017). *The country needs and challenges in integrating ICT in education*. Unpublished PowerPoint document.

Open Educational Resources

There has been much discussion about the need to take advantage of ICT to create digital content resources that can be shared with students, amongst teachers and amongst schools. There is a fervent desire to reduce the cost of textbooks, which is extremely burdensome for poor families. To date, there have been attempts to encourage teachers within CARICOM to use a platform called Notesmaster,⁸ which would allow educators to form working/collaborative groups within which they could share ideas, notes, curricula and exam questions and pose questions to the group. Platforms have been promoted by the Organisation of Eastern Caribbean States (OECS) and Caribbean Examinations Council, but the uptake to date has been less than desirable.

While there have been discussions within the education community in Saint Lucia about the creation of digital resources that would become part of the creative commons and shared widely amongst colleagues, there has been no deliberate strategy to make this happen. There is no dedicated unit within the MOE focused on the creation of such resources. However, the new ICT policy must address this issue, as it has implications for assisting with the democratisation of education — making resources accessible and affordable.

National ICT Centres

Saint Lucia has a network of national ICT centres around the country. Also known as community access centres, they provide Internet access for underserved communities, while the centres in Castries and Vieux Fort offer training in a number of ICT-related subjects in addition to Internet access. These training centres can be used by not-for-profit organisations contributing to community and national development. Hence, they play a very important role in enabling ordinary citizens to participate in the digital economy and digital society.

UNESCO's ICTE Indicators

A 2010 report on ICTE in Latin America and the Caribbean⁹ sheds light on Saint Lucia's infrastructure at the time. It is useful for getting a sense of the infrastructure then and now. Table 1 provides a summary of the values obtained. The indicators lacking values suggest a need for enhancing the suite of indicators pertaining to ICTE that are being monitored by the MOE.

⁸ Notesmaster: <https://notesmaster.com/>

⁹ UNESCO. (2012). *ICT in education in Latin America and the Caribbean: A regional analysis of ICT integration and e-readiness*. Montréal, Canada: UNESCO Institute of Statistics. Retrieved from http://uis.unesco.org/sites/default/files/documents/ict-in-education-in-latin-america-and-the-caribbean-a-regional-analysis-of-ict-integration-and-e-readiness-en_0.pdf

Summary

This section, which represents a brief desk review, paints a picture of a nation that recognises the value of ICTE and has expressed commitment to ICT integration but has found it rather difficult to codify its commitment through an approved policy, and to put in place the mechanisms required to bring about full-scale implementation of such a policy.

The basic ICTE indicators show that Saint Lucia's basic ICT infrastructure is relatively strong. However, the indicators do not capture the quality of the equipment, the state of the infrastructure or the level of satisfaction with the infrastructure. Having computers of poor quality and reliability will hinder rather advance initiatives focused on fully integrating ICTE.

Table 1. UNESCO's Basic ICTE Indicators for Primary and Secondary Schools (PR/SE).

Basic Core Indicators for ICTE	2010 PR/SE	2016/17 PR/SE
Proportion of schools with electricity	100/100	100/100
Proportion of schools with radio set used for educational purposes	100/100	100/100
Proportion of schools with television set used for educational purposes	100/100	100/100
Learners-to-computers ratio	19/15	13/2
Proportion of schools with basic telecommunication infrastructure or telephone access	100	100/100
Proportion of schools with Internet access	100/100	100/100
Proportion of schools with computer labs	75/100	100/100
Number of schools with access to online resources	n/a	102
Proportion of students who use the Internet at school	n/a	n/a
Proportion of students enrolled at the tertiary level in ICT-related fields, by gender	53% (G) 49% (B)	n/a
Number of ICT-qualified teachers in primary and secondary schools	10	n/a
Number of teachers trained to teach subjects using ICT facilities	8	n/a
Number of teachers currently teaching subjects using ICT facilities	6	n/a
Proportion of schools using computer-assisted instruction	49/100	n/a /100
Proportion of schools using Internet-assisted instruction	46/100	n/a /100
Libraries around the country	4	6
National ICT Centres	n/a	8

The Current Situation

This section of the report presents the findings from two surveys administered to principals and teachers. The surveys, which assess several dimensions of ICT integration in education, were sent out to 69 principals and 359 teachers. Fifty-one principals responded, yielding a 74% response rate. However, not all of those principals responded to all the questions. Some questions had a high non-response rate. Whilst we do not have a clear sense of the reason for the level of non-response, we believe that some questions required a high level of specificity. Principals without readily available information likely would not respond. One hundred and eight teachers, or 30% of the 359 teachers solicited, responded to the survey. As in the case of principals, not all of those teachers answered all the questions. The response rate for students was extremely low, so we do not present statistical results for the student survey but instead take into consideration their responses to the open-ended questions about ICTE.

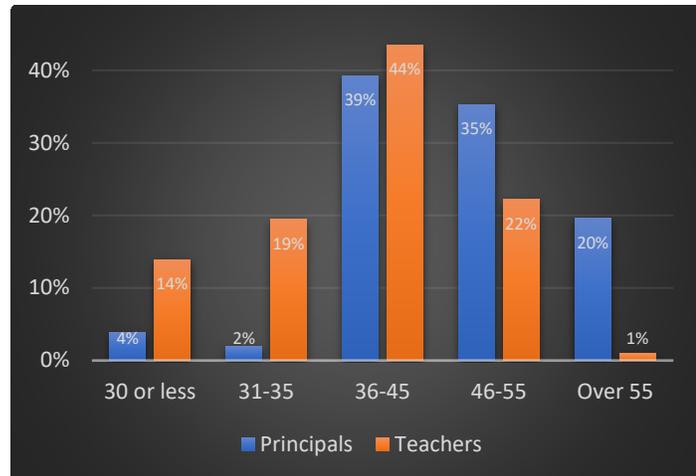


Figure 1. Age distribution of respondents

Demographics

Amongst principals, 80% of those who responded to at least one question were female. Four per cent of all the respondents were 30 or younger, 55% were 46 or older and 49% were between 36 and 45. Fifty-four per cent of those responding had been at their current institution or any other institution as principal for six years or more. Seventy-five per cent of the principals had been in the education system for more than 20 years and 90% of them for more than ten years. The level of experience is quite significant.

Of the teachers who responded to at least one question, 83% were female. Forty-four of all the teacher respondents were between 36 and 45, and 23% were older than 45, making 33% less than 36.

Forty per cent of all teachers who responded had been teaching for more than 20 years, and 38% of them had been teaching for 11–20 years. Suffice to say that 78% of the teachers responding had more than ten years of teaching experience and would have been present during the initial attempts at ICT integration in education.

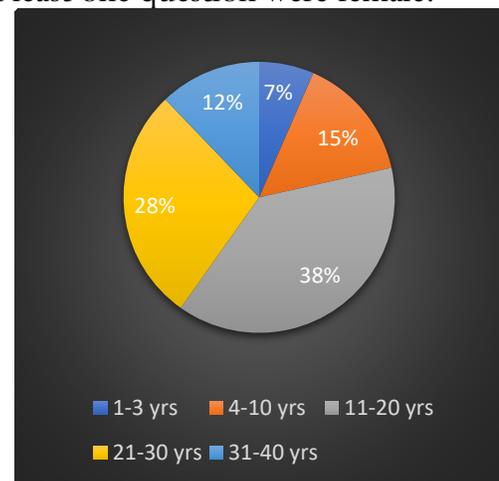


Figure 2. Teaching experience

School Populations

The broad classification for schools is consistent with the UNESCO categories:

- ISCED 1 = Primary
- ISCED 2 = Lower Secondary (Junior High)
- ISCED 3 = Upper Secondary
- ISCED 4 = Post-Secondary Non-Tertiary
- ISCED 5&6 = Tertiary

The maximum number of male and female students at each level as well as the average number of students per level per school by gender for the 52 respondents is shown in Table 2. It is worth noting that not all schools have all levels. The total number enrolled in each level is shown below.

Table 2. Estimated Aggregate Population of the Schools Participating in the Survey.

School Level	Maximum	Mean	Est. Total	Responses
ISCED 1 – Male	125.00	36.14	1,843	51
ISCED 1 – Female	533.00	43.21	2,247	52
ISCED 2 – Male	162.00	10.73	558	52
ISCED 2 – Female	228.00	10.35	538	52
ISCED 3 – Male	113.00	5.04	262	52
ISCED 3 – Female	146.00	8.46	440	52
ISCED 4 – Male	106.00	2.90	151	52
ISCED 4 – Female	280.00	9.44	491	52
ISCED 5&6 – Male	107.00	2.06	107	52
ISCED 5&6 – Female	142.00	2.73	142	52

Socio-economic Background

Thirty-one per cent of 36 principals responding indicated that more than 50% of their students came from deprived homes, and 62% said that more than a quarter of their student population came from deprived homes.

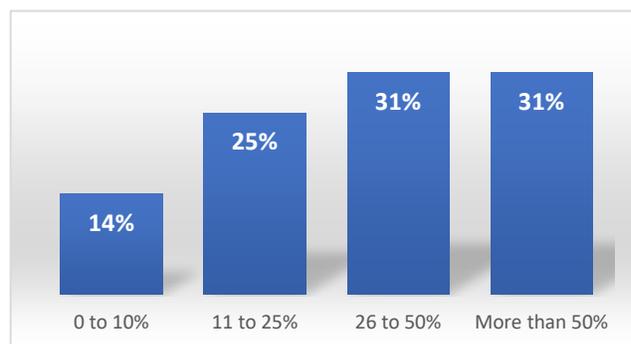


Figure 3. Socio-economic makeup of schools

Teachers/Complement

Among those responding, the maximum number of male teachers at any school was 29, compared with a maximum of 68 females. Across the 52 schools there was a total of 121

male teachers and 463 female teachers. The total number of teachers in the participating schools was estimated to be 584.

Forty per cent of the 107 teachers who responded to the teachers' survey had been teaching for more than 20 years, 38% between 11 and 20 years, and 22% for ten years or less. The average numbers of male and female students taught were 17 and 18, respectively.

Forty-seven per cent of the teachers taught all or almost all subjects (early stages of compulsory education); of the remainder, ten per cent taught English, five per cent mathematics, five per cent sciences, four per cent foreign languages, six per cent vocational subjects and 24% another subject.

ICT was taught as a separate subject for 61% of the respondents, and 91% voluntarily integrated ICT in their subjects. For 38% of the teachers, ICT integration happened because of curriculum requirements.

School Location

Thirty-nine principals indicated the location of their school; 38% of the principals responding were from the north (Castries, Gros Islet and Dauphin) and a similar percentage from the south (Vieux Fort and Laborie), whilst 13% were from the east (Micoud, Praslin and Dennery) and ten per cent were from the west (Anse La Raye, Canaries, Soufriere and Choiseul).

The majority (55%) of the teachers responding to the survey were from the northern region, 19% from the southern region, 12% from the west coast and 14% from the eastern region. Consequently, the country was fairly well represented. Sixty per cent of the teachers taught for five or more hours per week, whilst 26% taught for eight hours or more.

Infrastructure

Devices Used for Educational Purposes

In 2016, all primary and secondary schools had access to computer equipment that could be loosely referred to as a computer lab.

The 2013 laptop programme added to the number of computers in schools by giving all students in Form 4 a laptop computer. Some teachers in both primary and secondary schools have also been given laptop computers. Table 3 shows the estimated number of computers in the schools of the principals who participated in the survey. The exact number of computers in all schools on the island is not recorded but can be projected by extrapolating from the averages.

Table 3. Devices Used for Educational Purposes.

Device	Maximum	Mean	Total	Responses
Desktop computer with Internet access, total	40	8.63	354	41
Desktop computer without Internet access, total	22	2.17	89	41
Non-Internet-connected laptop, tablet PC, netbook or mini notebook, total	174	4.59	189	41
Internet-connected laptop, tablet PC, netbook, or mini notebook, total	42	3.44	142	41
Digital reader, total	0	0	0	41
Mobile phone provided by the school, total	2	0.24	10	41
Interactive whiteboard, total	1	0.05	3	41
Digital camera, total	1	0.05	3	41
Data projector, total	5	1.07	44	41

Equipment Use

Principals were asked approximately what proportion of this equipment (computers, interactive white boards, laptops, data projectors) was fully operational in that school year.

Twenty-six percent of 31 principals and 32% of teachers indicated that less than 50% of the equipment was fully operational; 38% of principals compared to 24% of teachers had more than 90% of their equipment fully functional, whilst 36% of principals and 45% of teachers had between 50% and 90% of the equipment fully operational.

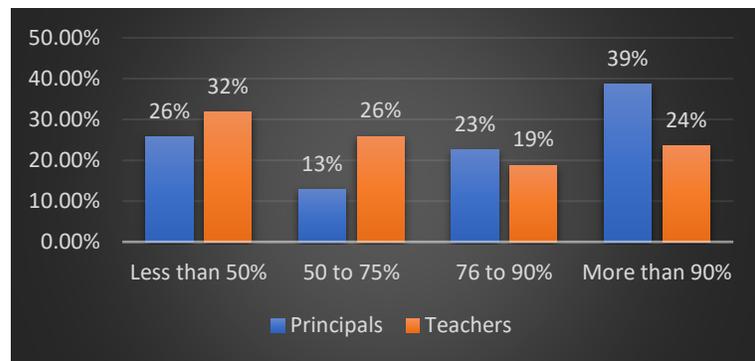


Figure 4. Proportion of technology operational

Teachers were asked about their use of computers in their daily lives. Seventy-three per cent used computers daily, whilst 19% use this technology on a weekly basis; 98% of teachers used a computer and the Internet to update subject knowledge or undertake personal and professional development in any subject; 99% of the teachers claimed to use computers and/or the Internet to prepare lessons; 91% used the computer for class teaching in front of students, and 75% used computers and the Internet to prepare video lectures/tutorials for their classes.

Most teachers had been using ICT in schools for some time; 54% had been users for more than six years, whilst 82% had four or more years of experience using ICT in schools. Only 33% of teachers had been provided with a laptop by the school, whilst 19% of the teachers had students with laptops provided by the school for their own use. Fifty-five per cent

students could use personally owned devices such as laptops, tablets and notebooks in school, whilst 43% could use their mobile phones.

Some subjects make greater use of ICT than others. Only 18% of teachers said that participating in ICT training is compulsory for the subject they teach.

Deployment of Technology

The numbers of desktop computers installed for educational purposes for pupils to use either alone or with a teacher in the following places are shown in Table 4. The averages per school are 11.76 computers per “lab,” 0.66 per classroom, 0.17 per library and 0.2 per other location accessible to students. Using the school populations for the 41 schools, we can estimate the student-to-computer ratios for each of these locations: labs, 11:1; classrooms, 198:1; libraries, 770:1; other locations, 655:1.

Table 4. Desktop Computers Installed for Student Use.

Location	Maximum	Mean	Total	Responses
Computer laboratories	50	11.76	483	41
Classrooms	19	0.66	28	41
Libraries	4	0.17	7	41
In other locations in the school accessible to students	3	0.2	9	41

The number of interactive whiteboards (IWB) installed in schools in the targeted school year in various places is shown in Table 5. The results show that IWBs were rather scarce.

Table 5. IWBs for Educational Purposes.

Location	Maximum	Mean	Total	Responses
In computer laboratories	1	0.02	1	41
Classrooms	0	0	0	41
Libraries	1	0.02	1	41
In other locations in the school that are accessible to students	0	0	0	41
Independent of any location because of portability	0	0	0	41

Connectivity

Amongst 24 schools responding, almost 63% had less than 5 Mbps connectivity, and 17% indicated their school was not connected via broadband (Table 6).

Table 6. Type of Internet Connectivity in Schools.

Type of Broadband	% of Respondents	Responses
144 Kbps – 2 Mbps	41.67	10
>2 Mbps – 5 Mbps	20.83	5
>5 Mbps – 10 Mbps	12.50	3
>10 Mbps – 30 Mbps	0.00	0
30 Mbps (excl.) – 100 Mbps (incl.)	4.17	1
> 100 Mbps	4.17	1
None of these; my school is not connected via broadband	16.67	4
Total	100	24

Access to Technology and Connectedness

Access to Technology

Of 29 respondents, 17% accessed the Internet through ADSL, 21% through cable and 62% through a wireless LAN. Seventy-seven per cent of respondents indicated that ICT equipment was maintained by their own staff, 92% used an external unit arranged by education authorities and 46% used some other means of maintaining ICT equipment.

Connectedness

With respect to connectedness, results were mixed, as shown in Table 7. Seventy-five per cent of respondents had a combination of LAN and Wi-Fi, 65% had school email addresses for more than 50% of teachers, but only 14% had email addresses for more than 50% of students. The students were therefore not connected via school email. Forty-one per cent of schools had a home page, but many of the pages were not routinely updated.

Table 7. Access to Technology.

Does your school have:	Yes	Responses
Its own homepage or website, publicly accessible?	41%	32
School email addresses for more than 50% of teachers?	66%	32
School email addresses for more than 50% of students?	14%	29
A LAN (local area network)?	73%	30
If yes, is this LAN also wireless (Wi-Fi)?	75%	28
An ICT co-ordinator?	21%	33
A virtual learning environment (i.e., a platform or knowledge management system, etc., possibly hosted externally)?	7%	29
If yes to virtual learning environment, can it be accessed from outside the school by teachers?	11%	18
If yes to virtual learning environment, can it be accessed from outside the school by students?	12%	17
If yes to virtual learning environment, can it be accessed from outside the school by parents?	7%	14
If yes to virtual learning environment, can it be accessed outside of school hours?	13%	15

Amongst those schools (seven out of 33) that had an IT co-ordinator, four were available full-time, none were rewarded in any concrete manner for performing such a function (such as increased salary), two had a reduced workload and six were responsible for providing

support in pedagogical ICT use. If schools are to fully integrate ICTE, all schools will need dedicated ICT support.

Professional Development

Table 8 summarises the professional development activity reported in the surveys. The same question was posed to both teachers and principals. Care must be taken in interpreting the responses. The principals indicated whether one or more teachers in their schools had received the various types of professional development. Teachers indicated whether they themselves had received professional development. So technically, 100% of schools could have had one or more teachers who had undergone professional development, but the proportion of teachers trained could be very low. Courses on pedagogical use of ICT, participation in peer learning communities, and other types of professional development not indicated here were most prevalent for the teachers.

Table 8. Professional Development.

Training Area	Teachers Yes	Total	Principals Yes	Total
Introductory courses on Internet use and general applications (basic word processing, spreadsheets, presentations, databases, etc.)	28%	83	64%	31
Advanced courses on applications (advanced word processing, complex relational databases, virtual learning environment, etc.)	38%	84	45%	29
Advanced courses on Internet use (creating websites/home pages, video conferencing, etc.)	22%	84	40%	30
Equipment-specific training (interactive whiteboard, laptop, etc.)	17%	84	25%	28
Courses on the pedagogical use of ICT in teaching and learning	63%	86	67%	30
Subject-specific training on learning applications (tutorials, simulations, etc.)	24%	84	43%	28
Course on multimedia (using digital video, audio equipment, etc.)	22%	83	28%	29
Participation in peer learning communities or group work with other teachers about the use of ICT for learning and teaching	59%	85	45%	29
Other professional development opportunities related to ICT	60%	87	68%	28

Twelve per cent of teachers indicated that they had spent no time receiving ICT training, 44% had spent three days or less in ICT training over the last two school years, and 56% had spent four days or more.

Support from Colleagues and/or Experts

When teachers use ICT in lessons, they may require support from one of several sources, such as: a more experienced/knowledgeable teacher, the school's ICT/technology co-ordinator, other school staff, experts from outside the school, or an online helpdesk, community or website. When teachers make use of supports, it is usually for technical assistance. That support tends to come from the ICT/technology co-ordinator, a more experienced/knowledgeable staff member or other school staff members. Pedagogical

support tends to come from other school staff and from online resources. There is a lack of dedicated support personnel allocated to schools.

ICT-related Activities

Activities

Teachers were asked how often they did the following activities with the target class. The top four activities were: preparing exercises and tasks for students; browsing the Internet to collect learning material or resources to be used by students during lessons; browsing or searching the Internet to collect learning materials or resources to be used by students during lessons; and searching the Internet to collect information to prepare lessons. The results show there is the potential for teachers to expand the scope of their activities.

Table 9. ICT-related Activities Undertaken by Teachers with Their Classes.

ICT-related Activities	At Least Once a Week or Daily (%)	Total
Prepare exercises and tasks for students	73.53	68
Browse or search the Internet to collect learning materials or resources to be used by students during lessons	70.00	70
Browse or search the Internet to collect learning materials or resources to be used by students during lessons	66.20	71
Browse/search the Internet to collect information to prepare lessons	61.11	72
Use applications to prepare presentations for lessons	40.00	70
Create your own digital learning materials for students	35.83	67
Look for online professional development opportunities	31.88	69
Communicate online with parents	22.06	68
Evaluate digital learning resources in the subject you teach	19.70	66
Download/upload/browse material from the school's website or virtual learning environment/learning platform	18.18	66
Use ICT to provide feedback and/or assess students' learning	15.95	69
Post homework for students on the school website	11.76	68

Materials

The types of materials used by teachers when teaching with the aid of ICT are shown in Table 10. Internet materials and online materials from educational sources were used most frequently, whilst 55% of teachers indicated that they used offline materials such as CD-ROMs.

Table 10. ICT-related Activities Undertaken by Teachers with Their Classes.

Types of Materials Used when Teaching with the Aid of a Computer/the Internet	Yes	Responses
Materials that you've searched the Internet for	99%	72
Existing online materials from established educational sources	93%	72
Materials that are available on the school's computer network or database	25%	69
Electronic offline materials (e.g., CD-ROMs)	55%	71

Capacity Shortage or Inadequacy

A major issue for schools is the level of inadequacy of ICT-related resources and the reality that inadequacy is a barrier to ICT integration in teaching and learning. Table 11 summarises the shortages that principals and teachers perceive to be impacting ICT integration to some degree or a very large degree. The inadequacies include: lack of bandwidth; the insufficiency of IWBs; the inadequate number of computers or laptops/notebooks; the level of technical support for teachers; the technical skills of teachers; a lack of pedagogical models for how to use ICT for learning; and the pressure to prepare students for exams.

Table 11. ICT Adequacy.

Area	Principals	Teachers	Difference (%)	Responses	Responses
	<i>Some or a lot (%)</i>	<i>Some or a lot (%)</i>		<i>Principals</i>	<i>Teachers</i>
Insufficient number of computers	77	68	9	31	72
Insufficient number of Internet-connected computers	67	68	-1	30	72
Insufficient Internet bandwidth or speed	90	90	0	30	72
Insufficient number of IWBs	94	78	16	32	72
Insufficient number of laptops/notebooks	84	81	4	32	72
School computers out of date and/or needing repair	74	69	5	31	72
Lack of adequate skills in teachers	84	62	22	32	71
Insufficient technical support for teachers	88	64	24	32	69
Insufficient pedagogical support for teachers	84	63	21	31	70
Lack of adequate content/materials for teaching	67	51	16	30	69
Lack of content in national language	55	34	21	29	67
Too difficult to integrate ICT use into the curriculum	43	24	19	30	71
Lack of pedagogical models on how to use ICT for learning	71	40	31	31	70
School time organisation (fixed lesson times, etc.)	58	58	0	31	71
School space organisation (classroom size and furniture, etc.)	61	60	1	31	71
Pressure to prepare students for exams and tests	71	68	3	31	71
Most parents not in favour of the use of ICT at school	7	13	-6	30	69
Most teachers not in favour of the use of ICT at school	19	23	-4	31	69
No or unclear benefit to using ICT for teaching	17	13	4	29	70
Using ICT in teaching and learning is not a goal in our school	13	21	-8	30	71

Existing Strategies

Schools focused on ICT integration in teaching and learning often implement several strategies to foster ICT uptake. The two most common strategies appear to be: regular discussions with teaching staff about ICT use for pedagogical purposes, and scheduled time for teachers to meet to share, evaluate or develop instructional materials and approaches. Various other strategies are used infrequently at some schools (Table 12).

Table 12. ICT Strategies.

Strategy	Principals (%)	Teachers (%)	Should Have (%)	Responses Principals	Responses Teachers
Its own written statement about the use of ICT	27	9	82	30	72
Its own written statement specifically about the use of ICT for pedagogical purposes	23	3	80	30	71
A policy and actions to use ICT for teaching and learning in specific subjects	14	5	89	29	70
Regular discussions with teaching staff about ICT use for pedagogical purposes	70	21	94	30	71
A specific policy or programme to prepare students for responsible Internet behaviour	13	11	96	30	72
A specific policy about using social networks (Facebook, etc.) in teaching and learning	17	9	94	30	71
A specific policy to promoting co-operation and collaboration amongst teachers	27	15	94	30	70
Scheduled time for teachers to meet to share, evaluate or develop instructional materials and approaches	53	28	96	30	70

Incentives

Educational transformation requires a major change-management strategy accompanied by a system of incentives for encouraging buy-in. Principals were asked: “Does your school reward teachers for using ICT in teaching and learning (whether related to ‘good teaching’ awards or not)?” The principals indicated there were few, if any, targeted incentives for teachers attempting to integrate ICT in teaching and learning. Five of 30 principals indicated that teachers may get additional ICT equipment for the classroom. When asked what incentives should be provided, teachers were strongly supportive of additional training hours in ICT, a specific policy or programme to prepare students for responsible Internet behaviour, and additional equipment for the classroom. They were not very supportive of reduced teaching hours, in some sense recognising the primacy of their role as educators. They were only somewhat supportive of competitions, prizes and financial incentives.

Innovation

Only seven per cent of the responding principals said that they had an official policy statement about innovation within the school in teaching and learning methods and/or school organisation more generally. Eight per cent of the teachers believed that such a policy should exist, 50% said they had initiatives to encourage ICT-based innovations within the school (even in the absence of a policy statement), and 81% supported the establishment of initiatives to promote ICT integration. Only 15% of principals claimed to have implemented a change-management training programme within the last three years, while 69% of teachers believed that such training should be offered. Change-management training would focus on preparing the institution for the transformation inherent in significant ICT integration in teaching and learning.

Opinions on the Use of ICT in Schools

Both teachers and principals were invited to express their opinions on the use of ICT in schools; 28 principals and 63 teachers responded, and both groups were strongly supportive. Figure 5 presents their responses which indicates that there was strong support for the use of ICT in school. In all cases, more than 80% agreed or strongly agreed with various uses of ICT in school. It is worth noting that 94% teachers felt that for ICT to be fully exploited for teaching and learning, radical changes in schools are needed.

1	ICT should be used for students to do exercises and practice.
2	ICT should be used for students to retrieve information.
3	ICT should be used for students to work in a collaborative way.
4	ICT should be used for students to learn in an autonomous way.
5	ICT use in teaching and learning positively impacts student motivation.
6	ICT use in teaching and learning positively impacts student achievement.
7	ICT use in teaching and learning positively impacts higher-order thinking skills (critical thinking, analysis, problem solving).
8	ICT use in teaching and learning positively impacts students' competence in transversal skills (learning to learn, social competence, etc.).
9	ICT use in teaching and learning is essential to prepare students to live and work in the 21 st century.
10	For ICT to be fully exploited for teaching and learning, radical changes in schools are needed.

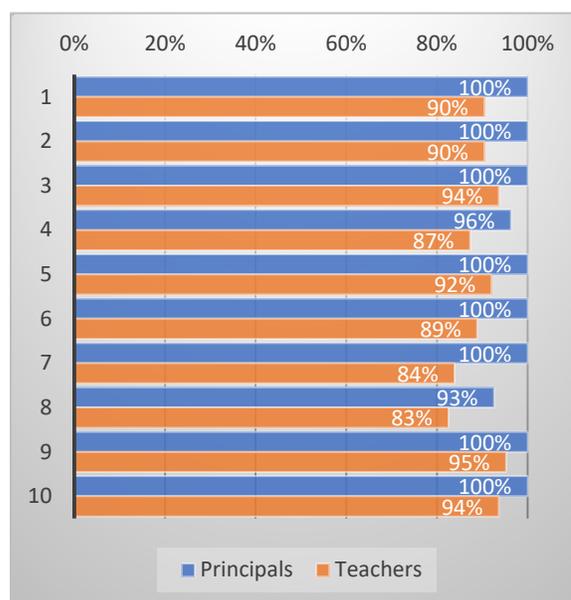


Figure 5. Opinions on the use of ICT in schools

Computer Use Related to School Activities

Principals undertook several activities with the use of a computer. All of them (100%) used their computer to achieve the following:

- school management-related tasks (budgeting, planning, timetabling, etc.);
- searching for information;
- making presentations;
- communicating online with teachers (email, website announcements, etc.); and
- communicating by emails with educational authorities (at the local, regional or central level).

Only 67% of the principals used their computer to communicate online with parents (email, website announcements, etc.).

Division of Responsibilities

Of five key functions that impact ICT integration in education, the MOE is predominantly responsible for three: procurement of the ICT infrastructure; determining course content; and making decisions about teacher training. Teachers are primarily responsible for choosing their own teaching methods and learning resources. We noted that the influence of the school head and regional bodies (such as the district offices) was somewhat subdued relative to that of the MOE and teachers.

Table 13. Division of Responsibilities.

Function	Teachers	School Head	School Governing Body	Regional Education Body	Ministry of Education	Responses
Procuring ICT infrastructure	0%	15%	11%	0%	74%	27
Determining course content	12%	15%	12%	12%	50%	26
Choosing teaching methods	78%	15%	0%	0%	7%	27
Deciding about teacher training	8%	19%	15%	0%	58%	26
Choosing learning resources	63%	19%	11%	0%	7%	27

Types of Learning Activities

Teachers were asked to what extent the following aspects of teaching and learning (with or without ICT) featured when teaching their classes. It is worth noting that several activities that are amenable to student-led ICT engagement were not strongly emphasised. Activities such as enquiry-based exercises, student presentations, group work, self-paced learning, and students discussing ideas with other students and the teacher were used frequently by 40% of the teachers or less. This observation is consistent with several of the identified impediments to ICT integration summarised in Table 11.

Table 14. Types of Learning Activities.

Activity	None (%)	A Little (%)	Sometimes (%)	A Lot (%)
I present, demonstrate and explain to the whole class	1%	1%	25%	72%
I support and explain things to individual students	0%	3%	42%	55%
Students work alone at their own pace	0%	13%	54%	33%
Students work in groups	1%	9%	54%	36%
Students work on exercises or tasks individually at the same time	3%	6%	46%	45%
Students give presentations to the whole class	10%	21%	51%	18%
Students take tests and assessments	6%	7%	47%	40%
Students are engaged in enquiry-based activities	1%	16%	64%	18%
Students discuss ideas with other students and the teacher	1%	15%	45%	39%
Students reflect on their learning	3%	26%	47%	24%
Students participate in assessing their work	4%	24%	48%	24%

ICT-related Skills

One of the mitigating factors for ICT integration in education is the level of competence/skill of the teachers with ICT use. Table 15 shows the percentage of teachers who claimed confidence in various ICT-related skills; 68 teachers responded to the question. Teachers were quite confident with simple/routine tasks such as sending emails, preparing a Word document and organising files in folders. Activities such as creating/mediating discussion forums, using spreadsheets, creating presentations with audio or video clips, or capturing and editing digital content such as photos, movies or other forms of graphics were skills about which teachers expressed less confidence.

Table 15. ICT-related Skills.

Question	A Lot (%)
Use emails to communicate with others	88
Email a file to someone (a student or another teacher)	82
Produce a text using a word processing programme	78
Organise computer files in folders and subfolders	76
Participate in social networks	60
Download and install software on a computer	57
Use a spreadsheet	55
Participate in a discussion forum on the Internet	54
Create a presentation with simple animation functions	49
Edit a questionnaire online	48
Teach students how to behave safely online	47
Capture and edit digital photos, movies or other graphics	46
Download or upload curriculum resources from/to websites/learning platforms for students to use	45
Teach students how to behave ethically online	45
Edit text online containing Internet links and images	43
Create a presentation with video or audio clips	43
Use a spreadsheet to plot a graph	39
Create a database	34
Create and maintain blogs or websites	27
Prepare materials to use with an interactive whiteboard	15

ICT Impact on Learning

The impact of ICT integration on teaching and learning is a debated subject. Researchers, however, have presented evidence that ICT integration in education does positively impact learning outcomes for students.¹⁰ Teachers were asked their opinion about the impact of ICT on student learning. Table 16 highlights their responses. It is worth noting that these opinions were potentially mediated by, amongst other factors: the state of the ICT infrastructure in the teacher's school; the teacher's knowledge of and skill with ICT; and the teacher's age and teaching experience. In general, a small percentage of the teachers felt that ICT would have little or no impact. Hence, most teachers felt that ICT could have some positive impact on students' learning.

Table 16. Opinions on the Impact on Students' Learning

Question	Little or None (%)	Somewhat (%)	A Lot (%)
Students concentrate more on their learning	8	45	47
Students try harder in what they are learning	14	36	50
Students feel more autonomous in their learning (they can repeat exercises if needed, explore in more detail topics that they are interested in, etc.)	9	25	66
Students understand more easily what they learn	6	46	48
Students remember more easily what they've learnt	11	38	51
ICT facilitates collaborative work between students	9	38	53
ICT improves the class climate (students are more engaged, less disruptive)	11	34	55

Open-ended Questions

This section presents responses to four open-ended questions posed to both principals and teachers. The verbal responses were analysed, and the key themes identified are listed below.

Question 1: What other issues need to be considered in crafting an ICT policy for education in Saint Lucia?

Key themes

- **Policy implementation and enforcement:** Implementation and enforcement of the ICT policy. The policy must make mandatory the use of technology in teaching in the classroom.
- **Resource sufficiency:** ICT resources must be made readily available for students and teachers to facilitate effective teaching/learning.
- **Teacher attitudes towards and competence with ICT**

¹⁰ Higgins, S. (n.d.). *Does ICT improve learning and teaching in schools?* Report prepared for the British Educational Research Association. Retrieved from <http://dysgu.llyw.cymru/docs/learningwales/publications/121122ictlearningen.pdf>

- **Standards for ICT integration in the school curriculum:** Standards and the availability of resources.
- **ICT and special needs learners:** Leveraging ICT to improve learning outcomes for students with special needs.
- **Equipment quality, reliability and operability:** The need to ensure that all schools are equitably equipped with functional ICT infrastructure, equipment and materials.
- **Enhancing equipment safety:** Issues of equipment safety at schools
- **Internet connectivity**
- **Policy on personal devices** such as tablets and mobile phones.
- **Total cost of ownership:** Affordability of ICT equipment.
- **Alignment of staff skills** with the CSEC moving to e-exams.
- **Sharing of ICT resources** with the community.
- **Cyber-bullying**
- **Privacy and intellectual property**

Question 2: The development of a policy for ICT in education in Saint Lucia dates to at least 2001. Based on your awareness of the Ministry's attempts at ICT integration in education, what have been the successes to date?

Key themes

- Computer labs in primary schools
- Greater availability of computers in secondary schools
- Establishment of an ICT curriculum officer
- Distribution of laptops to students and teachers
- Access to the Internet at schools
- Access to online training for teachers
- Greater awareness of the use of ICT for teaching and learning
- An increased awareness of and appreciation for it and a more driven effort to spread its use and benefit across the country
- Training programmes for teachers and greater Internet access

Question 3: The development of a policy for ICT in education in Saint Lucia dates to at least 2001. Based on your awareness of the Ministry's attempts at ICT integration in education, what have been the failures to date?

Key themes

- **ICT curriculum:** Outdated.
- **Commitment to ICT:** Level of buy-in for ICT integration is inadequate.
- **Resource sufficiency:** Insufficient resources in many schools.
- **ICT support:** Lack of technical support and maintenance of computers.
- **Professional development for teachers:** Training for teachers to facilitate greater use of ICT in regular teaching.

- **ICT for special needs:** Very little support for teachers working with students with special needs.
- **Internet connectivity:** Insufficient bandwidth and Internet access for instruction is a major issue.
- **Monitoring and evaluation of ICT impact:** No monitoring of ICT use is taking place.
- **Insufficient and inadequate educational software**

Question 4: Do you have additional comments?

Key themes

- Computers in classrooms for asynchronous learning and meeting the needs of different learning styles
- Speedy implementation of the ICT policy
- Sustainable funding for ICT
- Improving teacher capacity
- Preparation of teachers for CSEC e-exams
- Improving facilities, classrooms/laboratories, infrastructure, hardware and software
- Affordability of technology — parents cannot afford to supply their children with the technologies, especially those in rural areas, so more should be done to make it available to them.
- The need for more IWBs
- The need for adequate human resource capacity in terms of IT technicians
- The need to adopt a bring-your-own-device policy
- The efficacy of the laptop programme
- The need for teacher buy-in

The Viewpoint of Students

In addition to obtaining feedback from teachers and principals, an attempt was made to obtain feedback from students. The survey was sent to 124 recent and past students. Only 15 students responded. Whilst 15 responses represent more than a ten per cent response rate, we will not attempt to generalise from the results. Instead, the survey data were examined for some interesting insights, which are summarised below. The statements refer to the participating students, not students in general.

Some observations

- Most of the students used computers in their lives outside of school on a weekly or daily basis.
- Most of the students had access to a computer/laptop with Internet access, and most had access to a digital camera.

- The majority of the respondents had been using computers outside of school for more than six years.
- Most of the students had used the Internet and a desktop computer or laptop computer at school.
- Regarding activities related to schoolwork, most of the students at least once a week did homework on a computer and used online tools such as social media platforms. The students did not generally: email their teachers, participate in online communities or forums related to their subject of study, collect school-related information online and organise it for later retrieval, send schoolwork by email or upload it to the school LMS or virtual learning platform, download or upload material on their school's website, check the school's website for announcements, or find themselves engaging with job websites by posting or updating their CVs.
- The students got to make very little use of ICT equipment during lessons. The use of computers/laptops with or without Internet, digital readers, IWBs, digital cameras or their own laptop brought from home was minimal if any. A significant number used their own mobile phones.
- ICT resources and tools were rarely used during lessons in school. Digital textbooks, exercise software, multimedia production tools, broadcasting tools, data-logging tools, computer simulations and digital learning games were all quite absent from learning activities used by teachers
- In terms of ICT-based activities used directly during lessons, the students predominantly engaged in searching online for practical information. Other activities — such as downloading/uploading materials directly to the school's website, participating in online training sessions, and creating or contributing to blogs or discussion forums for schoolwork — were rarely undertaken.
- In terms of activities not directly related to school, most the students participated in: online chatting, searching online for practical information, searching different online sources for information about a topic of interest, browsing the Internet for fun, and watching video clips or downloading digital content (music, games, software).
- With respect to ICT skills, most of the students had quite an array of skills, which included: producing text documents; emailing files to someone, including a teacher; creating presentations with animation; participating in social networks; identifying online sources of reliable information; using the Internet to protect themselves against bullying; using the Internet to protect their online reputation and that of others; and using the Internet in a manner that protected the privacy of others.
- Generally, all the students believed the following: that it was important to them to use ICT in school; that using a computer for learning was fun; that using a computer whilst learning would help them with their future life as an adult; and that learning with computers would help them get a job.
- The students were very positive about the impact of ICT on learning. They believed that it would help them: concentrate better, try harder at what they were learning, feel more independent, understand concepts more easily, remember more easily

what they had learnt and work with other students on groups tasks. They also believed that ICT improved the learning atmosphere in the classroom.

In summary, while the students had had exposure to ICT equipment for several years, they had had very little experience with using ICT in school-based activities. Nonetheless, they were quite sure that ICT could have a positive impact on their educational experience.

Conclusions

This report has focused on presenting a snapshot of the status of ICTE as of 2016. The data presented in the report were obtained from a combination of a desk review of pertinent documents, conversations with Mr. Germain Anthony, the ICT specialist in the MOE, and an analysis of the results of two surveys administered to teachers and principals.

The report presents several findings that will drive the policy objectives for ICTE. Many of these findings present significant challenges to the MOE if it is to seriously commit to ICT integration in education. The silver lining is that both teachers and principals strongly support ICT integration in education, so there is fertile ground for reaping the benefits of ICT integration. Government must commit to appropriate levels of funding to meet the infrastructure and training needs as well as be willing to make much-needed educational reforms to allow ICTE to germinate and take root.



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