

## EDUCATION SECTOR ENHANCEMENT PROGRAM

(BA-0009)

### EXECUTIVE SUMMARY

**BORROWER AND GUARANTOR:** Government of Barbados

**EXECUTING AGENCY:** Ministry of Education, Youth Affairs and Culture (MEC)

**AMOUNT AND SOURCE:**

IDB:	US\$ 85,000,000 (OC)
CDB parallel financing:	US\$ 31,500,000
Local counterpart funding:	<u>US\$ 96,607,000</u>
Total:	US\$213,107,000

**FINANCIAL TERMS AND CONDITIONS:**

Amortization period:	25 years
Disbursement period:	7 years
Interest rate:	variable
Inspection and supervision:	1%
Credit fee:	0.75%
Currency:	U.S. dollars from single currency facility

**Caribbean Development Bank**

Amortization period:	17 years
Disbursement period:	8 years
Interest rate:	6.4%
Inspection and supervision:	0%
Credit fee:	1%
Currency:	U.S. dollars

**OBJECTIVES:** The Education Sector Enhancement Program (ESEP) is designed to help the MEC implement the education reform outlined in the 1995 White Paper. This policy paper emerged out of the need to improve the quality of education in order to ensure that citizens receive a sound education and are readily retrainable through the adoption of a coherent set of strategic measures aimed at improving the relevance and effectiveness of the national curriculum, pedagogy, teaching practices, and assessment mechanisms in the education system. The ESEP will complement other quality and equity enhancement measures outlined in the White Paper, and which are already underway. The goal of the program is "to effect an increase in the number of students contributing to sustainable social and economic development of Barbados". The objective of the program is to ensure that the teaching methodology and

materials used in the schools reflect the shift that is taking place in the economy.

**DESCRIPTION:**

The program is comprised of the below five closely interrelated components. It will be executed over a seven-year period. During the first year, 15 schools will be selected as "demonstration" schools. These schools will constitute a special group in which the pedagogical, technical, and implementation strategies will be tested. The remaining primary and secondary schools will be phased into the program at an average of about 19 schools per year over years two to seven.

a. **School rehabilitation** (US\$39.4 million). This component will consist of:

1. The rehabilitation of all existing primary and secondary school plants to make them computer and network ready, including: (i) the development of computer laboratories; (ii) electrical upgrading and wiring; (iii) the provision of "dust-free" environments; (iv) protection systems for hardware and software; and (v) furniture adapted to the technologies in use.
2. Other extensive structural repairs that go beyond the integration of computers in the schools, but that are required to ensure the improved delivery of education, including among other repairs: (i) plumbing; (ii) existing roofs; (iii) floors and windows; and (iv) sanitary blocks, etc.

School maintenance would contain a budgeted long-term approach to scheduled and systematic upkeep. It is expected that all the rehabilitation is to be in existing structures and that no new buildings will be erected using project funds.

b. **Technological infrastructure** (US\$68.9 million). This component will support a gradual computerization of all primary and secondary schools. It will include the provision of hardware, software, and the necessary networking infrastructure. A total of approximately 8,000-10,000 computers will be placed in subject classrooms, staff rooms, libraries and offices, and distributed on the basis of specific deployment intensity patterns approved by the Government of Barbados (GOB). "Media centers" will be created in each classroom and include a television set, video cassette recorder,

and TV-PC convertor. Software made available to the schools will be only those programs that fulfill MEC selection criteria.

A different technological configuration may be required for older schools, where physical constraints make it difficult to run cables and easily place workstations. A pilot scheme will be conducted using "Study Pro" laptop computers manufactured by "NetSchools Solution".

- c. **Human resource development and training** (US\$4.9 million). This component will contribute significantly to the long-term sustainability of the program. More than 4,000 education-sector professionals will be trained over the life of the program. This component will finance 360 hours per teacher of formal training, workshops, classroom training, and the development of learning materials for teachers ("school coaches"); 50-150 hours of training and materials for MEC and school administrative, library, and secretarial staff; continuous training at the school-level; study tours; and specialized training for information technology coordinators. The proposed training model is a gradual, multiplier, "cascade" approach that enables the sharing of expertise and the development of multiple support systems. To maximize available resources, the majority of this training will be in-service and site-based. School IT Teams comprised of the principal, a teacher with responsibility for the network, and a teacher with responsibility for curriculum matters will be formed in all schools. By the end of the program, the entire education staff will have received additional training in IT and special needs education.
- d. **Curriculum reform and evaluation** (US\$1.5 million). Most of the curriculum reform activities necessary to support the program are already ongoing. These activities will be enhanced through: (a) establishment of a Software Review Centre and the systematic integration of software into classroom activities; (b) establishment of a National Educational Evaluation Centre in the School of Education at the University of the West Indies, Cave Hill Campus; (c) comprehensive reform of the national curriculum, including the introduction of new content areas related to IT; and (d) development of new strategies for teaching and learning which maximize the options offered by IT.

- e. **Institutional strengthening** (US\$5.4 million). This component will support the full operation of the Program Coordination Unit (PCU), two external evaluations, the design and supervision of all civil works activities, and local and international technical assistance, as needed.

**RELATIONSHIP OF  
THE PROGRAM IN THE  
BANK'S COUNTRY AND  
SECTOR STRATEGY:**

The key to the Bank's strategy is to assist in the strengthening of sustained export-based economic growth. The strategy focuses on improving the competitiveness of the country's economy, protecting natural resources, and improving the efficiency of social service delivery. The proposed program seeks to provide a sound education so as to make citizens readily retrainable at any stage of their lives. Further, it will encourage future growth and employment by generating widespread mastery among the youth of emerging information technologies and the intellectual skills associated with them. This will position a small country like Barbados to compete in the global market economy on equal terms in knowledge-based and skill-intensive industries such as the international business and informatics sectors.

**ENVIRONMENTAL/  
SOCIAL REVIEW:**

**Environmental impact.** To the greatest extent possible, the project will use existing infrastructure more efficiently. Improvements will be carried out in accordance with the norms established by the MEC, the legal requirements of the Town Planning Act, and the environmental standards and health regulations established and enforced by the Ministry of Health and the Environment. Said norms will be reviewed to ensure compliance with Bank standards prior to the initiation of civil works, and arrangements will be made for the proper disposal of hazardous materials. No adverse environmental impact is envisaged.

**Social impact.** The provision of IT in all schools will benefit all segments of the school-age population. The project will contribute to a more equitable access to IT outside of the school environment through the targeted provision of compensatory programs. Care will be taken to ensure that the selection criteria for software are culture and gender sensitive.

**BENEFITS:**

- a. **A skilled workforce.** In a knowledge-based, service-oriented, and more widely-entrepreneurial system, it is imperative that persons be able to think critically, creatively, and participate in a technologically-infused work environment. The ESEP is a significant reform for anywhere in the world. It moves towards the installation of state-of-the-

art technology, as well as child-centered paradigms which will enable the education system to produce the skilled workforce that is required to drive a modern economy. Given its level of economic and social development and small scale, Barbados is a good candidate for such an educational reform program.

- b. **Efficiencies.** Direct benefits will be seen in increased numbers of students passing out of the educational system with higher rates of success than previously, and with increasingly higher numbers of youth better prepared to participate in a predominantly service economy. It is anticipated that increased efficiency will also be reflected in lower drop-out rates and higher pass rates at the various exam hurdles. As the number of students leaving the system with an accepted level of certification increases, greater opportunities for tertiary participation, youth employment, and increased social satisfaction are anticipated. Efficiencies in the management of the education system and in resource allocation are also expected from the networking of schools.

**RISKS:**

- a. **Slippage in implementation.** Taking into account possible implementation delays, the GOB decided to lengthen the project implementation period from five to seven years. Given the current building boom in Barbados, delays may occur and have already, in fact, been encountered in the pre-qualification and selection of firms. Construction delays raise costs, and slower implementation could also mean that students benefit from the innovation later. This situation may require some retraining of the initial cohort of trainers (school and subject coaches) if they go too long without opportunity to use their newly acquired skills.
- b. **Design uncertainty.** There have been few far-reaching technology projects in education that have not taken considerably more time than originally conceived. Because of the innovative nature of the program, uncertainty is great. This risk has been mitigated by building in flexibility for adjustment during implementation, as this is considered to be the appropriate approach for projects of this level of complexity and innovation. The program is designed following a "test and fix" model, where technology will be introduced gradually in a seven-year plan, allowing the experience of previous years to inform refinement of the design for

subsequent years. Integrated monitoring and supervision mechanisms will be used to inform the "test and fix" process, and will be supplemented by summative evaluation, annual reviews; and two independent, comprehensive external evaluations.

- c. **NetSchools.** The "Study Pro" laptops that are being piloted (see paragraph 2.14), are being provided by a relatively new company. It is also an especially costly activity within the project. While a small number of school districts in North America are experimenting with the program, it has not yet been thoroughly tested and evaluated. A risk of the program would be to implement the NetSchools solution on a wide scale without a thorough period of implementation or precise information. To mitigate this risk the MEC has proposed an initial pilot test of the NetSchools program in three schools over one full academic year. Furthermore, there are provisions for the first independent evaluation to assess the efficiency, efficacy, and cost-effectiveness of this approach, prior to deciding on a future course of action regarding this intervention.
- d. **Institutional capacity.** As in many other projects, there is a risk in the capacity of the MEC and the schools to execute the program. The complex characteristics of the new IT scope will demand close coordination between central ministry units and the schools, especially for support in pedagogical and technical matters. ESEP's execution design has taken this into consideration and specific actions are planned to mitigate this risk. Enough human and financial resources have been allocated to the PCU to provide them with the necessary capacity to manage project activities. The envisioned technical support system is expected to provide timely assistance to all levels of IT users.
- e. **IT utilization.** The program has been designed taking into consideration lessons learned from more than a decade of research in education reform and technology. We know, for instance, the importance of having a well-planned, well-paced and continuously-monitored computer-introduction process; we know that teachers cannot be replaced by machines; we know that teacher training is essential, and so forth. We also know that making massive use of computers in education entails risks. Some risks are financial – computers

consume resources that could be used for alternative purposes, to buy books, to hire more teachers, etc. There are also pedagogical risks - computers can be underutilized or inappropriately used by teachers and by administrators. These and other lessons have been considered in the design of the program.

**SPECIAL  
CONTRACTUAL  
CONDITIONS:**

Conditions precedent to disbursement:

- a. Establishment of necessary bank accounts and procedures (see paragraph 3.2).
- b. The GOB and UWI will subscribe to an agreement that will govern the establishment of the National Education Evaluation Centre and ESEP evaluation (see paragraphs 2.23, 2.26, and 3.3).
- c. Establishment and operation of four coordinating committees: (i) Policy Steering Committee; (ii) Advisory Committee; (iii) Planning and Implementation Steering Committee; and (iv) Demonstration Schools Steering Committee (see paragraph 3.7).
- d. Evidence of CDB financing and GOB budgetary allocation for program (see paragraph 3.16).

**POVERTY-TARGETING:** No.

**EXCEPTIONS TO  
BANK POLICY:** None.

**PROCUREMENT:** The limits over which international competition bidding will be used for the procurement of this project are: US\$250,000 for goods and related services, and US\$1.5 million for civil works.

Sole source procurement of specialized software and hardware will follow Bank rules for the procurement of specialized equipment and didactic materials in education, science and technology.

## I. FRAME OF REFERENCE 1/

### A. Foreword

- 1.1 Barbados faces a challenging international economic environment as it moves into the next millennium. A country of 266,000 inhabitants, Barbados is characterized by a relatively high standard of living (US\$8,216 per capita GDP at market prices in 1997), a well-educated labor force and a productive base that has been shifting from agriculture and manufacturing toward sectors such as tourism, informatics, financial and insurance services. This trend towards a more service-oriented economy is likely to continue into the future, because of the absence of any substantial economies of scale in manufacturing and the country's relatively high labor costs when compared to other nearby Caribbean nations.
- 1.2 The Government of Barbados (GOB) has an articulated national development policy that recognizes the primary importance of maximizing the productivity of that most important resource, its people. As a platform for economic expansion in the 21<sup>st</sup> century, the GOB has identified knowledge-based and skill-intensive industries where size, geography, and available capital are not the major factors affecting the country's ability to compete globally, but where a skilled workforce, capable of fueling the continued expansion and diversification of the economy is essential. To accomplish this goal, the GOB has as its priority the provision of a sound education so as to ensure that all citizens are readily retrainable at any stage of their lives.
- 1.3 The GOB views widespread mastery among its youth of the emerging information technologies (IT) and the intellectual skills associated with them as critical to the achievement of a modern economy. The GOB proposes to execute a comprehensive Education Sector Enhancement Program (ESEP) to ensure that the teaching methodology and materials used in the schools reflect the shift that is taking place in the structure of the economy. Ultimately, ESEP will contribute to the production of a better educated workforce with a greater level of employable skills, and increased productivity and competitiveness at the national and international levels.
- 1.4 The GOB is committed to ensuring that the proposed initiative is effective and sustainable.

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1/ Appraisal of the Education Sector Enhancement Program and key inputs for the project report were developed jointly with the Caribbean Development Bank and the Ministry of Education, Youth Affairs and Culture.



B. Recent macroeconomic performance

- 1.5 Barbados has long had a fixed exchange-rate system, pegged at B\$2 per U.S. dollar. Over the past decades, the authorities have been able to maintain this fixed rate, despite several severe negative external shocks, thanks to their strong long-term commitment to sound fiscal and monetary policies.
- 1.6 After a sharp economic decline during the early part of the 1990s, in the last four years Barbados' US\$2.2 billion economy has been growing at an average rate of about 3.5% per year, or 3.3% in real per capita terms. Following significant fiscal adjustments and tight monetary policies over the 1991-93 period, the authorities have managed to keep inflation under control. After reaching 7.7% in 1997, in part due to the initial temporary effects resulting from the introduction of a value-added tax that year, inflation is expected to revert to about 1.5%-2% in 1998 and beyond, broadly in line with changes in U.S. consumer prices.
- 1.7 Following the adoption of a broad-ranging economic and structural reform program in the early 1990s, Barbados' competitiveness has been steadily improving. Net international reserves have almost continuously recovered, and now stand at over US\$300 million, equivalent to about three months of imports. In addition, after peaking at US\$703 million in 1988, total external debt (of which IDB disbursed balances represent over one-third) has declined to US\$350 million in 1998, dropping from 46% to 16% of GDP during that 10-year period, and the external debt service ratio has been brought down to about 12%.
- 1.8 Recent macroeconomic data shows that the Barbadian economy has continued to do well during 1998, with GDP growth expected to reach 3.3% this year. There are also indications of increased competitiveness and private sector confidence, as tourist arrivals increased by over 10% in the first half of the year, and both the manufacturing and construction sectors continued their strong recovery. Current financial developments in Asia and elsewhere have prompted the GOB to ensure that a strict fiscal stance is maintained, and to seek to accumulate foreign exchange reserves above present levels in order to guard against potential external shocks. In this context, the GOB has recently indicated its intention to restrain its capital program in the short run in order to facilitate this increase in reserves, protect the exchange rate against any speculative attacks, and ensure the continuation of macroeconomic stability and growth over the medium- and long-term.
- 1.9 The sustained economic recovery of recent years has contributed to a substantial reduction in unemployment during the 1990s, with the unemployment rate falling from 25% in 1992-94, to around 12% of the labor force in the last quarter of 1997. Despite this achievement, the country still suffers from high levels of youth unemployment, a pattern also observed in several other Caribbean nations. Moreover, although male unemployment has fallen to a low of 7% at the end of

June 1998, mainly because of the strong growth of construction-related activities, female unemployment remained relatively high at 17.4%, in part due to job losses arising from recent closures of informatics firms.

- 1.10 As a result of growing competition from lower-cost Asian firms, the Barbadian outsourcing informatics industry is now moving upmarket into programming and software development, and a more technologically up-to-date workforce is also increasingly needed. Despite the recent job losses at the low-end of the informatics technological spectrum, mainly due to closures in the data-keyboarding and processing segments of the industry, shortages of computer-trained and highly skilled IT workers are now common, and have resulted in some Barbadian businesses seeking employees from elsewhere.
- 1.11 On the other hand, widespread introduction of IT into the primary and secondary schools through the ESEP initiative should not necessarily be expected to result in a rapid growth of IT-intensive industries induced by the greater availability of school leavers who will have been exposed to IT in their schools. IT awareness of standard school graduates is probably not a crucial element in determining the relative attractiveness of particular countries for IT-intensive economic activities. Far more important for this are likely to be the availability, quality and wage costs of middle and upper-level IT personnel, such as programmers, systems analysts and software engineers. Thus, the change in Barbados' school education system may not, in itself, induce the consequent evolution of the economy toward IT-intensive activities; that would be an unlikely outcome without undertaking substantial investments to expand post-secondary and tertiary training opportunities as well. What the widespread infusion of IT in the schools' curriculum can be expected to produce is school graduates potentially more productive in most mainstream sectors of the Barbados economy, such as tourism and other service-oriented activities, and thereby lead to higher investment and profitability levels in those key sectors, and to more rapid economic growth and employment levels in the medium and long-term.

C. The education sector

- 1.12 Barbados has one of the best education systems in the region, having attained universal coverage at the primary and secondary levels, a comparatively high rate of enrollment at the post-secondary level, and a high (98%) degree of adult literacy. These achievements have been facilitated by a strong government commitment to education, a policy of free and compulsory education to age 16, and relatively stable economic growth.
- 1.13 The basic education system provides coverage to approximately 50,000 students in 124 primary and secondary schools. With a relatively stable net enrollment of 98% and 95% at the primary and secondary levels, the flow of students through the system is regular and compares favorably with that of the most developed countries in the region. Private schools comprise 7% of all primary and 32% of

all secondary schools. The Ministry of Education, Youth Affairs and Culture (MEC) is currently studying strategies for expanding the provision of early childhood education.

- 1.14 **Primary education.** The primary sub-sector caters for about 26,100 students between the ages of 5 and 12. In 1996/97, the most recent year for which statistical information is available, there were approximately 1,400 teachers in 80 public primary schools. The student/teacher ratio averages 19:1. This figure compares favorably with those of other CARICOM member states where average ratios have reached 29:1. About 44% of all primary teachers are university graduates and 87% are professionally trained. Support programs at the primary level include school meals, transportation, diagnostic medical services, and textbooks.
- 1.15 **Secondary education.** The secondary level prepares young persons for the labor market or for further education and training. In 1997, there were approximately 21,400 students registered for the regular five-year programs in 23 public secondary schools. Enrollment at this level has remained fairly stable over the last 12 years, a benefit in that the administration has not been required to concern itself with expansion and associated costs. All public schools are co-educational with the exception of two. More than half of the public and government-assisted schools have rolls of between 900 and 1,200 students. Teachers are generally well qualified - 74% are professionally trained, and 60% are university graduates. The average student/teacher ratio was 16:1 in 1996/97. A textbook loan scheme, transportation assistance, uniform grant, and bursaries are available for low-income students, as are school meals on a limited basis.
- 1.16 **Tertiary education.** Formal post-secondary education and training is offered to about 7,800 students at four public institutions: Erdiston Teachers' College (ETC), the Samuel Jackman Prescod Polytechnic, the Barbados Community College and the Cave Hill Campus of the University of the West Indies (UWI). Some post-secondary education is also available at the Barbados Institute of Management and Productivity (BIMAP), a semi-private institution.
- 1.17 **Teacher training.** ETC is the only teacher training facility in the country. It trains teachers for the primary and secondary levels in collaboration with UWI, which provides certification, and has full responsibility for delivering the post-graduate Diploma in Education. Pre-service training for primary teachers was halted between 1993 and 1997 when the proportion of trained teachers at that level approached 100%. Initial teacher training was restarted in 1997. New objectives were then set for ETC, which focused on teacher re-training and skills upgrading in specialized areas such as remedial education, curriculum development, guidance and counselling, and computer assisted learning.

- 1.18 In late 1989, the **Centre for Information Technology** was established in ETC with a computer laboratory and other essential hardware and software. Its staff development program for the last decade reflects this emphasis on IT. ETC has now gained valuable experience in IT, has integrated computer technology into its own teaching and administrative processes, includes IT as a component of all its certificate programs, conducts short courses in IT, and offers IT as a Major for its Advanced Professional Diploma. In 1996, ETC undertook implementation of the MEC's IT training program for teachers, a component of the current Caribbean Development Bank (CDB) funded Secondary Education Project, which aimed to deliver three 50-hour modules in computer skills at basic, intermediate, and advanced levels, to approximately 900 teachers over three years. With the aid of additional computer laboratory facilities provided by two secondary schools, ETC has achieved 90% of the target to date.

D. Administration and finance

- 1.19 **Administration.** The education system is managed by the MEC. A 1996 study of the MEC's structure, responsibilities, and school management operations highlighted organizational constraints affecting performance. The analysis resulted in some restructuring and upgrading of the MEC's planning, policy analysis, audit and supervisory capabilities; and an increased emphasis on strengthening relationships with school managers, teachers, parents, communities, and other stakeholders. New structures were established including units dedicated to information management, testing and measurement, policy planning and research, and building maintenance. These changes have led to a more focused and efficient administration supported by clear policy guidelines that are results-oriented. Involvement in the day-to-day management of schools has been reduced and attention directed to matters relating to policy, supervision, research, and support. The creation of Boards of Management for secondary schools has been complemented by the establishment of School Management Committees for the primary level. The MEC has also benefitted from the allocation of new and more spacious premises as of early 1997.
- 1.20 **Finance.** Over the past decade, public expenditure on education and training (MEC only) has been given highest priority, with the MEC's share of the GOB's recurrent budget averaging between 17% and 21%, or roughly 6% of GDP. Recurrent expenditure on education for 1996/97 was about US\$120 million or 18% of total recurrent expenditure. This latter ratio is about average for expenditure on education in CARICOM member states. The pattern of expenditure for 1996/97 indicates that the secondary level absorbs the largest share of total recurrent allocation to education (39%), followed by the primary (36%) and tertiary (25%) levels. Personnel emoluments absorbed 80% of the education budget.
- 1.21 Unit costs at the primary and secondary levels were US\$1,325 and US\$1,822, respectively, for 1996/97. Other Organization of Eastern

Caribbean States' Nations averaged US\$832 at the primary level and US\$1,439 in secondary. Effecting cost efficiencies has been a major concern, in light of the GOB's policy to absorb full tuition costs for all Barbadian nationals attending public tertiary institutions, including UWI. In this regard, the MEC has been able to improve the system's efficiency through a number of reform measures already being implemented such as school amalgamation, the redeployment of specialist teachers, partial zoning, and a framework agreement for the articulation of programming between the Barbados Community College and UWI, among others.

E. Key issues and actions taken

- 1.22 Having achieved universal basic education, the challenge for Barbadian education in the future is one of continued improvement in quality, a strengthened capacity to keep pace with economic and technological change, and greater efficiency. This has led the GOB to focus more intensely on: (a) development of an enabling learning environment; (b) outcomes of the basic education system; and (c) modernization of educational content and delivery in line with development needs.
- 1.23 **School infrastructure.** Barbados now has sufficient schools to satisfy the number of places required at both the primary and secondary levels; however, the deteriorated condition of the physical plant of many of the schools, due in large measure to the postponement of regular maintenance, is now an area requiring urgent attention. There is a demand for a major rehabilitative component to ESEP, to once again put in place physical conditions adequate for productive learning.
- 1.24 **Performance on the Barbados Secondary Schools Entrance Examination (BSSEE).** All students are required to take the BSSEE at the end of the primary stage and are allocated to secondary schools on the basis of their grades and home location. Students falling below acceptable levels for entrance into secondary are admitted to schools which provide a special curriculum until age 16. Results of the BSSEE for 1995-97 indicate that on average, more than 1,000 students, or roughly one fourth of all students who sat the BSSEE obtained grades of less than 30% - results which are not satisfactory and need to be improved. 2/ The MEC is addressing this issue through the establishment of a diagnostic/intervention system which would facilitate the early identification of at-risk students and the provision of remediation in the education system.
- 1.25 **Failure of most school-leavers to achieve certification upon the completion of secondary school.** The current structure of the education system, on one hand ensures that the vast majority of new entrants to the labor market will have completed secondary school,

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2/ The average BSSEE score for the same time period was 52.3%.

and on the other hand leaves most of them without any school-leaving educational certificate recognized in the labor market. Successful completion of the secondary level is measured by the number of passes obtained on the Caribbean Examinations Council (CXC), and other external examinations mainly in technical and vocational areas. Student performance as measured in terms of CXC examination results, however, suggests some inefficiencies. A review of the 1997 results indicates that more than 40% of the age cohort is estimated to be unable even to attempt these exams, and more than 60% exit the system without any relevant certification.

- 1.26 **The need for more appropriate provision for the lowest achievers, especially those coming from lower-income socioeconomic backgrounds.** Education in Barbados bears the legacy of its design during the first half of this century. The intention then was to provide a basic education for the entire population and to select out a small percentage of the most academically talented students to proceed onto secondary and university education, thereby producing the professionals who would lead the country's economic, cultural and political growth. The resulting educational system has been successful in producing an intellectual leadership of very high caliber. However, it has shown itself to be maladapted to providing quality education for the much wider range of students needed for stable and sustained economic growth. The MEC is committed to systemic reform through broad, integrated reform of pedagogy, teaching methods, and learning strategies.
- 1.27 **The education system is already behind an actual shift in the economy.** The structure of Barbados's economy started to shift to more service-oriented and knowledge-based industries as long ago as the mid-1970s. However, the schools continue in their approach to prepare youth for an agrarian economy where they would be expected to take instructions well and not to think critically for themselves. Existing teaching practices are not sufficiently conducive to the GOB's national development objective. The average classroom is ill-equipped to facilitate the development of the type of student required to function in the workforce of the future. Similarly, the minimal use of existing technology is counter-productive in a society already widely utilizing these systems in homes and in offices. The methods used in the schools must radically change and so must the institutions delivering them. The use of alternative teaching approaches and the integration of available technologies will be essential to facilitate this change.

F. Educational policy framework

- 1.28 The MEC has a formally articulated policy (White Paper, 1995) in favor of a shift towards a child-centered, process-oriented approach, which provides citizens with the necessary skills and tools to fully participate in a global economy heavily dependent on IT and the provision of services. The White Paper embodies the results of broad-based consultations with various stakeholders which began in

1994, and provides the conceptual framework for a comprehensive education sector reform which was launched the following year. The White Paper emerged out of the need to adopt a coherent set of strategic measures aimed at improving the relevance and effectiveness of the national curriculum, pedagogy, teaching practices, and assessment mechanisms in meeting and diagnosing the learning needs of both high- and low-end achievers. This process has resulted in the definition of a strategic action plan for reforming the education system.

- 1.29 **Quality.** The reform is driven by the GOB's commitment to a paradigm shift in the teaching and learning process from a traditional system that is predominantly teacher-centered, to a modern one which is student focused. Over the past five years, the MEC has put in place a set of coordinated, ongoing, quality and equity enhancement measures to improve overall system performance and output. These actions, which have been financed largely through the GOB budget with some IDB and CDB financial assistance, include:
- a. strengthening diagnostic and remedial services beginning at age five;
  - b. reformulating the national schools' curriculum (which had not been revised since 1977);
  - c. expanding early childhood education from its current rate of 70% to improve equity and enhance access;
  - d. increasing expenditure in school maintenance;
  - e. introducing criterion referenced testing, including achievement testing for Mathematics and English;
  - f. planning for the introduction of a national secondary school certificate which recognizes competency in subjects and skills;
  - g. increasing access to teaching and learning materials, through expansion of the audio visual resource center;
  - h. strengthening the capacity of the MEC to monitor, implement and support the reform, including private sector involvement;
  - i. continuous teacher training;
  - j. shifting pedagogy to a child-centered, results-oriented approach;
  - k. creating an enabling physical environment; and
  - l. introducing IT into the system.

- 1.30 The majority of these are on-going programs intended to increase educational benefits to individual students. They continue to be a central focus of MEC operations. The last four elements of the above reform program are to be addressed through ESEP.
- 1.31 **Technology.** At the heart of the reform is government's vision that IT is central to addressing the special needs of individual students, the acquisition of knowledge skills, the development of technological literacy, and the attainment of broad sector goals. One of the ministry's strategies is to introduce IT into the national curriculum in all primary and secondary schools by the year 2005. Under a current GOB/CDB secondary education project, approximately one-third of all teachers in the system are already receiving initial training in computer basics; the Internet; and the application of technology to enhance basic skills development, productivity, and the development of higher-order skills through project-based learning.
- 1.32 Steps had also been taken to introduce IT at the primary and secondary levels of the system. Those efforts, which commenced in the eighties, have seen the modest provision of computers in seven public primary schools and a basic laboratory in each of the 23 public secondary schools. More recently, beginning in 1997, the MEC piloted several of the strategies proposed in ESEP in one primary school. Lessons learned from this initial experience about teacher training, hardware and software selection, curricular integration, the learning environment, and maintenance will contribute to an improved implementation under the program.
- 1.33 **Efficiency.** Increased efficiency is among the GOB's medium- and long-term objectives. Since 1979, there has been a policy of amalgamating schools. To date, 64 schools have been amalgamated to form 31. Some internal efficiencies have been gained through these measures, and this policy, if required, will continue in order to provide better conditions for all children in a cost-effective manner.
- 1.34 The operational costs of maintaining and improving the education system will continue to grow with the infusion of technology. To achieve its objectives for the sector, the MEC will need to introduce further measures aimed at reducing inefficiency. To this end, the ministry is using an education finance model developed with Bank assistance to study the financial feasibility and cost-effectiveness of specific policies and cost-saving measures in the education sector, including the tertiary level.

G. IDB country strategy

- 1.35 The key to the Bank's strategy is to assist in the strengthening of sustained export-based economic growth. This will require investment in infrastructure and in the social services. Accordingly, the country strategy focuses on improving the competitiveness of the



country's economy, protecting natural resources, and improving the efficiency of social service delivery.

- 1.36 The proposed program seeks to provide a sound education so as to make citizens readily retrainable at any stage of their lives. Further, it will fit into the Bank's strategy as it will encourage future growth and employment by generating widespread mastery among the youth of emerging IT and the intellectual skills associated with them. This will position a small country like Barbados to compete in the global market economy on equal terms in knowledge-based and skill-intensive industries such as the international business and informatics sectors.

H. Bank and other donor experience

- 1.37 Consistent with its strategy, the Bank is assisting the government to improve efficiency and resource allocation in the educational system. The current Primary Education Improvement Program (708/OC-BA, \$11.6 million), approved in 1993, has the objective of: (a) improving the quality of primary education; (b) increasing cost-effectiveness at the primary level; and (c) strengthening the capacity of the MEC for planning, evaluation, and operation of the primary sector. Major activities include: (a) amalgamation of eight small schools into four new, larger and properly equipped schools; (b) provision of textbooks and teachers' reference manuals; and (c) organizational and institutional strengthening of the MEC. Initially, with the exception of the technical assistance component, project implementation was slow. This was mainly because of queries raised by contractors concerning technical definitions during the prequalification for construction of the new schools, and the decision by the GOB to change the site of one school. However, with the resolution of these difficulties, implementation accelerated and the rating for achievement of development objectives is now highly probable. The technical assistance was completed in 1997 with good results in improvement of the MEC's management systems. All other activities should be completed during first quarter of 1999. The loan, originally scheduled for completion in 1997, has been extended to 1999 and is 100% committed. This slow rate of disbursement, although recently improved, reflects the lag between actual MEC payment for services rendered and MEC submission to the Bank for reimbursement of expenses incurred. No further extensions are expected.
- 1.38 Projects financed by the CDB and the European Development Fund, among others, have also provided support for a range of initiatives in human resource development and training. In 1995, the CDB approved a loan under the secondary education project to upgrade and construct secondary school facilities, strengthen teacher training in IT, and support special needs. This project is scheduled for completion in the year 2000. The European Development Fund has also supported human resource development through the establishment of a hospitality industry training institute and the provision of training.

- 1.39 The International Bank for Reconstruction and Development (IBRD) has played an important role, complementary to the Bank's activities in the past. In 1993 the IBRD approved the Human Resources Development Project (Loan 3634-BAR), whose objective is to strengthen the country's human capital base by expanding the availability of trained manpower. Following the mid-term evaluation of March 1997, there was improvement in execution progress as a result of government's assigning a full time procurement expert, and by the hiring short-term consultants. The IBRD has acknowledged the progress made in all areas of project implementation. All components of the project are considered to be well underway and the conditions are in place for successful completion by the year 2000.

## II. THE PROGRAM

### A. Objectives

- 2.1 The Education Sector Enhancement Program is designed to help the MEC implement the reform of national curriculum, pedagogy, teaching practices, and assessment mechanisms as outlined in the White Paper. It seeks to provide a sound education so as to make citizens readily retrainable at any stage of their lives. Further, it will complement other quality and equity enhancement measures already underway.
- 2.2 ESEP has as its goal, "to effect an increase in the number of students contributing to sustainable social and economic development of Barbados". The specific objective of the program is to ensure that the teaching methodology and materials used in the schools reflect the shift that is taking place in the structure of the economy.

### B. Description

- 2.3 ESEP is comprised of five closely inter-related components: (a) school rehabilitation; (b) technological infrastructure; (c) human resource development and training; (d) curricular reform and evaluation; and (e) program management and technical assistance.
- 2.4 As part of project preparation, a logical framework and a Master Plan were developed to guide the sequential transformation of the sector. The logical framework for the project is presented in Annex II-1.

#### 1. School rehabilitation (US\$39.4 million)

- 2.5 This component will consist of:
  - a. The rehabilitation of all existing primary and secondary school plants to make them computer and network ready, including: (i) the development of computer laboratories; (ii) electrical upgrading and wiring; (iii) the provision of "dust-free" environments; (iv) protection systems for hardware and software; and (v) furniture adapted to the technologies in use.
  - b. Other extensive structural repairs that go beyond the integration of computers in the schools, but that are required to ensure the improved delivery of education, including among other repairs: (i) plumbing; (ii) existing roofs; (iii) floors and windows; (iv) sanitary blocks, etc.

- 2.6 It is expected that all the rehabilitation to be undertaken will be of existing buildings and that no new structures will be erected using project funds.
- 2.7 About US\$29.4 million of the Bank loan will finance the improvement of all 80 primary schools and five secondary schools. Approximately US\$9.9 million in additional loan funds will be provided by the CDB for the rehabilitation of the remaining 18 secondary schools.
- 2.8 Of the 80 primary schools in the country, 56 have been selected for extensive upgrading and additional security features. The remaining primary schools, built in more recent times under programs funded by either the Bank or the IBRD, will require only minor repairs and modification. Rehabilitative work will be conducted on 23 secondary schools. To complete the rehabilitation component by the year 2005, the MEC will target approximately 15 public and three or four private "assisted" schools per year. (See Chapter III, section A.3, for a more detailed explanation of the proposed phased approach to ESEP implementation.)
- 2.9 The MEC employed consultants to conduct an infrastructure survey to assess school rehabilitation needs for the demonstration schools. The survey report identified the necessary items of work and the cost per school. After approval by the MEC, the consultants prepared drawings and tender documents for procurement using Bank procurement guidelines for international competitive bidding. The same process will be followed for each successive year.
- 2.10 The approach to maintenance would support a budgeted, long-term plan for scheduled and systematic upkeep of the schools such that on the average, the upgraded school plant should have a life span of 20-25 years before any major works would have to be undertaken again. Because the level of rehabilitation that is required in a number of schools arises from the repeated postponement of routine maintenance in favor of other expenditure at the school level, future allocations for maintenance will no longer be fungible.

## 2. Technological infrastructure (US\$68.9 million)

- 2.11 This component will support a gradual computerization of all primary and secondary schools, and will include the provision of hardware, software, and the necessary networking infrastructure. A total of approximately 8,000-10,000 computers will be placed in primary and secondary schools, in subject classrooms, staff rooms, libraries and offices. "Media centers" will also be created in each classroom and include a television set, video cassette recorder, and TV-PC convertor.
- 2.12 The Bank loan will finance US\$48.5 million for software requirements for the entire system; and technology-related infrastructure and networking, hardware, NetSchools, and other

equipment for 80 primary schools, five secondary schools, and the MEC. The CDB loan will fund US\$13.8 million for technology-related infrastructure, air conditioning units, student furniture, ceiling-mounted projectors, and uninterrupted power supply items. The GOB will contribute US\$6.6 million for technical support and other costs.

2.13 Deployment intensity has been determined as follows:

- a. **Primary schools:** (i) one computer laboratory (of 30 computers) for schools with rolls of under 500; (ii) two computer laboratories for schools with rolls greater than 500; (iii) five computers per classroom from Class I for computer-assisted instruction; (iv) computers for staff at a ratio of 1:5, one third to be laptops; and (v) one laptop for each principal; one PC for each clerk/typist; and Study Pro laptops (see explanation in 2.15 below) for all students in Class I and above, in a total of four schools in years one and two.
- b. **Secondary schools:** (i) five subject rooms per school with 10-30 computers each; (ii) one technology lab with five industrial PCs and technical peripherals; (iii) five industrial PCs for Science Labs in Forms 1-5; (iv) 20 industrial PCs for Science Labs in Form 6; (v) one laptop for principal and deputy principal; (vi) six PCs for administrative staff (two for administration, one for guidance counselors, and three for Boards of Management); (vii) computers for staff at a 5:1 ratio, half to be provided as laptops; (viii) six computers in all classrooms from Forms 1 to 3; (ix) Study Pros for all students in a total of two schools in years one and two; and (x) libraries with up to 20 computers.
- c. **All schools:** Media centers consisting of audio visual equipment including a TV/Monitor, VCR will be established in each classroom, and supplemented by the school-wide use of cassette recorder/stereos, electronic white boards, digitizer, scanners, robotics, camcorders, projectors, laser disc players, etc.

2.14 Based on the above, the student/staff-to-computer density for secondary schools averages 2.3:1 with a corresponding ratio for the primary level of 3.7:1. The corresponding rate in the United States, for example, is presently about 6:1 for primary and secondary schools.

2.15 A different technological configuration may be required for older schools, where physical constraints make it difficult to run cables and easily place workstations. A pilot scheme involving two primary and one secondary school, will be conducted during year one using "Study Pro" laptop computers manufactured by "NetSchools Solution". This package comes fully loaded with a portable computer, file server, proxy server, software, and training. Each

child participating in the pilot (356 primary and 778 secondary) will be provided with a lightweight, portable computer which uses infra-red, wireless communication to connect the student to the school's local area network and by extension, to the Internet. A thorough evaluation of this subcomponent will be undertaken during the first ESEP external evaluation, in order to assess the benefits derived from the utilization of this technology, and to determine if, and on what scale, this variant should be diffused to similar schools in succeeding phases.

- 2.16 The software made available to the schools will be only those programs that fulfill basic selection criteria to be identified by the MEC curriculum section, in consultation with teachers, and to be included in the Master Plan. In the initial stages of the program, teachers from the demonstration schools will choose one or two software packages on which all teachers will be trained. As the schools become more proficient in the use of IT in the classroom, schools will be permitted to test and use additional software that meets the criteria set by the MEC.

3. Human resource development and training (US\$4.9 million)

- 2.17 This component will contribute significantly to the long-term sustainability of ESEP. More than 4,000 education-sector professionals will be trained over the life of the project. Through this component, the program will finance 360 hours per teacher of formal training, workshops, classroom training, and the development of learning materials for teachers ("school coaches"); 50-150 hours per teacher of training and materials for MEC and school administrative, library, and secretarial staff; continuous training at the school-level; study tours; and specialized training for information technology coordinators. In an effort to make maximum use of the resources available, the majority of this training will be in-service and site-based. The framework builds upon the information technology and special needs training courses currently being offered by ETC (paragraphs 1.14-1.15). By the end of the program, the entire education staff will have received additional training in IT and special needs education, among other areas. As a further incentive to stimulate teacher utilization of IT, local credit unions have agreed to provide concessionary funding to teachers for the purchase of personal computers.
- 2.18 The Bank loan will finance US\$0.1 million for study tours for school coaches and School Information Technology Teams (SILTs). The CDB will provide an additional US\$4.8 million in loan funds to cover all other direct training costs, including ETC operation of the training program, and study tours for principals, teachers, and MEC staff.
- 2.19 The training of teachers will be undertaken in phases and will focus broadly on: child-centered teaching, IT skills, the integration of technology into the teaching process, and, as applicable, technology management, program management and school

administration. New teaching and learning strategies, curriculum and content adaptation and revision, classroom configurations, assessment management, school/community links, and optimum use of media resources, will also be emphasized.

- 2.20 The model proposed is a multiplier approach that enables the sharing of expertise and the development of multiple support systems. Prior to the full-scale implementation of the program, approximately 60 professionals including, education officers, ETC tutors, audio visual aids officers, and representatives from each of the 15 demonstration schools will receive 360 hours of training as "school and subject-matter coaches". This training will focus on the development of: (a) a clearly articulated conceptual and pedagogical framework for the shift in pedagogy; (b) IT skills, understanding, and knowledge; and (c) skills and competencies for educational leadership. The first session of 100 hours was delivered by international consultants in August of 1998.
- 2.21 The "school coaches" will assist principals to plan and manage the change processes in their schools. The "subject-matter coaches" will train teachers to apply the pedagogical objectives guiding the integration of IT into curricular activities, and to design and implement IT based lesson plans and classroom activities that are congruent with these objectives.
- 2.22 In addition to the above-mentioned personnel, every school will have a SILT comprised of the principal, a teacher with responsibility for the network, and a teacher with responsibility for curriculum matters. Each school team, in conjunction with ETC, will develop a Master Plan for Technology Integration and Training in line with general guidelines provided by the consultants, the school's individual vision for the introduction of IT, and its particular ethos and culture. The team will oversee the implementation of each school's Master Plan, evaluate feedback, and provide regular training to their peers.

#### 4. Curricular reform and evaluation (US\$1.5 million)

- 2.23 Most of the curriculum reform activities necessary to support the program are already ongoing. These activities will be enhanced through: (a) the establishment of a Software Review Centre (SRC) and the systematic integration of software into classroom activities; (b) the establishment of a National Educational Evaluation Centre in conjunction with the School of Education at the University of the West Indies, Cave Hill Campus; (c) the comprehensive reform of the national curriculum, including the introduction of new content areas related to IT, and (d) the development of new strategies for teaching and learning which maximize the options offered by IT.
- 2.24 This component will be fully implemented through GOB counterpart funds.

- 2.25 The SRC will be established within the MEC to provide the necessary technical assistance to facilitate the adaptation of, and the development of, software packages that culturally relevant to and congruent with Barbados's curriculum needs. The SRC will act initially as a clearing house for software destined for school use, but a fair degree of autonomy will be permitted to schools and individual teachers after they have been trained in software evaluation. Standards for the selection of software will be agreed by the MEC and school management teams. Software to be used will include specialized subject "courseware", as well as standard operating system software for managing networks, application, anti-viral and proxy server software, and school-based MIS.
- 2.26 Curriculum development activities will be driven, in part, by a process of continuous evaluation and feedback. To enhance Barbados institutional capacity to manage sustained program evaluation, a National Educational Evaluation Centre will be established by the University of the West Indies, at the Cave Hill Campus. The program will contribute to the development of this capacity through the provision of a consulting contract between the MEC and UWI for the on-going monitoring and evaluation of the program. In addition to basic benchmarks of project progress, more subtle, process-oriented and in-depth implementation evidence will be collected through a formative research component to be led by UWI. Quantitative and qualitative information gathered by continuous classroom observation, teacher survey instruments, curriculum officers, school inspections, school implementation committees, and teachers will inform a "test and fix" approach to project implementation. This will ascertain to what extent teachers are utilizing their newly acquired skills and technology, and to what extent the program has, inter alia, enhanced student achievement and attitudes, promoted cooperative learning skills, increased student-centered instruction, and the development of an appropriate repertoire of assessment techniques. The results of this effort will be communicated to the MEC on a timely and ongoing basis so that revisions in program design and implementation can be effected immediately. Baseline data for the formative and ex post evaluations will be collected during the first term of program implementation with summative data to be collected at the same time in the following years on an annual basis.
- 2.27 This component will also support the development of new strategies for teaching and learning which maximize the options offered by it and which facilitate a sustained shift in pedagogy. Skills relating to computer use will be taught in all primary schools and concentrated in the first three years of secondary. Courseware will be available for the enhancement of subject-area teaching and learning throughout the primary and secondary levels. The use of appropriate software will be particularly beneficial for managing mixed-ability classrooms and will provide teachers with the tools for ensuring that each child progresses at a pace appropriate for his/her individual learning style. The curriculum will emphasize project-based and collaborative learning, and use interactive media



and audio visual technology to enliven learning with imagery and sound. A filtered version of the Internet/Intranet will be accessible to individual schools.

5. Program management and technical assistance (US\$5.4 million)

- 2.28 This component will support the full operation of the Program Coordination Unit (PCU), two external evaluations, the design and supervision of all civil works activities, and local and international technical assistance.
- 2.29 Financial resources for this component will be provided as follows: IDB, US\$2.8 million in loan funds for the complete technical assistance package; US\$2.7 million in counterpart GOB funds for PCU operation, evaluation, and civil works design and supervision.
- 2.30 The allocation of resources under each of the above five components is based on existing experience of the IDB and the CDB in the education sector in Barbados and on considerations related to procurement restrictions of the respective institutions.

C. Dimension

- 2.31 Project capital and recurrent costs were determined by conducting a careful analysis of all the inputs necessary to carry out the proposed program. This included the costing of all computer equipment, peripherals, installation of networks, software, operational costs, teacher training, program evaluation, technical assistance, and civil works requirements. These costs were also examined by a Bank-funded external consultancy conducted at the request of Barbados' Ministry of Finance, which was undertaken by a team led by education economists and information technology experts from Florida State University. Given that the high degree of innovation in teaching methods and curricular content of the proposed program will imply a complete educational paradigm shift in Barbados, the economic evaluation focused on the project's detailed cost assessment and the relevance of the planned interventions. As a result, the economic evaluation determined that, given the scope of the interventions to be undertaken, current project costs estimates are reasonable. According to these estimates, capital and concurrent project costs over the seven-year implementation period will amount to about US\$178 million, plus US\$35 million in financial costs, for a total of US\$213.1 million.

D. Cost and financing

- 2.32 **Cost.** The Bank financing is part of a seven-year program whose total cost is estimated by the GOB to be US\$213.1 million,

inclusive of interest and fees. The GOB has decided to seek parallel financing for the program as follows:

- IDB - US\$85 million in loan funds,
- CDB - US\$31.5 million in loan funds; and
- GOB - US\$96.6 million in counterpart.

The total direct cost of the program net of interest and fees is US\$149.1 million. The breakdown by investment category and source of funds is presented in Table II-1.

- 2.33 **Financing plan.** The Bank loan will account for 40% of the total program cost, and the CDB loan will account for an additional 14%. GOB counterpart contributions for the program will be distributed over the seven years of execution and account for the remaining 46%.

TABLE II-1: EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009) PRELIMINARY TOTAL PROGRAM COST TABLE (000's of US\$ equivalent)					
CATEGORIES	IDB	CDB	LOCAL	TOTAL	% TOTAL
<b>1. PROJECT MANAGEMENT</b>	<b>2,751</b>	<b>0</b>	<b>5,029</b>	<b>7,780</b>	<b>2.5</b>
1.1 PCU	0	0	2,366	2,366	1.1
1.2 Program evaluation	0	0	300	300	0.1
1.3 Technical assistance	2,751	0	0	2,751	1.3
1.4 Design and supervision	0	0	2,363	2,363	1.1
<b>2. DIRECT COSTS</b>	<b>78,043</b>	<b>26,197</b>	<b>10,424</b>	<b>114,664</b>	<b>53.8</b>
2.1 Civil works	29,440	9,948	0	39,388	18.5
2.2 Curriculum reform	0	55	1,435	1,490	0.7
- Software Review Center	0	55	95	150	0.1
- National Education Evaluation Center	0	0	1,340	1,340	0.6
2.3 HRD-training	100	2,389	2,393	4,882	2.3
2.4 Information technology	48,503	13,806	6,596	68,905	32.3
- Infrastructure	1,004	688	0	1,692	0.8
- Networks	3,974	1,109	0	5,082	2.4
- School hardware	24,113	12,009	0	36,122	17.0
- Ministry hardware	920	0	0	920	0.4
- Standard software	2,406	0	0	2,406	1.1
- Specialized software	10,349	0	0	10,349	4.9
- Technical support	2,738	0	3,921	6,659	3.1
- Other costs	3,000	0	2,675	5,675	2.7
<b>3. CONCURRENT COSTS</b>	<b>0</b>	<b>0</b>	<b>26,625</b>	<b>26,625</b>	<b>12.5</b>
3.1 Operational costs	0	0	25,162	25,162	11.8
3.2 Civil works maintenance	0	0	1,463	1,463	0.7
<b>S U B T O T A L</b>	<b>80,794</b>	<b>26,197</b>	<b>42,078</b>	<b>149,069</b>	<b>70.0</b>
<b>4. CONTINGENCIES</b>	<b>3,356</b>	<b>5,303</b>	<b>20,354</b>	<b>29,013</b>	<b>13.6</b>
4.1 Physical contingencies	3,356	2,296	5,794	11,446	5.4
4.2 Cost escalation	0	3,007	14,560	17,567	8.2
<b>5. FINANCIAL COSTS</b>	<b>850</b>	<b>0</b>	<b>34,175</b>	<b>35,025</b>	<b>16.4</b>
5.1 Interest	0	0	30,184	30,184	14.2
5.2 Commitment fee	0	0	3,991	3,991	1.9
5.3 Credit supervision	850	0	0	850	0.4
<b>T O T A L</b>	<b>85,000</b>	<b>31,500</b>	<b>96,607</b>	<b>213,107</b>	<b>100.0</b>
% FUND/YEAR	39.9	14.8	45.3	100.0	

2.34 The program requires the GOB to contribute, net of financial expenses, an estimated amount of US\$62.4 million over a period of seven years. The yearly contributions range from a low of US\$3.7 million in the first year, to a maximum of US\$11.1 million in the last year of implementation. These annual amounts, though relatively high, are manageable when compared to annual national spending on education (between 2.6% and 7.4% of projected education expenditures). Thus, no problems are anticipated with regard to the borrower's capacity to make the necessary contributions.

E. Terms and conditions of the loan

- 2.35 The IDB financing, in the amount of US\$85 million, will be drawn on the Ordinary Capital resources from the U.S. dollars Single Currency Facility. These funds will cover 40% of the total requirements for the program. The following table shows the terms and conditions of the loan:

TABLE II-2: TERMS AND CONDITIONS OF THE LOAN	
Source of funds:	Ordinary Capital
Amount:	US\$85 million
Terms:	
Amortization period	25 years
Commitment of funds	6.5 years
Disbursement	7 years
Interest rate:	Variable
Inspection and supervision:	1% of the loan amount
Credit fee:	0.75% per year on undisbursed amounts
Currency:	United States dollars from the Single Currency Facility

### III. PROGRAM EXECUTION

#### A. Institutional framework

##### 1. Borrower and executing agency

- 3.1 The borrower is the Government of Barbados and the executing agency is the ministry responsible for education. Policy-related responsibilities and overall monitoring of qualitative and quantitative objectives and targets of the program will be undertaken by a Policy Steering Committee (PSC), chaired by the Minister. The program's activities will be executed by the relevant units of the MEC and coordinated by a Project Coordinating Unit (PCU) that was established for this purpose.
- 3.2 The progress of the expenditures will be monitored following the procedures and guidelines established by the Ministry of Finance (MOF). Based upon annual work plans prepared by the MEC and supplemented by quarterly projected cash requirements, Bank resources and counterpart funds will be transferred to the MEC. The Bank funds will be deposited into a special account that will be established for this purpose in the Central Bank. The establishment of this special account and the procedures for its use will be a **condition prior to the first disbursement** of the loan.

##### 2. Other participating agencies

- 3.3 Other agencies will participate in the implementation of the program. The Erdiston Teachers' College 3/ is envisioned to coordinate and conduct most of the basic training responsibilities for participating teachers. The University of West Indies will play an important role in the evaluation of the program during the critical initial years. As a **condition prior to first disbursement**, the GOB and UWI will subscribe to an agreement that will govern the establishment of a National Education Evaluation Center at UWI, at the Cave Hill Campus, and the evaluation of ESEP.

##### 3. Program execution strategy

- 3.4 Given the innovative nature of the project, the Ministry has adopted a "test and fix" approach to implementation. The program will be executed throughout a seven-year period. It will start with a first year for which the 15 4/ schools selected will be

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3/ ETC is a GOB financed institution under the direction of the MEC.

4/ Based on proposals enunciating their vision of the role and function of IT in their school, an evaluation committee selected eight primary, four secondary, one assisted private secondary, one private primary and one special school to participate in the pilot.

considered as demonstration schools. They will constitute a special group in which the pedagogical, technical and implementation strategies will be tested. Throughout implementation, demonstration schools will function as training, research and evaluation hubs, bases for research studies and experiments carried out on a small and controlled scale, and for fine-tuning project outputs prior to wider dissemination. Also, during this demonstration year, an ongoing evaluation will take place and the information provided from the monitoring and evaluation exercises to be conducted in these schools will inform the other schools as to "best practices" to adopt during their implementation of the program. Training of teachers for the demonstration year has already begun and the rehabilitation works for the demonstration schools are in the tendering process.

- 3.5 The schools not involved in the first year will come on stream in the remaining six years comprising 22, 19, 22, 21, 14, and 14 schools in years two to seven respectively. For these schools the implementation will follow much the same pattern of the demonstration schools. Major civil works will be done during the summer holidays preceding implementation in September. Hardware and other equipment will normally be procured and installed in time for the opening of the school year in September. Training of teachers of the schools programmed will begin early in the calendar year of implementation. Project components or subcomponents which are not phase-specific and which underpin the project as a whole, such as those relating to curriculum reform and evaluation, will be executed over the entire implementation period. The project is expected to be fully implemented by December 31, 2005.
- 3.6 The execution of the program will rest primarily on existing units of the MEC with the assistance of specific temporary consultant services for implementation support. This strategy avoids the creation of a parallel structure for program execution, and moreover, aims at taking maximum advantage of the execution of the program as a means of supporting the sustainability of the program activities and for consolidating and strengthening the MEC.

#### 4. Responsibility for program execution, coordination, and management

- 3.7 **Program coordination.** Since the program is designed as a systemic concept and covers all areas of education, its implementation will require participation at all levels, inside and outside of the schools. To attain an adequate level of interaction among all stakeholders, the program envisions four coordinating committees: (a) a **Policy Steering Committee** that will have responsibility for all major policy decisions. It will be chaired by the Minister and will comprise representatives of all major divisions of MEC; (b) an **Advisory Committee** that will have the task of advising on impending issues. The committee will be comprised of representatives of private sector industries and firms and the MEC; (c) a **Planning**

**Implementation and Steering Committee** that will have responsibility over all implementation issues. It will be chaired by the Permanent Secretary of Education and will comprise representatives of all major divisions of MEC, school principals, and representatives of the teachers' unions, and of the national council of parents-teachers associations; and (d) a temporary **Demonstration Schools Steering Committee** that will oversee all implementation issues as each group of schools comes on stream. It will be chaired by the Chief Education Officer and will have representatives of all major divisions of MEC, UWI School of Education, Erdiston College, and BCC. The establishment and setting in motion of these four committees is a **condition precedent to first disbursement**.

- 3.8 **Program management.** The existing Program Coordinating Unit (PCU) which has been restructured to respond to the expanded duties required for implementation will administer the program. The main function of the PCU will be to review implementation progress and induce decisions on critical issues. The PCU will be responsible for monitoring progress against the agreed-upon targets and benchmarks, assessing the continued viability of the program, facilitating inter-institutional coordination, and channeling policy and organizational issues requiring government decisions or international involvement.
- 3.9 The PCU, headed by a Program Coordinator, will be responsible for its operation. The Coordinator will be assisted by a staff of five professionals, and clerical staff, that will ensure that the activities undertaken under the program are executed adequately and with the required level of quality. The PCU will be assisted, as required, by existing units in MEC, including MIS and CS. Specific temporary consultancy services will be engaged, as required, to provide technical assistance for the various project components including training, technology management, testing and measurement, evaluation, and project management. It will supervise all procurement and management of the technical support, arrange overseas placements for MEC and school staff, oversee all management development and training activities, and communicate the objectives and activities of the program. The PCU will organize, coordinate, manage, and administer finances, procurement of goods and services, and disbursements.
- 3.10 Through a previous IDB project, the MEC established an Education Program Implementation Unit (EPIU) that is currently implementing CDB and IBRD projects, all of which are expected to be fully implemented by December 2000. EPIU will implement the civil works and will provide procurement and accounting services for the proposed program. Currently, the EPIU technical staff includes a project manager, two project educators, a project accountant, one training officer, three clerks of work, clerical staff and a number of part-time consultants. In addition, the MEC is specifically contracting a consultant project manager to supervise and

coordinate the civil works component for ESEP. Officers from the EPIU participate in the program's Advisory Committee.

- 3.11 For project management of IT issues, at school level, it is anticipated that all schools in the demonstration phase will have a teacher with responsibility for the network. All secondary schools will have a Library Media Specialist. These persons will provide support to the teaching staff and student body as the school undergoes its transformation. Depending on the effectiveness of this arrangement, it will extend to the other schools as they come on stream. The MEC envisions a technical support system that will provide schools with solutions by means of: (a) on-site (school) hardware, software and network problems will be dealt with immediately by the teacher with responsibility for the network; (b) the link between the teachers with responsibilities for the network and the ministry will be via school liaison officers; and (c) off-site major hardware problems will be dealt with by providers of maintenance services (sending technicians to schools), and/or by an on-line help-desk operated within the MEC.

B. Program procurement procedures

- 3.12 Acquisition of goods and related services and contracting of civil works financed through the Bank loan will be subject to Bank procedures as stated in Annex B of the loan contract. International public bidding will be mandatory for acquisition of goods that exceed US\$250,000, and US\$1,500,000 for civil works. These limits are justified considering that in similar projects in the country, international participation is attracted when amounts exceed these limits. All bidding under the set limits will be done following national legislation that requires public bidding for amounts that exceed \$100,000 (equivalent to US\$50,000 at current rate) and shopping below those amounts. Procurement of consulting services will also be done according to regular Bank procedures as stated in Annex C of the loan contract.
- 3.13 Computer hardware will be purchased outright while hardware maintenance will be by service contracts, both will be procured according to Bank procedures. Related telecommunications services will be provided by the national telecommunications companies. An unbundled approach for the provision of technology goods and services has been selected. Specialized software (courseware) and hardware (NetSchool Solution Study Pros) will be purchased through "sole sourcing", following the Banks rules for the procurement of specialized equipment and didactic materials in education, science and technology projects. This is justified in the case of the courseware because there is a limited number of developers in the world and each has a specific type of software. In the case of the Study Pros, Netschool Solution is the sole manufacturer and patent holder of this unique, fully loaded, specialized hardware. The program's procurement plan is presented in Annex III-1.



- 3.14 Each bank will finance specific and separate items; consequently, the acquisition of goods and services and contracting of civil works financed by the CDB loan as indicated in Table II-1, will follow CDB procedures.

C. Disbursement schedule

- 3.15 The disbursement schedule for the program, by source of funds, is presented in the following table:

Table III-1 DISBURSEMENT SCHEDULE (in US\$ 000)									
SOURCE	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	TOTAL	%
IDB	11,028	11,307	11,165	11,939	9,929	14,810	14,822	85,000	39.9
CDB	6,302	6,959	4,410	6,599	5,206	1,072	951	31,500	14.8
Local	5,370	7,518	11,101	15,268	20,353	18,932	18,065	96,607	45.3
% Year	10.7	12.1	12.5	15.9	16.7	16.3	15.9	100.0	100.0

- 3.16 **Prior to the first disbursement**, the borrower is to present evidence to the Bank's satisfaction that: (a) a local contribution to cover activities for the first year has been allocated in the corresponding budget; and (b) that a loan agreement has been signed with the CDB establishing the items it will finance for the program.

D. Recognition of expenditures and advance of funds

- 3.17 The borrower has requested that the Bank recognize expenses to be incurred prior to the consideration of the proposal by the Bank's Board of Executive Directors. The project team has reviewed the expenses that will have been incurred by the executing agency and considers that up to US\$1 million could be recognized as retroactive financing and US\$1 million as counterpart.
- 3.18 Given the expected pace of execution, it is recommended that a revolving fund be established of up to the equivalent of 5% of the loan, i.e. US\$4.25 million.

E. Bank monitoring during program execution

- 3.19 To assure that all participants in the execution of the program are well informed of the activities under their responsibilities and their interrelation, a start-up workshop will be held no later than February 28, 1999, or as soon as the loan has been declared eligible for disbursements. The purpose of the workshop will be to familiarize all those involved in the execution of the program with the strategies, expected achievements and principal goals. The layout, schedule and venue of the workshop will be defined during negotiations.

- 3.20 Given the innovative nature of the program, important decisions will be made, possibly implying changes in the direction of the its implementation. Thus, it is anticipated that during the first year of execution, close monitoring of the execution will be required. It has been agreed with the GOB that during the first year, two joint (GOB-IDB-CDB) reviews will take place. These reviews will serve: (a) to identify issues that require decision or consensus, as well as problems and changes required in the execution and/or goals; and (b) refine the plan of action and funding requirements for the following period. The monitoring and mechanism for changes and approval of funding will be based on the program's benchmarks and monitoring indicators (see Annex III-2). The Bank's Country Office will track the general progress of the program and the project team will participate in the yearly reviews.
- 3.21 The following areas have been tentatively defined as subject of reassessment during the yearly reviews:
- a. Evaluation of the execution mechanisms with emphasis on the involvement and participation of the ministry's units and other participating agencies.
  - b. Review of the agreed monitoring indicators and comparison of these to specific achievements during the year.
  - c. Technical reviews, with external assistance if necessary, of the evaluation studies and reports produced, and in process, during the year.
  - d. Review and evaluation of the recommendations stemming from the evaluation studies and reports produced during the year.
  - e. Review of actions to be taken as result of progress assessment and recommendations of evaluation studies and reports.
  - f. Agreement on measures, funding allocation, and new action plan to be undertaken the following year.
- 3.22 Representatives from the MOF will participate in the yearly reviews, which will take place in November to coincide with the review and preparation of the MEC budget for the following year.
- 3.23 **Independent evaluations.** An independent, external evaluation of activities (first evaluation) will be conducted between June and December, 2000, immediately following one school year of implementation of the demonstration phase. This evaluation will, in addition to the topics discussed in paragraph 3.21 above, contain specific recommendations for the continuation or adaptation of alternative programs such as the Netschools Solutions program. The findings of this evaluation will also inform the development and content of an action plan for the remainder of the implementation period. A second independent, external evaluation will be

conducted between June and December 2003. The project action plan will be revised taking account the findings and recommendations of this evaluation. The implementation of the revised action plans will be agreed upon by the GOB, the CDB and the Bank. The final evaluation frame already commenced by UWI will reflect areas to be independently evaluated, as agreed and discussed with MEC and approved by the Bank and the CDB.

- 3.24 **Maintenance and replenishment.** Civil works maintenance for primary schools will be carried out according to a computerized maintenance program developed under the current GOB/IDB Primary Education Program. A similar program for secondary schools was developed by a CDB-sponsored consultancy.
- 3.25 Starting on year six of the program, replenishment of computer equipment and server will commence. Essentially, this equipment will be replaced every five years; printers, hubs cabling and telecommunications will not be replaced until year ten. Regarding software, the MEC is anticipating an upgrade of the equivalent to 65% of original cost every five years. This amount will apply for both courseware and standard software. Maintenance of hardware and software will be contracted (managed services), either with the original vendor or with a specialized firm.
- 3.26 The GOB will present to the Bank a yearly maintenance plan during the implementation period and five years after that.
- 3.27 **External audits.** During the execution period of the loan, the executing agency will present to the Bank financial statements for the loan. These statements should be submitted annually within 120 days of the close of the fiscal year and should be certified by the Office of the Auditor General or a firm of independent public accountants acceptable to the Bank.
- 3.28 **Ex post evaluation.** The information acquired during the yearly reviews and the independent evaluations will include indicators and parameters that will be the basis for an ex post evaluation that the Bank will undertake at the end of the implementation period. This ex post evaluation will be financed by the IDB.

#### IV. VIABILITY, BENEFITS AND RISKS

##### A. Technical and financial viability

- 4.1 The project is far-reaching, thorough, and has been carefully prepared. Lessons learned by the MEC, the IDB, and the CDB have informed project design, management, and execution strategies. Project development began in 1995 with MEC consultations with a broad range of stakeholders including resource personnel, hardware and software suppliers, school teachers and administrators, and technical and human resource development consultants from the United States, Canada, and Britain. Study visits were made to several institutions overseas where similar projects have been implemented. A Project Advisory Committee representing a cross section of commercial and other private sector interests was established in 1997. The MEC also consulted broadly with the general public in order to build consensus for the program, and to assess the public's level of preparedness for implementation. An economic assessment and analysis of alternatives completed in May 1998, provided a useful evaluation of economic sustainability and financial requirements.
- 4.2 ESEP will introduce technology into all schools in the system in a well-thought through sequence, and as part of an overall pedagogical reform for Barbados. Requirements for the successful introduction of technology into the schools and for the coordination of a number of supporting factors were considered in the design of the Master Plan for ESEP. The coordination of technology integration with a committed strategy of educational reform increases the likelihood that the technology investment will be effective in improving teaching and learning rather than an isolated addition to schools.
- 4.3 During the seven-year implementation period, ESEP will represent, on average, about 1% of GDP and 18% of Barbados' Public Sector Investment Program (see Annex IV-1). Long-term incremental costs (including interest payments) attributable to the program are estimated at between US\$20 million to US\$25 million per year (in 1998 US\$). This represents incremental expenditures of some 0.75%-0.95% of GDP after project completion, and implies an increase of some 15%-19% over the MEC's current budgetary levels. The GOB is taking the above cost implications into account and has expressed its intention to make the necessary budgetary allocations to cover these incremental expenditures, while keeping its commitment to the continued maintenance of long-term fiscal discipline (see paragraphs 1.5 to 1.8).
- 4.4 Macroeconomic projections to assess the program's viability assumed a moderate GDP growth scenario (2.5% in real terms), and the

implementation of a 'core' IDB lending program, <sup>5/</sup> including ESEP. These projections indicate that the fiscal deficit would remain below the GOB's indicative ceiling of 2.5% throughout the period, except for the fiscal year 2000/01, when the deficit would peak at 2.6% of GDP, falling to 1.8% of GDP by 2004/05. Net international reserves would remain at about three months of import coverage, and total debt service as a proportion of Central Government current revenues would remain at its current level of about 27.5%. Moreover, the ratio of total outstanding debt (domestic and external) to GDP would drop slightly, from 62% in 1998/99 to 58% in 2004/05, although heavier reliance on external financing sources would translate in an increase in outstanding external debt, from its current level of about 16% of GDP to almost 20% of GDP in 2004/05. Thus, based on these macroeconomic projections, even though the ESEP will represent a substantial effort for Barbados, its implementation appears to be fiscally sustainable in the medium- and long-term.

B. Benefits

- 4.5 **A skilled workforce.** In a knowledge-based, service-oriented, and more widely-entrepreneurial system, it is imperative that persons be able to think critically, creatively, and participate in a technologically-infused work environment. ESEP is a significant reform for anywhere in the world. It moves towards the installation of state-of-the-art technology, as well as constructivist and child-centered paradigms which will enable the education system to produce the skilled workforce that is required to drive a modern economy. Given its level of economic and social development and small scale, Barbados is a good candidate for such an educational reform program.
- 4.6 The program will transform the fundamental guiding philosophy and teaching approach of the education system. Technology integration will be comprehensive in Barbados schools, and is expected to lead to a substantially better prepared workforce. By the year 2005, computer mastery will be achieved by 75% of all school leavers. The pedagogical reform (of which the technology acquisition forms part) is aimed to develop not just information technology skills, but students who can think well and flexibly about complex topics, and develop the habits of creative problem solving as required by a modern, competitive economy. This will also likely increase the efficiency, productivity, and attractiveness of the labor pool.
- 4.7 **Efficiencies.** Direct benefits will be seen in the increased numbers of students passing out of the educational system with higher rates of success than previously, and with increasingly

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<sup>5/</sup> This core program over 1998-2001 would include loan approvals of US\$195 million, or 56% of the current Bank's pipeline for this period.

higher numbers better prepared to participate in a predominantly service economy. By the year 2005, the GOB anticipates that the number of students scoring less than 30% on the BSSEE will be reduced by 50%; the number of students sitting the CXC examinations will increase by 5%, and corresponding pass rates in mathematics and English will increase by 10%. It is anticipated that apart from the attitudinal improvements that will occur from students passing through the system, that increased efficiency will be reflected in these lower drop-out rates and higher pass rates at the various exam hurdles. Furthermore, it is expected that a higher number of people leaving the system with an accepted level of certification will also contribute to increased participation at the tertiary level, and greater opportunities for youth employment.

- 4.8 Increased efficiencies in the management of the education system are also expected from the networking of schools. This will allow for more rapid access to a greater range of information on staff, students, plant, equipment, and curriculum for a more systematic and strategic approach to planning and monitoring the sector, and a more efficient utilization of resources. Enhanced personal and professional development of teachers and administrators will result from their participation in a range of retraining programs. Lessons learned from the implementation of ESEP will also be very relevant to other member states of the CARICOM as they seek to modernize their education systems and maximize their investment in human resources.

- 4.9 **Social impact.** Overall, the project will involve close to 50,000 students in all primary and secondary schools on the island. More than 4,000 teachers, school administrative and support staff, and MEC personnel will be trained through the program. The provision of IT in all schools, ensures that all students, whatever the location or circumstances of their home environment might be, will benefit from its implementation. The project will further mitigate the negative impact of inequitable access to IT outside of the school environment through the targeted provision of compensatory programs, such as computer libraries, from which students can check-out portable computers for home usage; and the provision of community access to computer labs after school hours. Care will be taken to ensure that the selection criteria for software are cultural and gender sensitive.

#### C. Risks

- 4.10 **Slippage in implementation.** ESEP is a complex program that requires coordinated interlocking of a number of components. Taking into account the risk of implementation delays, the GOB decided to lengthen the project implementation period from the original five years to the current seven-year design. There are many vulnerable points which can cause delays throughout the project. Given the current building boom in Barbados, delays may occur and have already, in fact, been encountered in the pre-

qualification and selection of firms for the first wave of civil works, and as a result, the first two waves of schools will now begin later than envisaged in the Master Plan. Slower implementation could also mean that students benefit from the innovation later, construction delays can raise costs, and this situation may require some retraining of the initial cohort of trainers (school and subject coaches) if they go too long without opportunity to use their newly acquired skills.

- 4.11 **Design uncertainty.** There have been few far-reaching technology projects in education that have not taken considerably more time than originally conceived. Because of the innovative nature of the program, uncertainty is greater than in other education projects. This risk has been mitigated by building in flexibility for adjustment during implementation, as this is considered to be the appropriate approach for projects of this level of complexity and innovation. The program is therefore designed following a "test and fix" model so that technology will be introduced gradually in a seven-year plan, allowing the experience of previous years to inform refinement of the design for subsequent years. Integrated monitoring and supervision mechanisms will be used to inform the "test and fix" process, and will be supplemented by summative evaluation, annual reviews; and two independent, comprehensive external evaluations for the assessment of the physical, technical, pedagogical and management aspects of the project.
- 4.12 **NetSchools.** The "NetSchools Solution" that is being piloted in three schools is being provided by a relatively new company, and is a new design for technology integration into schools. It is also an especially costly component of the project. While a small number of districts in the United States and Canada are experimenting with the program, it has not as yet been thoroughly tested and evaluated. A risk of the program would be to implement the NetSchools solution on a wide scale without a thorough period of implementation or precise information. To mitigate this risk the MEC has proposed an initial pilot test of the NetSchools program in three schools over one full academic year. Furthermore, there are provisions for the first independent evaluation to assess the efficiency, efficacy and cost-effectiveness of this approach, prior to deciding on a future course of action regarding this intervention.
- 4.13 **Institutional capacity.** The complex characteristics of the new IT scope will impose close coordination between central ministry units and the schools, especially for support – both in pedagogical and technical matters. In designing program execution mechanisms, the GOB has taken this need into consideration and has identified specific actions to mitigate associated risks. Enough human and financial resources have been allocated to the PCU to provide them with the necessary capacity to coordinate project activities. The EPIU, which will bear most of the contracting and supervision of civil works and procurement of other goods, has been strengthened

with additional technical staff, and funding for external technical assistance will be readily available. The envisioned technical support system is expected to provide timely assistance to all levels of IT users.

- 4.14 **IT utilization.** The program has been designed taking into consideration lessons learned from more than a decade of research in education reform and technology. We know, for instance, the importance of having a well-planned, well-paced and continuously-monitored computer-introduction process; we know that teachers cannot be replaced by machines; we know that teacher training is essential, and so forth. Making massive use of computers in education can also entail risks. Some risks are financial. Computers consume resources that could be used for alternative purposes, to buy books, to hire more teachers, etc. Frequently IT resources are underutilized and outdated. There are also pedagogical risks, computers can be misused by teachers and by administrators. The experience accumulated over the last few years has taught us some valuable lessons on how to use, and not to use, computers. These and other lessons have been considered in the design of the program.



## LOGICAL FRAMEWORK: BARBADOS EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)

Narrative summary	Objectively verifiable indicators/targets	Means of verification	Assumptions
<p>more productive participation of the technologically-based, global environment of the 21<sup>st</sup> century</p>	<ul style="list-style-type: none"> <li>• A 5% reduction in unemployment levels among 16-24 age group between 1998 and 2005</li> <li>• Increase of 3% in enrolment rates for post-secondary education, between 1998 and 2005</li> </ul>	<ul style="list-style-type: none"> <li>• Labor market surveys and statistics; census data</li> <li>• Ministry of Education (MEC) statistics</li> </ul>	<ul style="list-style-type: none"> <li>• Social and political climate is maintained</li> <li>• Economy remains buoyant and continues providing suitable job opportunities</li> <li>• Continued investment in training and upgrade is made following project completion</li> </ul>
<p>outcomes at the primary and secondary school levels; and                      improvement in the range and relevance of skills of school-leavers during the period of</p>	<ul style="list-style-type: none"> <li>• Decrease by 50% in the number of students scoring less than 30% at BSSEE by 2004</li> <li>• 5% increase in the number of students sitting CXC examinations</li> <li>• 10% increase in pass rates in CXC examinations in English and Mathematics by 2005</li> <li>• Computer mastery achieved for 75% of school-leavers by 2005</li> </ul>	<ul style="list-style-type: none"> <li>• MEC records; CXC reports</li> <li>• MEC records</li> <li>• Institutional records</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable job opportunities available, with the skills of school-leavers.</li> <li>• Higher education institutions have sufficient capacity for increased number of secondary school graduates.</li> <li>• Higher education institutions keep pace with reform at basic level.</li> </ul>
<p>learning environment in primary and secondary education and improved system through:                      administrative, teaching and support services                      computer technology throughout the system and MEC                      curriculum                      physical infrastructure                      management</p>	<ul style="list-style-type: none"> <li>• 4,000 teachers, administrative and MEC personnel trained in IT, computer-assisted teaching and learning, software review etc, by 2005</li> <li>• 8,000 computers, related peripherals and specified audio-visual equipment installed by 2005</li> <li>• Revised curricula, relevant software, monitoring and evaluation mechanisms in place by 12/2000</li> <li>• 103 public schools rehabilitated by 2005</li> <li>• Project management and information systems in place</li> </ul>	<ul style="list-style-type: none"> <li>• Project Manager's reports; training reports; engineering consultants' reports; MEC records</li> </ul>	<ul style="list-style-type: none"> <li>• Training component sustained</li> <li>• Adequate and competent technical support resources remain available to classroom</li> <li>• Evaluation mechanisms adequate for training and other project components</li> <li>• Teacher and students react positively to new approaches</li> </ul>

(US\$'000)	(US\$'000)			
	IDB	CDB	GOB	TOTAL
<b>PROJECT MANAGEMENT</b>	<b>2,751</b>	<b>0</b>	<b>5,029</b>	<b>7,780</b>
	0	0	2,366	2,366
Program evaluation	0	0	300	300
Technical assistance	2,751	0	0	2,751
Design and supervision	0	0	2,363	2,363
<b>PROJECT COSTS</b>	<b>78,043</b>	<b>26,197</b>	<b>10,424</b>	<b>114,664</b>
Works	29,440	9,948	0	39,388
Curriculum reform	0	55	1,435	1,490
Software review center	0	55	95	150
National evaluation center	0	0	1,340	1,340
Training	100	2,389	2,393	4,882
Information technology	48,503	13,806	6,596	68,905
Infrastructure	1,004	688	0	1,692
Networks	3,974	1,109	0	5,082
School hardware	24,113	12,009	0	36,122
Ministry hardware	920	0	0	920
Standard software	2,406	0	0	2,406
Specialized software	10,349	0	0	10,349
Technical support	2,738	0	3,921	6,659
Other costs	3,000	0	2,675	5,675
<b>CURRENT COSTS</b>	<b>0</b>	<b>0</b>	<b>26,625</b>	<b>26,625</b>
Operational costs	0	0	25,162	25,162
Works maintenance	0	0	1,463	1,463
	<b>80,794</b>	<b>26,197</b>	<b>42,078</b>	<b>149,069</b>
<b>CONTINGENCIES</b>	<b>3,356</b>	<b>5,303</b>	<b>20,354</b>	<b>29,013</b>
Physical contingencies	3,356	2,296	5,794	11,446
Escalation	0	3,007	14,560	17,567
<b>FINANCIAL COSTS</b>	<b>850</b>	<b>0</b>	<b>34,175</b>	<b>35,025</b>
Interest	0	0	30,184	30,184
Commitment fee	0	0	3,991	3,991
Unit supervision	850	0	0	850
	<b>85,000</b>	<b>31,500</b>	<b>96,807</b>	<b>213,107</b>

- Funding for project activities, from the specified sources, is available and timely
- Recruitment of consultants and contractors is appropriate and timely
- Procurement of hardware and software is appropriate and timely
- Climatic and other conditions are suitable for construction and rehabilitation

**TENTATIVE PROCUREMENT PLAN**

<b>Description of Main Acquisitions</b> <b>No. of Lots</b>	<b>Financing</b>		<b>Method</b>	<b>Pre-qualification</b> <b>Yes/No</b>	<b>Date</b> <b>Sem/Year</b>
	<b>IDB</b>	<b>CDB</b>			
<b>WORKS</b>					
Repair and Rehabilitation of Schools Lots: 7	<b>75%</b>	<b>25%</b>	ICB	YES	II/98, I/99, I/00, I/01, I/02, I/03, I/04
IT infrastructure (US\$1.7 million) Lots: 4 (US\$890,000)	<b>60%</b>	<b>40%</b>	LCB	NO	II/98, I/99, I/03, I/04
Lots: 3 (US\$ 804,000)			LCB	NO	I/00, I/02, I/03
Networks (US\$5.1 million) Lots: 7	<b>78%</b>	<b>22%</b>	ICB	NO	II/98, I/99, I/00, I/01, I/02, I/03, I/04
<b>GOODS</b>					
Hardware (schools) (US\$36.1 million) Lots: 7	<b>67%</b>	<b>33%</b>	ICB	NO	II/98, I/99, I/00, I/01, I/02, I/03, I/04
Hardware (Ministry) (US\$2.4 million) Lots: 1	<b>100%</b>	<b>0%</b>	ICB	NO	II/98
Software (standard) (US\$2.4 million) Lots: 7	<b>100%</b>	<b>0%</b>	ICB	NO	II/98, I/99, I/00, I/01, I/02, I/03, I/04
Software (specialized) (US\$10.3 million) Lots: 7	<b>100%</b>	<b>0%</b>	DIRECT (sole sourcing)	NO	II/98, I/99, I/00, I/01, I/02, I/03, I/04
<b>SERVICES</b>					
Training (US\$4.9 million) Lots: 3	<b>0%</b>	<b>100%</b>	ICB	NO	II/98, I/00, I/02
Technical Assistance (US\$2.7 million) Lots: 3	<b>100%</b>	<b>0%</b>	ICB	NO	II/98, I/00, I/02

ICB = International Competitive Bidding  
LCB = Local Competitive Bidding

Direct: Sole sourcing approved  
Date: Refers to semester of year

<b>EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)</b> <b>BENCHMARKS FOR PROJECT PROGRESS</b> <b>YEAR ONE: 1999</b>			
First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>• Procurement documents and bidding process in place for (phase 1)</li> <li>• Document awarding of contracts (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Document start of work (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Document that work is completed in all 15 schools (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Procurement documents and bidding process in place for (phase 2)</li> </ul>
<ul style="list-style-type: none"> <li>• Document means of identifying and soliciting vendors; procurement documents available (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Document hardware purchases (phase 1)</li> <li>• Hardware installed in all 15 schools (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Document that hardware is functioning and available for use in all 15 schools (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Document means of identifying and soliciting vendors; procurement documents available (phase 2)</li> </ul>
<ul style="list-style-type: none"> <li>• Standard software packages for schools are selected. Library of optional software is identified</li> <li>• Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>• Document software has been installed in all 15 schools</li> </ul>	<ul style="list-style-type: none"> <li>• Document that software is functioning and available for use in all 15 schools (phase 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Procurement documents for software are available</li> </ul>
<ul style="list-style-type: none"> <li>• Mechanism and staffing for Internet resource filtering process is identified</li> </ul>	<ul style="list-style-type: none"> <li>• Internet hub and design for intranet are established</li> </ul>	<ul style="list-style-type: none"> <li>• All intranet connections and initial resources are established in all 15 schools and centrally</li> </ul>	<ul style="list-style-type: none"> <li>• Submit report on online traffic; growth and use of intranet resources; and chronic problems</li> </ul>
<ul style="list-style-type: none"> <li>• Necessary staff hired</li> </ul>	<ul style="list-style-type: none"> <li>• Advisory Board meeting held</li> <li>• Six-month review with IDB/CDB</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation plan for year 2000 developed</li> </ul>	<ul style="list-style-type: none"> <li>• Annual review with IDB/CDB</li> </ul>
<ul style="list-style-type: none"> <li>• Necessary staff hired; procurement documents and process available for civil works</li> </ul>	<ul style="list-style-type: none"> <li>• Six-month review with IDB/CDB</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation plan for year 2000 developed</li> </ul>	<ul style="list-style-type: none"> <li>• Annual review with IDB/CDB</li> </ul>
<ul style="list-style-type: none"> <li>• Document phase 1 schools meeting at least 3 hours every two weeks for faculty-led workshops</li> <li>• 100 hours of training conducted for 60 master trainers</li> </ul>	<ul style="list-style-type: none"> <li>• Document 3-5 hours of training with outside experts conducted at every phase 1 school over the school year</li> <li>• Document phase 1 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>• 150-170 hours of training conducted for 3 faculty -phase 2 school</li> <li>• Refresher training conducted with advanced modules for phase 1 teams</li> </ul>	<ul style="list-style-type: none"> <li>• Document phase 2 schools meeting at least 3 hours every two weeks for faculty-led workshops</li> </ul>
<ul style="list-style-type: none"> <li>• Software Review Center established and staffed</li> </ul>	<ul style="list-style-type: none"> <li>• Document range of software purchased</li> <li>• Mechanism for publicizing Software Review Center to teachers, alerting them to its functions, is established and documented</li> </ul>	<ul style="list-style-type: none"> <li>• Document that teams from all phase 1 schools have visited the Software Review Center</li> <li>• Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>• Student data records from schools where software are submitted by a teacher are applicable</li> <li>• Report on activity in Software Review Center; document expansion of software acquisitions</li> </ul>

EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009) BENCHMARKS FOR PROJECT PROGRESS YEAR ONE: 1999			
First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>National Evaluation Center established and staffed at UWI</li> <li>Formative evaluation framework, tasks, timeline are established; disseminate report on these</li> </ul>	<ul style="list-style-type: none"> <li>Instrumentation is established, pilot tested</li> <li>Specific cohorts for different portions of the study are identified; control groups identified</li> <li>Baseline data collected</li> </ul>	<ul style="list-style-type: none"> <li>Report on baseline data for phase 1 and phase 2 schools</li> <li>Collection of ex post baseline data</li> </ul>	<ul style="list-style-type: none"> <li>Formative research report for schools; recommendations</li> </ul>

<b>EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)</b> <b>BENCHMARKS FOR PROJECT PROGRESS</b> <b>YEAR TWO: 2000</b>			
First quarter	Second quarter	Third quarter	Fourth quarter
Document awarding of contracts phase 2	<ul style="list-style-type: none"> <li>Initiate works in all phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 2</li> </ul>	<ul style="list-style-type: none"> <li>Procurement documents and in place for phase 3 schools</li> </ul>
Document awarding of contract phase 2 schools	<ul style="list-style-type: none"> <li>Hardware installed in all phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>Hardware installed in all phase 2 schools</li> <li>Document that hardware is functioning and available for use in all phase 2 schools</li> <li>Procurement of additional hardware</li> </ul>	<ul style="list-style-type: none"> <li>Needs for new or additional hardware previously equipped schools, are identified and procurement and bidding process in place</li> </ul>
Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed	<ul style="list-style-type: none"> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document that software is installed and functioning in all phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>Document that software is installed and functioning in all phase 2 schools</li> </ul>
		<ul style="list-style-type: none"> <li>All intranet connections and initial resources are established for phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>Submit report on online traffic by teachers; growth adaptation resources; and chronic technical</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>	<ul style="list-style-type: none"> <li>Implementation plan for year 2001 is completed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CDB is completed</li> </ul>
		<ul style="list-style-type: none"> <li>Implementation plan for year 2001 is completed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CDB is completed</li> </ul>
Document phase 2 schools meeting at least 3 hours every two weeks for faculty-led workshops	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside experts or coaches conducted at every phase 2 school over the school year</li> <li>Document phase 2 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>150-170 hours of training conducted for 3 persons from phase 3 school</li> <li>Refresher training conducted with advanced modules for phase 2 teams</li> </ul>	<ul style="list-style-type: none"> <li>Document phase 3 schools meeting at least 3 hours every two weeks for faculty-led workshops</li> </ul>
Sample lesson plans using technology are submitted by all phase 1 schools	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 2 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> <li>Report on activity in Software Review Center document expansion, adaptation and acquisitions</li> </ul>

<b>EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)</b> <b>BENCHMARKS FOR PROJECT PROGRESS</b> <b>YEAR TWO: 2000</b>			
<b>First quarter</b>	<b>Second quarter</b>	<b>Third quarter</b>	<b>Fourth quarter</b>
<p>Data collection continues</p> <p>Evaluation plan is reviewed, revised for 2000-2001 school year; instrumentation revised as necessary</p>	<ul style="list-style-type: none"> <li>• Submit preliminary report on 1999-2000 school year findings, formative and outcome data</li> <li>• Specific cohorts in phase 2 schools are identified for different portions of the study; control groups are identified if necessary</li> <li>• Baseline data collection completed in phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>• Formative data collection is expanded to phase 2 schools</li> <li>• Initiate first independent mid-term evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Formative data report on phase 2 schools, recommendations for improvement</li> <li>• Conclude first independent mid-term evaluation</li> </ul>

**EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)  
BENCHMARKS FOR PROJECT PROGRESS  
YEAR THREE: 2001**

First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>Document awarding of contracts phase 3</li> </ul>	<ul style="list-style-type: none"> <li>Initiate works in all phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 3</li> </ul>	<ul style="list-style-type: none"> <li>Procurement documents and process in place for phase 4</li> </ul>
<ul style="list-style-type: none"> <li>Document awarding of contract phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Hardware installed in all phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Hardware installed in all phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Needs for new or additional previously equipped schools phase 4 are identified and procurement documents and bidding process initiated</li> </ul>
<ul style="list-style-type: none"> <li>Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed</li> </ul>	<ul style="list-style-type: none"> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document software has been installed in all phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Document that software is fully available for use in all phase 4 schools</li> </ul>
		<ul style="list-style-type: none"> <li>All intranet connections and initial resources are established for phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Submit report on online training used by teachers; growth and intranet resources; and chronic problems</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>	<ul style="list-style-type: none"> <li>Implementation plan for year 2002 completed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CDE</li> </ul>
		<ul style="list-style-type: none"> <li>Implementation plan for year 2002 completed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CDE</li> </ul>
<ul style="list-style-type: none"> <li>Document phase 3 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside coaches or experts conducted at every phase 3 school over the school year</li> <li>Document phase 3 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>150-170 hours of training conducted for 3 faculty from each phase 4 school</li> <li>Refresher training conducted with advanced modules for phase 3 teams</li> </ul>	<ul style="list-style-type: none"> <li>Document phase 4 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>
<ul style="list-style-type: none"> <li>Sample lesson plans using technology are submitted by all 21 phase 2 schools</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 3 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> <li>Report on activity in Software Review Center document expansion, adaptation, and acquisitions</li> </ul>
<ul style="list-style-type: none"> <li>Data collection continues</li> <li>Evaluation plan for 2000-2001 school year is reviewed, revised; instrumentation revised as necessary</li> </ul>	<ul style="list-style-type: none"> <li>Baseline data from phase 4 schools completed</li> <li>Summary report of formative and outcome data from all schools submitted</li> </ul>	<ul style="list-style-type: none"> <li>Formative data collection expands to phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Formative research report for recommendations for refinement</li> </ul>



**EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)  
BENCHMARKS FOR PROJECT PROGRESS  
YEAR FOUR: 2002**

First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>Document awarding of contracts phase 4</li> <li>Document awarding of contract phase 4 schools</li> <li>Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed</li> </ul>	<ul style="list-style-type: none"> <li>Initiate works in all phase 4 schools</li> <li>Hardware installed in all phase 4 schools</li> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 4</li> <li>Hardware installed in all phase 4 schools</li> <li>Document software has been installed in all phase 4 schools</li> </ul>	<ul style="list-style-type: none"> <li>Procurement documents process in place for phase 4</li> <li>Needs for new or additional previously equipped schools phase 5 are identified and documents and bidding prepared</li> <li>Document that software is available for use in all phase 4 schools</li> </ul>
		<ul style="list-style-type: none"> <li>All intranet connections and initial resources are established for phase 4 schools</li> </ul>	<ul style="list-style-type: none"> <li>Submit report on online training used by teachers; growth of intranet resources; and other problems</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>	<ul style="list-style-type: none"> <li>Implementation plan for year 2003 developed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/C</li> </ul>
		<ul style="list-style-type: none"> <li>Implementation plan for year 2003 schools</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/C</li> </ul>
<ul style="list-style-type: none"> <li>Document phase 3 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside coaches or experts conducted at every phase 4 school over the school year</li> <li>Document phase 4 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>150-170 hours of training conducted for 3 faculty/phase 5 school</li> <li>Refresher training conducted with advanced modules for phase 4 teams</li> </ul>	<ul style="list-style-type: none"> <li>Document phase 4 schools meeting 3 hours every two weeks workshops</li> </ul>
<ul style="list-style-type: none"> <li>Sample lesson plans using technology are submitted by all 19 phase 3 schools</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 4 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from submitted by all schools,</li> <li>Report on activity in Software Review Center; document expansion of software acquisitions</li> </ul>
<ul style="list-style-type: none"> <li>Data collection continues</li> <li>Evaluation plan reviewed, revised; instrumentation revised as necessary</li> </ul>	<ul style="list-style-type: none"> <li>Baseline data completed in phase 5</li> <li>Submit summary report</li> </ul>	<ul style="list-style-type: none"> <li>Data collection expands to phase 4 schools</li> </ul>	<ul style="list-style-type: none"> <li>Formative data report, recommendations for refinement for all schools</li> </ul>

**EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)  
BENCHMARKS FOR PROJECT PROGRESS  
YEAR FIVE: 2003**

First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>Document awarding of contracts phase 5</li> <li>Document awarding of contract phase 5 schools</li> <li>Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed</li> </ul>	<ul style="list-style-type: none"> <li>Initiate works in all phase 5 schools</li> <li>Hardware installed in all phase 5 schools</li> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 5</li> <li>Hardware installed in all phase 5 schools</li> <li>Document software has been installed in all phase 5 schools</li> </ul>	<ul style="list-style-type: none"> <li>Procurement documents and process in place for phase 5</li> <li>Needs for new or additional previously equipped schools phase 6 are identified and documents and bidding prepared</li> <li>Document that software is available for use in all phase 6 schools</li> </ul>
		<ul style="list-style-type: none"> <li>All intranet connections and initial resources are established for phase 5 schools</li> </ul>	<ul style="list-style-type: none"> <li>Submit report on online training used by teachers; growth of intranet resources; and computer problems</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>	<ul style="list-style-type: none"> <li>Implementation plan for year 2004 developed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CD</li> </ul>
		<ul style="list-style-type: none"> <li>Implementation plan for year 2004 developed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/CD</li> </ul>
<ul style="list-style-type: none"> <li>Document phase 5 schools meeting 3 hours every two weeks for faculty-led workshops.</li> </ul>	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside experts conducted at every phase 5 school over the school year</li> <li>Document phase 5 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>150-170 hours of training conducted for 3 faculty/phase 6 school</li> <li>Refresher training conducted with advanced modules for phase 5 teams.</li> </ul>	<ul style="list-style-type: none"> <li>Document phase 6 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>
<ul style="list-style-type: none"> <li>Sample lesson plans using technology are submitted by all 18 phase 4 schools</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from standard learning software are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 5 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records from all schools, if applicable</li> <li>Report on activity in Software Review Center; document expansion of software acquisitions</li> </ul>
<ul style="list-style-type: none"> <li>Data collection continues</li> </ul>	<ul style="list-style-type: none"> <li>Baseline data collected for year 6 schools</li> <li>Submit preliminary summative evaluation report for progress through phase 3</li> </ul>	<ul style="list-style-type: none"> <li>Formative and impact collection expands to phase 5 schools</li> <li>Second mid-term evaluation initiated</li> </ul>	<ul style="list-style-type: none"> <li>Formative research report with recommendations for refinement</li> <li>Second mid-term evaluation initiated</li> </ul>

**EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)  
BENCHMARKS FOR PROJECT PROGRESS  
YEAR SIX: 2004**

First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>Document awarding of contracts phase 6</li> <li>Document awarding of contract phase 6 schools</li> <li>Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed</li> </ul>	<ul style="list-style-type: none"> <li>Initiate works in all phase 6 schools</li> <li>Hardware installed in all phase 6 schools</li> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 6</li> <li>Hardware installed in all phase 6 schools</li> <li>Document software has been installed in all phase 6 schools</li> <li>All intranet connections and initial resources are established for phase 6 schools</li> </ul>	<ul style="list-style-type: none"> <li>Procurement documents process in place for phase 6</li> <li>Needs for new or additional previously equipped schools phase 7 are identified and documents and bidding process</li> <li>Document that software is available for use in all phase 6 schools</li> <li>Submit report on online training used by teachers; growth of intranet resources; and other problems</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>	<ul style="list-style-type: none"> <li>Implementation plan for year 2005 developed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/C</li> </ul>
		<ul style="list-style-type: none"> <li>Implementation plan for year 2005 developed</li> </ul>	<ul style="list-style-type: none"> <li>Annual review with IDB/C</li> </ul>
<ul style="list-style-type: none"> <li>Document phase 6 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside experts conducted at every phase 6 school over the school year</li> <li>Document phase 6 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>150-170 hours of training conducted for 3 faculty/phase 7 school</li> <li>Refresher training conducted with advanced modules for phase 6 teams</li> </ul>	<ul style="list-style-type: none"> <li>Document phase 7 schools meeting 3 hours every two weeks workshops</li> </ul>
<ul style="list-style-type: none"> <li>Sample lesson plans using technology are submitted by all 15 phase 5 schools</li> </ul>	<ul style="list-style-type: none"> <li>Student data records are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 6 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records are submitted by all schools, if applicable</li> <li>Report on activity in Software Review Center; document expansion of software acquisitions</li> </ul>
<ul style="list-style-type: none"> <li>Data collection continues</li> </ul>	<ul style="list-style-type: none"> <li>Baseline data collected for phase 7 schools</li> <li>Submit preliminary report on summative evaluation for progress through phase 4</li> </ul>	<ul style="list-style-type: none"> <li>Data collection expands to phase 6 schools</li> </ul>	<ul style="list-style-type: none"> <li>Formative research report and recommendations for refinement</li> </ul>

**EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)  
BENCHMARKS FOR PROJECT PROGRESS  
YEAR SEVEN: 2005**

First quarter	Second quarter	Third quarter	Fourth quarter
<ul style="list-style-type: none"> <li>Document awarding of contracts phase 7</li> <li>Document awarding of contract phase 7 schools</li> <li>Standard software packages are reviewed. Library of optional software is reviewed; procurement documents completed</li> </ul>	<ul style="list-style-type: none"> <li>Initiate works in all phase 7 schools</li> <li>Hardware installed in all phase 7 schools</li> <li>Document software has been procured</li> </ul>	<ul style="list-style-type: none"> <li>Document completion of works phase 7</li> <li>Hardware installed in all phase 7 schools</li> <li>Document software has been installed in all phase 7 schools</li> </ul>	<ul style="list-style-type: none"> <li>Final evaluation with IDB/C</li> <li>Final evaluation with IDB/C</li> <li>Final evaluation with IDB/C</li> </ul>
			<ul style="list-style-type: none"> <li>Submit report on online training used by teachers; growth of intranet resources; and other problems</li> <li>Final evaluation with IDB/C</li> </ul>
	<ul style="list-style-type: none"> <li>Advisory Board meeting held</li> </ul>		<ul style="list-style-type: none"> <li>Final evaluation with IDB/C</li> </ul>
			<ul style="list-style-type: none"> <li>Final evaluation with IDB/C</li> </ul>
<ul style="list-style-type: none"> <li>Document phase 7 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>Document 3-5 hours of training with outside experts conducted at every phase 7 school over the school year</li> <li>Document phase 7 schools meeting 3 hours every two weeks for faculty-led workshops</li> </ul>	<ul style="list-style-type: none"> <li>Refresher training conducted with advanced modules for phase 7 teams</li> </ul>	<ul style="list-style-type: none"> <li>Final evaluation with IDB/C</li> </ul>
<ul style="list-style-type: none"> <li>Sample lesson plans using technology are submitted by all 13 phase 6 schools</li> </ul>	<ul style="list-style-type: none"> <li>Student data records are submitted by all schools, if applicable</li> </ul>	<ul style="list-style-type: none"> <li>Document that teams from all phase 7 schools have visited the Software Review Center</li> <li>Submit report on activities and holdings of Software Review Center</li> </ul>	<ul style="list-style-type: none"> <li>Student data records are submitted by all schools, if applicable</li> <li>Report on activity in Software Review Center; document expansion of software acquisitions</li> <li>Final evaluation with IDB/C</li> </ul>
<ul style="list-style-type: none"> <li>Data collection continues</li> </ul>	<ul style="list-style-type: none"> <li>Submit final formative evaluation report</li> </ul>		<ul style="list-style-type: none"> <li>Final summative evaluation</li> </ul>

# **EDUCATION SECTOR ENHANCEMENT PROGRAM (BA-0009)**

## **ANNUAL PROJECT COST PROJECTIONS**

(In BD\$mn 1/)	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	T
P	42.6	46.3	45.9	58.0	59.1	55.3	50.8	
DB	22.1	22.6	22.3	23.9	19.9	29.6	29.6	
CDB	12.6	13.9	8.8	13.2	10.4	2.1	2.0	
GOB	7.9	9.8	14.8	20.9	28.8	23.6	19.2	
Terms of GDP at market prices (%)								A
P	1.0	1.0	0.9	1.1	1.1	1.0	0.9	
DB	0.5	0.5	0.4	0.5	0.4	0.5	0.5	
CDB	0.3	0.3	0.2	0.2	0.2	0.1	0.1	
GOB	0.2	0.2	0.3	0.4	0.5	0.4	0.3	
Terms of total PSIP of GOB (%)	16.7	16.3	17.2	20.8	20.2	18.1	15.9	1

total investment cost does not include interest costs during implementation.

PROPOSED RESOLUTION

BARBADOS. LOAN \_\_\_\_/OC-BA TO THE GOVERNMENT OF BARBADOS  
Education Sector Enhancement Program

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Government of Barbados, as Borrower, for the purpose of granting it a financing to cooperate in the execution of the Education Sector Enhancement Program. Such financing will be for the amount of up to eighty five million dollars of the United States of America (US\$85,000,000) from the Single Currency Facility of the Ordinary Capital Resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Terms and Financial Conditions" of the Executive Summary of the Loan Proposal.