Barbados

Summary

Over the last decade, Barbados has launched an ambitious program of education reform, EduTech 2000, which features a strong ICT component. The US$213 million EduTech project has experienced significant delays in its civil works component, with those delays reflected in delays in ICT implementation. In contrast, major EduTech activities—reforming the primary and secondary curricula and providing ICT-focused TPD—have been implemented to some extent, and have introduced increased use of learner-centered pedagogies. As of 2007, EduTech ICT planning has been revised and the project is moving forward with installation of classroom- and lab-based computers.

The four Barbadian tertiary institutions offer a range of ICT-related certificates, diplomas, and degrees. Several also offer courses via e-learning.

The standard of living in Barbados is among the highest in the region. However, key sectors such as tourism and product assembly are strongly influenced by the global economy.

Basic Data

Category	Date	Value
Population	2006	279,912
Per capita GDP (PPP)	2005	$17,300
Economy, composition	2006	Tourism, sugar, light manufacturing, component assembly for export
Literacy, total population 15 and over	2002	99.7
Literacy rate (women)	2002	99.7
Gross enrollment ratio, primary	2002/3	104.3
Gross enrollment ratio, primary (girls)	2002/3	103.8
Gross enrollment ratio, secondary	2002/3	89.8
Gross enrollment ratio, secondary (girls)	2002/3	89.7
Number of primary schools*	2006	82
Number of secondary schools	2006	23
Language of instruction	—	English

* Figures are for government schools only. At both the primary and secondary levels in Barbados, there are less than 10 private schools.

Sources: World Factbook, UNESCO, MOEYC

Relevant Policies

Document	Status	Date	Key points and objectives
White paper on education reform: Preparing for the twenty-first century	Adopted	1995	■ Revalue the role of education in national development ■ Develop a workforce that adapts to changing conditions ■ Develop creativity ■ Revalue the role of teachers
EduTech 2000 Master Plan	Adopted	1997	■ Purpose behind use of ICT ■ Structures required to support integration of ICT into curriculum
Curriculum Reform 2000	Adopted	2000	■ Places student at center of the teaching and learning processes ■ Emphasized technology integration

Source: MOEYC

Historically, Barbados allocates a high share of GDP to education (7.9 percent in 2001). This level of expenditure has led to significant achievements, including universal enrollment in primary and secondary education, free primary and secondary education, and support for some costs of textbooks, transportation, and meals.

The government's 1995 white paper on education targeted development of a twenty-first century workforce, and led to the Education Sector Enhancement Program, launched in 2000, strongly focused on curriculum change supported by the integration of ICT into both primary and secondary instruction.

Policy and planning

The 1995 White Paper anticipates the need for a flexible, technologically skilled workforce. From this goal, the White Paper derives a series of objectives that together outline a transformation of Barbadian education from an industrial-age system to a system that acknowledges the individual needs and capacities of learners, that nurtures creativity and problem solving, and that lays a foundation for lifelong learning.

The White Paper, the EduTech 2000 Master Plan, and the Curriculum 2000 document have together been used as a touchstone to guide policy, planning, and implementation of the Education Sector Enhancement Program—also known as EduTech 2000. The Master Plan, which was included in proposals to project funders, outlined structures required by integration of ICT into all aspects of teaching and learning, including human and technological resources, school-level planning, and an articulated vision of the uses of ICT in schools.

ICT Resources in Schools

School type	Number*	Median enrollment	ICT profile
Primary schools	82	332	■ About 30% of primary schools have received computers from the government ■ These schools are connected to the Internet
Secondary schools, government	23	888	■ All secondary schools have at least one computer lab (~30 computers) and an Internet connection ■ ADSL broadband connectivity is provided to all schools

* School totals include both government schools and private schools that receive government assistance ("government-assisted schools"). There are 71 government primary schools and 11 private assisted primary schools; there are 23 government secondary schools and 6 private secondary schools.

Source: MOEYC

EduTech 2000: Primary and secondary educational reform with ICT support

With an overall budget of US$213 million, EduTech 2000 represents substantial commitment on the part of the Government of Barbados and the Ministry of Education, Youth Affairs, and Culture (MOE Barbados) to broad reform of teaching and learning in support of the White Paper. Fifty-five percent of the EduTech budget is comprised of CDB (40 percent) and IDB (15 percent) loans, with the remainder provided by the Government of Barbados.

The technology-infrastructure component of EduTech is budgeted at US$88 million.

EduTech design: Focus on curriculum

The project was initially conceived as having four components:

- Civil works (or school facilities improvement)
- Curriculum development and reform
- Teacher professional development
- ICT infrastructure

In line with the objectives outlined in the 1995 White Paper, EduTech 2000 is most strongly focused on enhanced teaching and learning through re-design of the Barbadian curriculum at all primary and secondary levels. The use of ICT has been designed primarily to support teaching and learning activities in relation to new curricula.

The curriculum development component, or Curriculum Reform 2000, "places the student at the centre of the learning process and emphasizes the integration of various technologies across the curriculum."[1] In primary grades, students are intended to learn organization, self-management, problem solving, conflict resolution, and other social and emotional "skills." Although Barbadian students participate in the CXC exams, the learner-centered curriculum is also intended to be supported by various authentic assessment techniques at all levels. MOE Barbados education officers working with teams of in-service teachers and UWI education faculty facilitated the curriculum development. Draft curricula were reviewed by a Curriculum Development Council and were field tested in schools before being finalized and adopted.

The EduTech 2000 project experienced substantial delay centering on unexpected challenges in the project's civil works component. Completion of civil works plans at present entails facilities improvements to 6 schools by the end of 2006, 8 schools in 2007, and 14 schools in 2008.

Although curriculum reform and teacher development proceeded on schedule, delays in facilities improvements resulted in delays in implementing the ICT infrastructure component. The technology-rich installations called for in EduTech could not be accommodated in many Barbadian schools without completion of the planned facilities upgrades.

In 2005, MOE Barbados re-designed the EduTech program to target the provision of ICT to all secondary schools as quickly as possible. Initial installations, in this new model, would be much less extensive than those originally planned. These installations are intended to support learning and skills acquisition by students and teachers, lesson preparation, and school administration.

For more information about the challenges encountered by EduTech 2000 and program responses to those challenges, refer to the *Project Profile: EduTech 2000, Barbados.*

ICT in primary schools

At present, 24 primary schools have received their full complements of computers from the government, enabling them to establish labs and place computers in classrooms. Schools have from 12 to 30 computers for instructional use. In some instances, MOE Barbados computers provided through EduTech will supplement computers that they have received previously as donations (possibly new or refurbished) from their local communities.

Many primary schools have distributed existing computers to classrooms for use by teachers and students, often choosing to create several one-computer classrooms rather than a fully outfitted lab. This choice may be influenced in primary schools by lack of space, as well as by educational considerations.

1   MOE. 2001. National report on the development of education in Barbados.

In addition to productivity software, primary schools offer students educational software, including titles such as Thinkin' Things, Story Reader, and Crocodile Clips science simulations.

Each primary school has one IT coordinator on staff. Teachers, administrative staff, and school leadership also have access to computers, with a current target of three to four computers per school for administrative and teacher use.

ICT in secondary schools

At present, all 23 Barbadian government secondary schools and all 6 schools that receive government assistance have at least 30-computer lab installations. All of these schools also have Internet connectivity, but in some schools, only a sub-set of computers is connected to the Internet. Of these schools, 11 have received their full complement of lab hardware, software, and peripherals; a tender to meet the needs of the other schools is in process. Of the 11 schools, five have taken delivery of new laptops and carts to enable use of ICT in classrooms.[2] The remaining 6 of these schools will receive mobile-computing equipment in Phase 2 of the current installation process.

C & W provides connectivity to Barbadian schools, with discounted costs paid by MOE Barbados.[3] As installation progresses, all schools will shift to "business-level" ADSL connections.

Under the re-designed EduTech component, secondary schools will, like primary schools, provide teachers and students with laptops on demand (1 laptop per 10 students) using mobile carts and wireless networking. Each school will also have three to four computer labs. Labs will range from 15 to 30 computers, and will typically be dedicated for use by specific departments (e.g., IT, math/science, language and literature, etc.) and will feature educational software addressing the core curriculum as well as other areas, such as health, family, and critical thinking. The number of computer labs in a given school will depend on school enrollment.

Although planned installations are large, secondary schools have only one IT coordinator on staff to support intensive integration of ICT across the curriculum. The IT coordinator is the primary support for lab and laptop timetabling and for ICT integration. However, department heads may receive additional training, intended to enable them to provide additional support for teachers in their departments and to spark collaboration among teachers in different schools.

Teacher professional development

One of Barbados' four tertiary education institutions, Erdiston Teachers College is the sole government provider of TPD to pre-service teachers. The reformed curriculum was introduced while still in draft form in 2000, and is fully supported at Erdiston. The two-year pre-service curriculum includes basic computer skills.

In-service teachers may also take part-time professional development courses addressing topics that include leadership, authentic assessment, and other topics as well as ICT.

The central TPD initiative under EduTech, however, has been outsourced to a private sector ICT company, Illuminat (Barbados). Since 2003, Illuminat has staged two-week summer ICT intensives for in-service primary and secondary teachers, partially supported by Microsoft Corporation (BDS$100,000). Goals for basic ICT training included delivery to 90 percent, or 2,700, of Barbados' 3,000 teachers. Most recent reports suggest that at most 65 percent of primary teachers and 76 percent of secondary teachers have participated in this program, while participation in TPD addressing teaching methodologies is much lower. Teachers do not receive credit for participation in summer TPD programs, which may contribute to lower-than-expected participation.

MOE Barbados personnel report that teachers—particularly secondary teachers—are embracing ICT as a teaching tool, however project evaluations suggest that use of technology is limited in relation to the high cost of the EduTech project.

Challenges in relation to TPD include the brevity and lack of depth of in-service programs. The

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2   In several schools, mobile, cart-based laptops were used previously as part of the NetSchools project. See "Project profile: EduTech 2000, Barbados," for more information.
3   As of January 2007, C & W Barbados has announced that it will upgrade Internet connections in both primary and secondary schools.

Teacher Professional Development Programs

TPD organization	Target population	Objectives	Scale	Barriers
Erdiston Teachers College	Pre-service primary and secondary teachers	■ Train prospective teachers in: ■ Learner-centered curriculum ■ Use of ICT ■ Integration of ICT and curriculum	■ ~100 primary teachers per year ■ ~30 secondary teachers per year	—
Erdiston Teachers College	In-service primary and secondary teachers	■ Train prospective teachers in: ■ Learner-centered curriculum ■ Use of ICT ■ Integration of ICT and curriculum	■ Roughly 30 teachers per semester as part-time students	■ Current need is to develop more advanced (follow-on) training ■ Scheduling training to coincide with teachers' access to ICT in schools
Illuminat	In-service primary and secondary teachers	■ Technology mastery ■ Teaching methodology (learner-centered)	■ 300 teachers every summer, in two-week sessions ■ Not currently accredited (accreditation is planned)	■ Summer intensive strains teacher commitment ■ Two-week format is too brief ■ Capacity of company to support more advanced pedagogies and ICT innovation

Sources: MOEYC, The Natoma Group

two-week summer format for TPD is short and it is removed from the classroom; teachers currently do not receive credit for participating. TPD needs to be re-structured to help teachers increase their mastery of teaching with technology, and to support innovation among both teachers and students.

EMIS and ICT capacity among MOE Barbados administration

Given the scope, scale, and timeframe of the EduTech project, IDB and other donors have established stringent benchmarks for reporting of project indicators. In conjunction with these benchmarks, IDB has funded development and required use of an EMIS database—a requirement that is becoming standard for IDB projects. MOE Barbados expanded the design of the database to enable all entities in Barbadian education, including tertiary-level institutions (TLIs) to upload data. Substantial components of data collection and analysis are now automated, with enhanced query and reporting features. In 2007, Barbados is also pilot testing school-level EMIS software developed by the Barbadian company AbusTechnologies. For additional information, refer to the section "Regional overview of EMIS."

Tertiary Education

There are three national tertiary and post-secondary institutions in Barbados, in addition to the Cave Hill campus of the regional UWI.

Of these three, the Barbados Community College offers the broadest array of ICT-related programs. The Division of Computer Studies awards B.Ed. degrees in technical/vocational education to current teachers, associate degrees in IT to undergraduates, and certificates encompassing technical topics such as visual basic and Web design. The division is also responsible for maintaining the IT systems of Barbados Community College.

The Samuel Jackman Prescod Polytechnic ([SJPP]— named after a 19th century hero in the struggle for black rights in Barbados) offers full- and part-time courses in CAD, computer and electronics maintenance, office technology, IT, network administration, office technology, Web design. Students have free Internet access in the campus library.

Demand for post-secondary and tertiary education in Barbados far exceeds capacity. To address this, SJPP offers several courses via asynchronous, instructor-led e-learning, including elder care, child care, and occupational health and safety, among other subjects.

ICT in Tertiary Education

Institution	Target population	Objectives/degrees	ICT
UWI, Cave Hill Campus Dept of Computer Science, Mathematics and Physics	Undergraduate students	■ B.Sc. Computer Science (optional emphasis on accounting or management) ■ Certificate, Information Technology	■ The department makes course information available via the Web ■ UWI offers some course materials via Web CT
UWI, Cave Hill Campus Dept. of Computer Science, Mathematics and Physics	Graduate students	■ M.Sc., M.Phil., Ph.D. Computer Science	■ The department makes course information available via the Web ■ UWI offers some course materials via Web CT / Moodle
Barbados Community College	Teachers (holding Erdiston Teachers Certificate)	■ B.Ed, Technical/Vocational Education ■ Diploma, Technical/Vocational Education (post-graduate)	—
Barbados Community College	Undergraduates, post-secondary students	■ Associate Arts/Science, Information Technology ■ Associate, Applied Science (Computer Science) ■ Certificate, Information Technology	—
Samuel Jackman Prescod Polytechnic	Post-secondary students	■ Associate Arts, Electrical Engineering	—
Erdiston Teachers College	Pre-service and in-service teachers	■ Teachers Advanced Professional Cert. ■ Teachers Advanced Prof. Certificate, Technical/Vocational education ■ Diploma Ed. ■ Additional certs.	—

Sources: UWI, The Natoma Group

University of the West Indies, Cave Hill

UWI has main campuses in Barbados, Jamaica, and Trinidad, plus 12 additional centers. The UWI Cave Hill campus in Barbados houses a Department of Computer Science, Mathematics, and Physics.

Barriers and challenges

Barriers, challenges, and lessons learned in relation to EduTech 2000 are addressed in the section, "Project Profile: EduTech 2000, Barbados."