SURVEY OF ICT AND EDUCATION IN THE CARIBBEAN
VOLUME I: REGIONAL TRENDS AND ANALYSIS

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The Natoma Group

ICT AND EDUCATION SERIES
SERIES EDITOR:
Michael Trucano
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Acronyms

ABHTI Antigua and Barbuda Hospitality Training Institute
ABJIT Antigua and Barbuda International Institute of Technology
ADSL Asymmetric Digital Subscriber Line (also DSL)
BSSEE Barbados Secondary School Entrance Exams
BVI HS British Virgin Islands High School
C & W Cable and Wireless Corporation
CAI Computer-assisted Instruction
CAPE Caribbean Advanced Proficiency Examination
CARADOL Caribbean Association for Distance and Open Learning
CARICOM Caribbean Community
CASE College of Agriculture, Science and Education
CDB Caribbean Development Bank
CIC Community Information Center
CKLN Caribbean Knowledge and Learning Network
CMC Community Media Center
COL Commonwealth of Learning
COTS Commercial Off-the-Shelf
CREMIS Caribbean Regional Education Management Information System
CSEC Caribbean Secondary Education Certificate
CUPIDE Caribbean Universities Project for Integrated Distance Education
CXC Caribbean Examination Council
DBMS Database Management System
DE Distance Education
DFID Department for International Development
DOE Department of Education
ECCB Eastern Caribbean Central Bank
EDF European Development Fund
EEC Education Evaluation Center
EFA Education For All
ELJAM e-Learning Jamaica
EMIS Education Management Information Systems
ETRC Education Technology Resource Centre
FCC Federal Communication Commission
GCE General Certificate of Education
GeSCI Global e-Schools Initiative
GIS Geographic Information System
GOB Government of Barbados
GER Gross Enrolment Ratio
GTZ Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
HDI Human Development Index (UNDP)
HEART Trust/NTA The Human Employment and Resource Training Trust/National Training Agency
HLSCC H. Lavity Stoutt Community College
ICCI International College of the Cayman Islands
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ICDL</td>
<td>International Computer Driving Licenses</td>
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<tr>
<td>ICT</td>
<td>Information and Communications and Technology</td>
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<tr>
<td>IDB</td>
<td>Inter American Development Bank</td>
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<td>IDRC</td>
<td>International Development Research Centre</td>
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<td>IGCSE</td>
<td>International General Certificate of Education</td>
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<td>IEARN</td>
<td>International Education and Resource Network</td>
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<td>IP</td>
<td>Internet Protocol</td>
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<tr>
<td>IPA</td>
<td>Pedagogical Institute of Aruba</td>
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<td>ISTENETS</td>
<td>International Society for Technology in Education National Education Technology Standards</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>ITALIC</td>
<td>Improving Teaching and Learning in the Cayman Islands</td>
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<td>JCSEF</td>
<td>Jamaica Computer Society Education Foundation</td>
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<tr>
<td>JSAS</td>
<td>Jamaica School Administration Software</td>
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<tr>
<td>JSEP</td>
<td>Job Skills Education Program</td>
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<tr>
<td>LAN</td>
<td>Local Area Network</td>
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<td>LDC</td>
<td>Least Developed Country</td>
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<td>LRC</td>
<td>Learning Resource Center</td>
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<td>LMS</td>
<td>Learning Management System</td>
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<td>MIT</td>
<td>Massachusetts Institute of Technology</td>
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<td>MOE</td>
<td>Ministry of Education</td>
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<tr>
<td>MOE Barbados</td>
<td>Ministry of Education, Youth Affairs and Sports</td>
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<td>MOEY</td>
<td>Ministry of Education and Youth (Jamaica)</td>
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<td>MOEYC</td>
<td>Ministry of Education, Youth and Culture (Jamaica)</td>
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<tr>
<td>MOEYS</td>
<td>Ministry of Education, Youth, and Sports</td>
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<tr>
<td>NCU</td>
<td>Northern Caribbean University</td>
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<td>NIHEST</td>
<td>National Institute of Higher Education, Science and Technology</td>
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<tr>
<td>NHP</td>
<td>New Horizons Project</td>
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<td>NQR</td>
<td>National Qualifications Register</td>
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<td>OAS</td>
<td>Organization of American States</td>
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<tr>
<td>OCAD</td>
<td>Ontario College of Art and Design</td>
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<tr>
<td>OCW</td>
<td>Open CourseWare Project</td>
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<tr>
<td>ODL</td>
<td>Open and Distance Learning</td>
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<tr>
<td>OECS</td>
<td>Organisation of Eastern Caribbean States</td>
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<tr>
<td>OER</td>
<td>Open Education Resource</td>
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<td>OERU</td>
<td>OECS Education Reform Unit</td>
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<td>OISE</td>
<td>Ontario Institute for Studies in Education</td>
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<td>OLPC</td>
<td>One Laptop Per Child</td>
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<td>PBL</td>
<td>Project-based Learning</td>
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<tr>
<td>PBX</td>
<td>Private Branch Exchange</td>
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<td>PDU</td>
<td>Professional Development Unit</td>
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<tr>
<td>PSEP</td>
<td>Primary Education Support Project</td>
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<td>PMT</td>
<td>Performance Management Tool</td>
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<td>PPP</td>
<td>Pillars for Partnership and Progress: The OECS Education Reform Strategy 2010</td>
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<tr>
<td>PPMR</td>
<td>Project Performance Monitoring Report</td>
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<tr>
<td>PTA</td>
<td>Parent Teachers Association</td>
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*While the acronym "ICT" is the term of art used most commonly among donor and development agencies, MOEs and other educational institutions in the Caribbean (and elsewhere) use "IT," especially in relation to curricula, exams, departments within ministries, and technology teachers. To the extent possible, IT will be used similarly in this report. ICT will be used more generally.*
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AC</td>
<td>Acronym</td>
</tr>
<tr>
<td>SALCC</td>
<td>Sir Arthur Lewis Community College</td>
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<tr>
<td>SASI</td>
<td>School Administrative Student Information</td>
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<td>SBA</td>
<td>School-based Assessment</td>
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<td>SEMP</td>
<td>Secondary Education Modernization Program</td>
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<tr>
<td>SETAR</td>
<td>Servicio di Telecomunicación di Aruba</td>
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<tr>
<td>SIDS</td>
<td>Small Island Developing States</td>
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<tr>
<td>SIF</td>
<td>Schools Interoperability Framework</td>
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<td>SIFA</td>
<td>Schools Interoperability Framework Association</td>
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<tr>
<td>SITES M2</td>
<td>Second Information Technology in Education Study: Module 2 report</td>
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<tr>
<td>SJPP</td>
<td>Samuel Jackman Prescod Polytechnic</td>
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<tr>
<td>SMU</td>
<td>Sr. Mathews University</td>
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<tr>
<td>TCO</td>
<td>Total Cost of Ownership</td>
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<td>TIMS</td>
<td>Training Information Management System</td>
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<tr>
<td>TLI</td>
<td>Tertiary Level Institution</td>
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<tr>
<td>TPD</td>
<td>Teacher Professional Development</td>
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<tr>
<td>TVET</td>
<td>Technical and Vocational Education and Training</td>
</tr>
<tr>
<td>UCCI</td>
<td>University College of the Cayman Islands</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
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<tr>
<td>USAC</td>
<td>Universal Service Administration Company</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>USED</td>
<td>United States Department of Education</td>
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<tr>
<td>UTech</td>
<td>University of Technology</td>
</tr>
<tr>
<td>UVI</td>
<td>University of the Virgin Islands</td>
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<tr>
<td>UWI</td>
<td>University of the West Indies</td>
</tr>
<tr>
<td>UWISECS</td>
<td>UWI School of Continuing Studies</td>
</tr>
<tr>
<td>VIDE</td>
<td>US Virgin Islands Department of Education</td>
</tr>
<tr>
<td>VOIP</td>
<td>Voice Over Internet Protocol</td>
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<tr>
<td>VSAT</td>
<td>Very Small Aperture Terminal</td>
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<tr>
<td>VTC</td>
<td>Video teleconference</td>
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<tr>
<td>VUSSC</td>
<td>Virtual University of the Small States of the Commonwealth</td>
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<tr>
<td>WAN</td>
<td>Wide Area Network</td>
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Please note that a glossary of technology-related and educational terms appears at the end of this volume.
The following limitations should be noted:

- The data presented in the individual *Country Reports* should be regarded as illustrative rather than exhaustive. This *Survey* was not an exercise in primary data collection. The guidelines given to country researchers regarding report length were deliberate in order to ensure a focus on the more salient information and to enable the completion of the project within the established time frame and the available resources.

- Focus on regional trends and national profiles have no doubt failed to identify effective small-scale projects. Review methodology focused on secondary research and on interviews with respondents in positions that enabled them to knowledgeably discuss system-wide aspects of Information and Communications Technology (ICT) in schools and education systems, and recent or significant government projects and programs.

- Consideration of the cost effectiveness of ICT use in education has not been undertaken in the course of the *Survey*. While such analysis is critical to understand decision-making especially in relation to opportunity costs, this analysis is beyond the scope outlined for the *Survey*.

- The main focus of research for the *Survey* has been the use of ICT use in primary and secondary education, with additional investigation of ICT use in tertiary, vocational, and non-formal education. Many important aspects of the use of ICT in schools and in other learning-related contexts have not been addressed in the *Survey*. These include topics that cover services for special-needs students, assistive technologies, and providing ICT access to isolated and vulnerable populations, among others.

- ICT use in education is at a particularly dynamic stage in the Caribbean, which means that there are new developments and announcements happening on a daily basis. Therefore, these reports need to be seen as “snapshots” that were current at the time they were taken; it is expected that specific facts and figures presented in the *Country Reports* may become dated very quickly.

- It is anticipated that these reports will serve as the building block for an on-line database that will be updated collaboratively over time, based on additional research and feedback received through the infoDev web site. It is expected that individual *Country Reports* will be updated in an iterative process over time based on additional research and feedback received through the infoDev web site. For more information, and to suggest modifications to individual *Country Reports*, please see www.infodev.org/ict4edu-Caribbean.
This report synthesizes the findings from research that was initiated by the Information for Development Program (infoDev), a multi-donor partnership housed at the World Bank that investigates issues related to the effective and appropriate use of information and communication technologies (ICT) in developing countries. Research was undertaken in response to needs expressed by international donor and development agencies, private-sector organizations, governments, and NGOs for consolidated information focused on the following key questions:

- How is ICT currently being used in Caribbean countries, and what are the strategies and policies related to this use?
- What are the common challenges and constraints faced by Caribbean countries in this area?
- What is actually happening on the ground, and to what extent are donors involved?

Similar surveys were completed in 2003–2004 by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (Meta Survey on the Use of Technologies in Education in Asia and the Pacific) and in 2007 with support from infoDev (Survey of ICT and Education in Africa: A Summary Report, Based on 53 Country Surveys). It is hoped that this Survey will also contribute to the building of a global database on ICT and education issues in developing countries, regularly updated with the cooperation of project stakeholders.

More complete background information on this project is available on the infoDev Web site at http://www.infodev.org/ict4edu-caribbean.

Methodology

The Survey is intended as a broad presentation of fact overlaid with observations made by people involved in educational ICT efforts within the region and by the author's analysis. The main methods of gathering information for the Survey, then, were face-to-face and telephone interviews with respondents, email communication, and a survey of literature including policy documents, project reports, news articles, Web pages, and other resources. Original research—surveys, for example, leading to quantitative analysis or descriptive statistics—was not undertaken.

Information has been compiled from many, often duplicative and occasionally informal, sources. A list of works consulted, appearing at the end of Volume 1, includes formal sources such as reports, policies and other documents, but does not include government-maintained Web sites or other more evanescent sources. Citations within sections have been kept to a minimum.

Small Island Developing States

The Survey focuses on the region's small island developing states (SIDS) so as to maximize understanding of areas of commonality in terms of scale, economic factors, and other conditions. SIDS can be characterized as island states that typically are confronted by the following conditions:

- Small populations
- Limited natural resources
- Susceptibility to natural disasters such as hurricanes
- High reliance on international trade
- Vulnerability to international economic events

The economies of SIDS tend to be conditioned by their limited scale and by high transportation and communication costs. Their typically undiversified economies increase their vulnerability to natural, economic and other shocks. All of these conditions apply, in varying degrees, to Caribbean SIDS.
Many Caribbean countries, in addition, comprise archipelagos or parts of archipelagos, meaning that their populations are distributed on several islands, frequently with disparities of wealth and opportunity among them.

Interview respondents

The following people responded generously to requests for interviews regarding ICT in education in the Caribbean, and for review of the country profiles that appear in Volume 2 of the Survey.

- Cathy Augier-Gill
  Ministry of Education, Human Resource Development, Youth and Sports
  St. Lucia

- Worrell Brooks
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  Albena Lake-Hodge Comprehensive School
  Anguilla

- Leo Cato
  Education Officer, IT
  Ministry of Education
  Grenada

- Albert Corcho
  Principal, Tarrant High School
  Jamaica

- Jacqueline Cousins
  Assistant Chief Education Officer
  Media Services Unit
  Ministry of Education and Youth
  Jamaica

- Averill Crawford
  Chief Executive Officer / Project Manager
  e-Learning Jamaica
  Jamaica

- Susan Dougan
  Chief Education Officer
  Ministry of Education, Youth and Sports
  St. Vincent and the Grenadines

- Abraham Durand
  Director, ICT Division
  Ministry of Education
  Dominica

- Doristeen Etinoff
  Assistant Director of Education
  Ministry of Education
  Antigua and Barbuda

- Chris Gilbert
  Ministry of Education
  Jamaica

- Soila M. Gomez-Vries
  Project leader, ICT
  Ministry of Education and Labor
  Aruba

- Kathleen Greenaway
  Director of Education
  Ministry of Education and Labour
  Montserrat

- Hon. Girlyn Miguel
  Minister of Education, Youth, and Sports
  St. Vincent and the Grenadines

- Hon. Dr. Carlton Mills
  Minister of Education, Youth, Sports and Culture
  Ministry of Education
  Turks and Caicos Islands

- Quinton Morton
  Director EMIS
  Ministry of Education
  St. Kitts and Nevis

- Marlon Narcisse
  Manager, IT Unit
  Ministry of Education, Human Resource Development Youth and Sports
  St. Lucia

- Robert Phillips
  Education Specialist
  e-Learning Jamaica
  Jamaica
Development of the Survey was greatly facilitated by those listed below, who shared or provided access to information, offered opinions, and reviewed drafts.

Cristina Amorim, Inter-American Development Bank
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Jan Arend Brands, Free Man Management Consultants
Angela Demas, World Bank
Michelle Fryer, Inter-American Development Bank
Cynthia Hobbs, World Bank
Ushio Miura, UNESCO
Kerry McNamara, infoDev
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Cleveland Sam, Caribbean Examinations Council
Michael Trucano, infoDev
Paul West, Commonwealth of Learning
The CIVIC discussion forum, and the review contributions of members Hallam Hope, Richard Padilla and George Rogers

About the author

Edmond Gaible, Ph.D., president of The Natoma Group, is a consultant in ICT for development based in Oakland, California, specializing in teacher development, technology integration, and in appropriate technology and sustainable solutions. Over the last ten years, he has worked with governments, development agencies, foundations, and local NGOs on projects in Africa, Asia, and Latin America. In 2006, with Mary Burns, he wrote the infoDev guide, Using Technology to Train Teachers.

Additional research for the Survey of ICT in Education in the Caribbean was conducted by Mary Burns and by Clarisse O. Lima, Ph.D.

At infoDev, the project was managed by Michael Trucano.
Findings in primary and secondary education

The findings below represent an overview of analysis and observations regarding primary and secondary education in Volume 1 and Volume 2 of this Survey. The situations in specific countries within the Caribbean will of course differ from these broader observations. More nuanced discussion of these findings and the relationships among them occur throughout the Survey.

Findings related to policy
- Most governments have drafted or approved ICT policies in education.
- ICT policies in education have had limited impact on practice.

Findings related to institutions and management
- Organizational understanding of issues surrounding ICT in education is low.
- Many individual government personnel have strong understanding of issues surrounding ICT in education.
- ICT-supported education management information management (EMIS) remains challenging; several countries have promising initiatives in process.
- Learning by organizations from national, regional, and international experiences in ICT in education is low.
- Institutional capacity is not adequate to plan and implement comprehensive projects using ICT to support transformation of management, curriculum, and classroom practices.
- High capital and operational costs of ICT projects are cited as barriers to impact.

Findings related to ICT infrastructure
- Most secondary and many primary schools enable teachers and students to access computers and the Internet.
- Internet connectivity to schools is in many cases adequate to meet current needs.
- Hardware quality and maintenance pose critical challenges.

Findings related to the curriculum and to assessment
- Most ICT initiatives target basic technology skills and support for students on the Caribbean Examination Council Information Technology (CXC IT) exams.
- Student scores on CXC IT exams are high relative to scores in other subjects.
- Student scores on CXC IT exams do not correlate with workplace-ready skills.
- The IT curriculum and the IT-teacher position as currently staffed pose barriers to the use of technology to support learning in other subjects.
- High reliance on CXC exams for assessment limits the potential for changes in classroom practice.

Findings related to teacher professional development
- In-service teacher professional development (TPD) relies on “pull-out” workshops, which produce limited change in classroom practice.
- Participation in technology-focused TPD falls short of goals.
- TPD models tend to teach ICT skills separately from pedagogical skills.
- Pre-service teacher education does not provide adequate introduction to ICT and does not address use of ICT to support teaching and learning.
Findings related to teaching and learning in the classroom

- Student access to ICT for learning in non-IT subjects is limited.
- Support for integration of ICT across the curriculum has not influenced teachers’ activities.
- The impact of technology on learning outcomes in the Caribbean has yet to be demonstrated.

Findings related to regional cooperation

- Cooperative efforts by the Organisation of Eastern Caribbean States Education Reform Unit (OERU) and education ministries have influenced policy development.
- Cooperative efforts by the OERU and education ministries to support information management have not had impact.
- There is limited direct support by regional organizations for teachers or students to use technology to collaborate, access learning resources, or otherwise use ICT to support mastery of the curriculum.

Findings in tertiary education

The following findings represent an overview of analysis and observation regarding the use of ICT in tertiary education in the Caribbean.

- Student access to computers and the Internet at many tertiary level institutions (TLIs) is adequate, and in some instances above adequate.
- Many TLIs offer degrees and/or certificates in technical skills (e.g., autoCAD (Computer-aided design) and subjects (e.g., computer science).
- Access to ICT and ICT-focused education at teachers colleges and other teacher-education institutions is significantly lower than in other TLIs.
- Establishment of region-wide ICT infrastructure supporting increased collaboration and wider use of ICT-supported distance education remains a challenge.
- UWIDEC is expanding use of ICT to meet geographical obstacles to student access to higher education.
- Regional organizations such as Caribbean Knowledge and Learning Network (CKLN) and Caribbean Universities Project for Integrated Distance Education (CUPIDE) have yet to significantly impact operations or delivery of education by TLIs.