

# **Eastern Caribbean Education Reform Project (ECERP)**

## **WBS 2500: Electronic Networking**



**Assessment of ICT  
Infrastructure in  
OECS Ministries  
Of Education, Schools  
And the OERU.**

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## ABBREVIATIONS

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BERP	Basic Education Reform Project
BVI	British Virgin Islands
CAD	Computer Aided Design
CAI	Computer Aided Instruction
CIDA	Canadian International Development Agency
CMC	Computer Mediated Communication
CMI	Computer Managed Instruction
CXC	Caribbean Examination Council
DSL	Digital Subscriber Line
ECERP	Easter Caribbean Education Reform Project
EDF	European Development Fund
EMIS	Education Management Information System
EOSI	Electronic Online Systems International
GPI	General and Pedagogical Information
ICT	Information and Communication Technology
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISU	Information Systems Unit
IT	Information Technology
MOE	Ministry of Education
NGO	Non-Government Organisation
OECS	Organisation of Eastern Caribbean States
OERU	OECS Education Reform Unit
PC	Personal Computer
PPP	Pillars for Partnership and Progress
SASI	School Administration Student Information
WAN	Wide Area Network



# EXECUTIVE SUMMARY

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## BACKGROUND

In 1997, the OERU initiated a number of activities in accordance with the Implementation Plan for the Electronic Networking of the OECS education community. These activities were aimed at developing the capacity of the OERU, the Ministries of Education (MOEs) and the schools of the OECS to use information and communication technologies (ICT) as essential tools for the management of their education systems and the implementation of education reform.

Approximately four years later, the OERU, also in accordance with the above-named implementation plan, has commissioned this consultancy assignment in order to review the progress made in respect to the electronic networking initiative.

In this consultancy assignment, various methods were employed in gathering the information required for analysis. These methods included:

- The use of questionnaires in order to assess the status of ICT in the Ministries of Education and public schools in the sub region.
- The execution of case studies in three OECS territories (the British Virgin Islands, Antigua & Barbuda, and Grenada) in order to gain an in depth understand of the ICT projects being undertaken in education in these territories
- The performance of interviews with officers of the OERU in order to review the OERU's web site and electronic communication mechanism
- The study of reports on recent assessments done by and of the OERU and the reform process

## FINDINGS

The following outlines the major findings with respect to: (i) the status of ICT in education in the seven OECS territories that participated in this assessment (Dominica and Anguilla excluded); and (ii) the OERU's web site and electronic communication mechanism.

### Status of ICT in Education in the OECS

- There was evidence of computerisation in all MOEs. However, the degree of computerisation varied from one island to the next.
- In all the islands, the emphasis placed on the application of ICT in institutional administration at the Ministry has been significantly greater than that placed on the integration of ICT in schools.
- General productivity tools such as MS Office were the primary software applications utilised in administration. Attempts have been made to implement system-wide online EMIS in only St. Lucia and the BVI.

- Generally, ICT was used on a limited scale in the curriculum. Very few primary schools in the sub-region were equipped with computer facilities for instructional purposes. In secondary schools, the computer facilities were used primarily to offer CXC Information Technology. It was admitted that computer aided instructional (CAI) technologies were probably being used in some schools without the Ministry's knowledge or endorsement.
- Internet connectivity was available in all seven MOEs that participated in this assessment. However, fewer than 50% of the officers in five of these islands had easy access to the Internet. The majority of secondary schools in the sub-region had Internet access facilities. At the primary school level, there was a clear disparity between the extent of Internet access in islands that had negotiated special rates with their ISP and that in islands that had not. In most cases, dial-up connection was used to access the Net. Other technologies such as ADSL and ISDN were also used.
- It was estimated that, in almost every island, over 65% of the officers at the MOE was computer literate. In contrast, the estimated computer literacy rate for teachers and school administrators was significantly lower than 65%. The emphasis in the past had been on the training of senior officers and secretaries at the Ministry. It was noted, however, the Ministries intended on embarking on extensive training programmes for teachers and school administrators.
- The information available on expenses in and budgets for IT in education was very scant. In islands, where such information was available, it was noted that investments in ICT have been directed mainly towards the acquisition of hardware for the Ministry and the installation of computer labs at secondary schools. Training was given second priority, and a comparatively negligible sum was allocated to maintenance.
- Generally, the technical support resources at the MOEs responsible for the implementation and sustenance of ICT initiatives were grossly inadequate. In some cases, the job specifications of these individuals were not formalised. The MOEs relied heavily on private IT service companies, particularly in providing technical support to schools.

### **OERU's Electronic Communication and Web Site**

- A local area network (LAN) was installed at the OERU. This LAN facilitated electronic communication internally, and generally, officers were satisfied with this mechanism for communication.
- OERU officers, however, expressed the desire to communicate with other educators in the sub-region just as easily as they do internally. They also indicated that there was a need for an in-house technical resource, who would be



responsible for resolving technical issues and for the administration of the OERU's LAN, intranet and web site.

- An OERU Intranet had been established. However, it had not been utilised as expected. At the time that this intranet was implemented, intranet technology was relatively new to the sub region and not many individuals were aware of its potential benefits. Although some key officers involved in other reform initiatives had been trained in the use of the OERU's Intranet, they reverted to their usual mode of operation i.e. communication via telephone and fax, and face-to-face meetings.
- The OERU's web site was in a state of transition at the time of the assessment. Quantitative reports from the web site hosting company suggested that the web site was not visited frequently.
- Officers of the OERU and other educators in the sub region indicated that they did not visit the site regularly primarily because the information presented on the site was very limited and was not updated regularly. Some officers also felt that the web site could be more attractive.

## **RECOMMENDATIONS**

Having considered the above findings, it is recommended that the OERU focus on the following areas in order to assist in further integrating ICT capacity in the education systems of the OECS and to improve the mechanism for electronic communication among educators.

### **Increasing access to ICT**

The strategies for increasing access to technology, outlined in the Pillars for Partnership and Progress report, should be implemented. Additionally, the OECS, as a unified body, should attempt to negotiate special agreements with the major suppliers of technology e.g. Cable and Wireless, Microsoft, IBM and DELL. The OECS territories, acting together, would have greater bargaining power than individual territories and could negotiate relatively more attractive and affordable prices from suppliers.

### **Training**

There is need for extensive training in the application of ICT throughout the education system in each island. However, significant emphasis should be placed on the training of teachers and school administrators. The training of in-service teachers should be acknowledged as a challenge. Efforts should therefore be directed towards the development of modern distance education programmes at tertiary institutions in the sub-region in order to deal with this challenge.

## **Formulation and Implementation of policies for ICT in Education**

Individual territories should be encouraged to develop national ICT policies using, as a template, the model ICT guidelines and strategies for education systems developed by the OERU. The issues of formalised organisational support structures and demonstrated financial commitment towards the development of education through the use of ICT should be addressed in the implementation of these national policies.

## **Non-Technical Issues**

The need to address administrative and psychological challenges associated with the implementation of the electronic networking initiative (or any computer system for that matter) should be recognised. The OERU should therefore undertake to do the following in tackling these challenges:

- Encourage Ministries to make the necessary modifications to the job specifications of individuals involved in the implementation of reform initiatives. It should be made clear to these individuals that they would be expected use the electronic network to consult, collaborate and share ideas with their counterparts
- Devise incentives to encourage the early adoption of technology and provide awards for its innovative use
- Provide adequate training to allay the fears of individuals whose job specifications have been altered.

## **Re-establishment of the Intranet**

The process to rebuild the OERU's Intranet should commence as soon as possible. A more participatory approach, which involves the potential users, should be employed in this process. It should be made clear to individuals involved in other education reform initiatives that the intranet would be the primary medium for communication and collaboration.

## **Upgrading/Redesigning the OERU's Web Site**

An approach similar to the one proposed for the rebuilding of the OERU's Intranet should be used in upgrading/ redesigning the web site. Design ideas could be elicited from educators in the sub-region through activities such as competitions and exhibitions.

It is paramount that educators understand why the web site is of value to them. It is therefore proposed that the objectives of the web site be clearly defined and that the web site be promoted aggressively. It is further suggested that the web site be upgraded regularly in order to encourage visitors to return to the site repeatedly.

### **Appointment of a System Administrator/ Webmaster**

The responsibilities associated with the development and the ongoing maintenance of the web site and the intranet are tremendous. It is there unrealistic to expect the Information Specialist to undertake these additional responsibilities. Recognising this, it is recommended that the organisation structure of the OERU be modified in order to include the post System Administrator. The individual appointed to that post would be responsible for the establishment and maintenance of the OERU's web site and intranet, as well as the administration of the computer systems at the OERU. The information specialist should focus on the management of all ICT related activities and the promotion of the effective use of ICT in education in the sub-region



# 1. INTRODUCTION

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The Electronic Networking initiative was spawned from the need to foster collaboration among the Organisation of Eastern Caribbean States (OECS) territories as part of the education reform process. This initiative has been given the highest priority under the Eastern Caribbean Education Reform Project (ECERP) because this network has been viewed as an implementation tool for other initiatives under the ECERP project

The OECS Education Reform Unit (OERU) has thus far undertaken most of the activities outlined in the implementation plan for the electronic networking of the OECS. Specifically, the following had been accomplished:

- (1) The provision of Internet training workshops to key Ministry officials (electronic counterparts) in 1997;
- (2) The procurement of computers and other equipment for all Ministries excluding St. Lucia and Grenada;
- (3) The establishment of local area networks at the OERU and all Ministries with the assistance of OCOD interns;
- (4) The delivery of Internet train-the-trainer workshop to Ministry representatives;
- (5) The establishment of a web site for OERU and Ministries of Education.

Also included in the implementation plan was the need for continuous assessment and monitoring of the initiative in order to report on the progress made and to provide information to the Ministries of Education on the implications associated with sustaining the system implemented as part of the initiative. These assessments were also to be undertaken with a view to incorporate new and emerging technologies and practices into the initiative and the education reform project as a whole.

The assessment on which this report is based, was undertaking approximately four years into the implementation of the electronic networking initiative. This assessment focussed on the following:

- The level of computerization at all Ministries of Education (MOEs) and all government schools (primary and secondary) in the OECS
- The extent of utility of computer systems (hardware & software) in the administrative operation of Ministries and schools.
- The level and type of computer training of Ministry Staff, Principals and teachers in the education systems of the various member states.
- The availability and use of the Internet by Ministry officials and schools.
- Ministries' annual budgetary allocations to information and communication technology (computer purchases, training, etc).

- Ministries' and schools' annual telecommunications/Internet access cost.
- The readiness of member states to the implementation of a computerized Education Management Information System EMIS.
- The extent to which educational software is used in Schools in the Sub-region

## 2. METHODOLOGY

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The consultant, in accordance with the scope of work outlined in the Terms of Reference<sup>1</sup> for this assignment, was required to accomplish the following:

1. Undertake a complete assessment of the status of the ICT infrastructure of all MOEs and schools in member states using questionnaires.
2. Undertake visits to MOEs in three members states that are presently implementing major ICT projects in their education systems.
3. Review the electronic communication mechanism at the OERU along with the web site with a view to improving their effectiveness.
4. Consider and analyse recommendations of recent reviews done by and of the OERU and reform process.

The following describes the activities that were performed in carrying out the above-named tasks.

### **Assessment of ICT status**

A questionnaire was developed and distributed to the various islands via fax or electronic mail. This questionnaire was intended to assess the following aspects of the information and communication technology capacity in the islands:

- Hardware and communication
- Software/ Courseware
- Information technology capacity of Ministry employees, principals and teachers
- Organisational and technical support
- Budget for information and communication technology

### **Visits to MOEs and Select Schools**

The three member states visited during the assignment were Grenada, the British Virgin Islands (BVI), and Antigua and Barbuda. The primary objective of these visits was to gain further insight into the major ICT projects being implemented in education in the respective islands.

Interviews were conducted with key officers within the Ministry. Specifically officers who had been directly and indirectly involved in the activities undertaken as part of the electronic networking initiative. The consultant also took the opportunity to complete the questionnaire designed to assess the status of ICT in education in the respective country.

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<sup>1</sup> The Terms of Reference for this assignment are provided in Appendix 1.

### **Review of Electronic Communication Mechanism and OERU's Web Site**

The consultant visited the Office of the OERU in order to review the electronic communication mechanism and the OERU's web site. The Information Specialist provided information on the computerisation of the Unit and the development and implementation of the web site. Additionally, OERU officers were interviewed in order to assess their views on the following aspects of the OERU web site:

- The web site's objectives
- The content of the web site and the manner in which it is organised or structured
- The design or 'look and feel' of the site
- Promotional efforts
- Accessibility (download time or down time of server)

### **Consideration and Analysis of Recent OERU Reviews**

The consultant reviewed a series of documents on the OECS education reform project in which specific reference to the electronic networking initiative was made. The names of these documents are included in the list presented in Appendix 5.



## 3. STATUS OF ICT IN EDUCATION

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### 3.1 KEY FINDINGS

This review is based on information compiled from seven OECS territories, viz.: Antigua, the BVI, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. The time frame within which this information was provided ranged from June 2001 to September 2001.

#### 3.1.1 Hardware

Personal computers appeared to be ubiquitous in the Ministries of Education visited (the BVI, Antigua, St. Lucia and Grenada) and the information provided by the other territories suggested the same for the other MOEs. There were networks installed in all Ministries. The extent of these networks in terms of the Departments, Units and Sections that are linked, varied from one island to the next. In some islands, the networks were localised within the Computer Department. In other territories, the networks encompassed the entire Ministry and, in some cases, extended to include schools and other Government Departments.

In contrast to the Ministries of Education, the presence of computer hardware and communication technology in schools was minimal. In two of the islands with over 30 public schools, an alarming proportion (over 40%) of these schools did not have at least one computer. Though some schools had at least one computer, their computers were used mainly for administrative purposes.

The investment in information technology for secondary schools appeared to be significantly greater than that for primary schools. In almost all the islands, there were IT facilities, in the form of computer labs with at least ten (10) computers, in every secondary school.

In general, the investment in and allocation of computer hardware in the education appeared to be disproportionate in most of the islands. The focus thus far appeared to have been on capacity building at the Ministry with significantly less attention being placed on information technology at schools.

#### 3.1.2 Software In Administration

The Microsoft Office suite of applications was the main tool used in administration at all levels of the education system in the seven islands. Other software applications being used included:

- A school performance management spreadsheet tool implemented by the OERU
- Alexandria – an online library catalogue and circulation system
- ACCPAC – used for accounting purposes
- AutoCAD – used in designing classrooms
- Smart Stream – used Government wide for financial management

With the exception of St. Lucia and the BVI, there was no system-wide application used for education administration in the islands. The BVI and St. Lucia were each in the early stages of implementing two different turnkey education management information systems (EMIS).

In the BVI, School Administration and Student Information (SASI) developed by the National Computer Systems (NCS) –a US based company- had been installed in a number of the schools.

In St. Lucia, the pilot site for the OECS EMIS implementation, 25 schools were in the process of entering registration data into the database. At the time of this assessment, no meaningful report had been generated from this system.

Grenada reported that an attempt was made to implement a classroom management system, School Vista, which is distributed by IBM. This initiative was abandoned due primarily to the number of technical difficulties encountered during the implementation.

### **3.1.3 Software in the Curriculum**

Educational software was used on a very limited scale in the OECS region. With the exception of the BVI, Montserrat and St. Kitts, fewer than 10% of primary schools in the islands used their computers for teaching and learning purposes. In the BVI, a sizeable investment was made in providing all primary schools with educational software for all levels.

The educational software covered topics in subject areas such as Mathematics, Language Arts, General Science, Keyboarding skills, and included brands such as Skills Banks, AutoSkills and Cornerstone.

Computer facilities at secondary schools are used primarily for CXC IT. In a few cases, however, educational software is used on small scale in other subject areas such as Mathematics, French and Spanish.

In their responses, island representatives noted that some schools used software without the Ministry's knowledge or endorsement. Therefore, the Ministry does not have an accurate picture of the extent to which educational software is used.

### 3.1.4 Internet Access

Internet connectivity was available in all seven Ministries of Education that participated in this assessment. In most cases, dial-up connection was used. However, in the BVI, Grenada and St. Lucia, other technologies such as ADSL (Asymmetric Digital Subscription line) and ISDN (Integrated Services Digital Network) were used.

Although Internet connectivity was available, fewer than 50% of the officers in five of the seven islands were capable of accessing the Net easily. It was admitted in some cases, that cost was the main reason for limiting access to a few officers.

With respect to Internet access at primary schools, the islands could be divided into two categories: (1) islands that have been able to negotiate a special package with their Internet Service Provider (ISP) and, (2) islands that were being charged the regular rate.

In the BVI, Monserrat and St. Lucia where Internet access is either free or a flat rate, over 88% of the primary schools have Internet connectivity. With the exception of St. Kitts, Internet access facilities are available in fewer than 10% of the primary schools in the remaining islands. Only dial-up connections are available at the primary schools.

With the exception of Antigua and Barbuda, and St. Vincent and the Grenadines, Internet access was available at all secondary schools in each island. In most schools, dial-up connection was used. However, in the BVI, Grenada and St. Lucia, other technologies e.g. DSL and ISDN were available.

In general, Internet accessibility is improving in most islands. Although many islands recognised the importance of the Internet, they identified cost as the major prohibiting factor in making it available to everyone in the education system. Other concerns such as misuse of the Internet were noted.

### 3.1.5 IT Capacity of Officers

For the purposes of this assessment, "**computer literacy**" was defined as having the following: (i) a basic understanding of the computer and the function of its components; (ii) a working knowledge of the computer's operating system; and (iii) the ability to use word processing and spreadsheet applications, as well as the Internet.

Based on rough estimates provided by each island, the computer literacy rate for officers at individual Ministries was over 65% in all but one island. Formal training was provided to some officers in almost every island. Specifically, training was provided in MS Word, MS Excel, MS Outlook, and MS PowerPoint.

It was admitted, however, that the beneficiaries of the training programs were primarily senior officers and secretaries.

In primary schools, the computer literacy rate of teachers was less than 65% in all islands except Monserrat, where a rate of 100% was reported. Formal training had been provided to some teachers in only five islands. Although the focus had been mainly on general productivity tools such as the MS Office applications, training in other areas had been conducted.

For instance, in the BVI, Anguilla and St. Lucia, training in the Evaluation and Educational Software was provided to selected teachers and principals, with the assistance of the OERU. In St. Vincent, training in Network Administration was provided to a few designated IT Administrators in schools, and in Grenada, teachers at all levels received training in (1) the use of Skills Bank 4 to teach Math, Language Arts, and Library Skills, and (2) the use of AutoSkills to teach Math, English and General Science.

At the secondary school level, computer literacy rate ranged from 20% to 100%. Formal training had been provided to some secondary schools teachers in almost every island. The training provided to secondary school teachers was similar to that provided to primary school teachers.

In discussions with Ministry representatives in the islands visited, it was noted that the Ministries intended on embarking on extensive training programmes for all teachers. The Ministry of Education in Antigua planned to use a recently completed computer training institution to upgrade the computer skills of all teachers. The Grenada representative indicated that it was the Ministry's intention to conduct the following training programmes during the 2001 summer vacation: (1) computer literacy for primary schools teachers, and (2) computer repair and maintenance for selected teachers in primary and secondary schools and for a few individuals in the community. St. Lucia indicated that the Ministry is committed to the following: training all Principals in Office 2000; providing at least one teacher in each school with basic skills in computer maintenance; and training Secondary School teachers in MS Access and MS Visual Basic.

In general, although not much attention has been given to training of officers and teachers in the past, there is strong indication that this is changing in every island.

### **3.1.6 Financial Commitment to ICT in Education**

Generally, the individuals interviewed or who were responsible for responding to the questionnaires were unable to provide definite responses to questions relating to budget allocation or expenditure for information technology in education.

In most islands, the budget for IT in Education was managed by a central government department, which was also responsible for expenses in IT

throughout the public sector. Therefore officers within the Ministry had very little knowledge of the approved allocations and the actual expenses.

Only four islands (the BVI, Grenada, St. Lucia, and St. Kitts) were able to provide estimates for IT in education for the current financial year. These estimates ranged from EC \$1.3 million to EC\$80,000.00. With the exception of the BVI, these figures represent less than 1% of the total education budget.

In all the islands, a significant proportion of the IT budget was allocated for the purchase of hardware. Training was given second priority, however, the amount apportioned to training was significantly less than that assigned to purchase of hardware. A negligible sum, or in some cases, nothing was allotted to maintenance of equipment.

### **3.1.7 Organisation and Technical Support**

The information received from the various islands suggested that the resources, in terms of technical support personnel, were grossly inadequate for the developments in IT being undertaken by the Ministries. Grenada, St. Lucia and St. Kitts indicated that there were internal IT/computer departments in their Ministries of Education. These Departments, though meagrely staffed were also responsible for IT support in schools.

Although there was no established Computer Department in the MOEs of the BVI, Montserrat and Antigua, there were resource personnel capable of troubleshooting problems, and servicing the computers. In the BVI and Antigua, technical support was also being provided by a central Government Computer Department.

Generally, private service companies, and the MOEs' computer departments, in islands where they existed, provided technical support for computer technology in primary schools. St. Vincent was the only island in which training in network administration was provided to teachers in a few schools. As a result, these teachers were capable of maintaining their systems.

In secondary schools IT teachers, for the most part, were also responsible for computer system maintenance. The maintenance service that they provide was supplemented by support from the Ministries' Computer Department and private contracting.

## **3.2 KEY ISSUES AND RECOMMENDATIONS**

The findings discussed earlier suggest that IT had been integrated into the education system in all the islands that participated in this assessment. The degree of integration and the sophistication in technology used appeared to vary from one island to the next.

There was evidence to suggest that some developments in the ICT capacity had resulted directly or indirectly from the initiatives that were implemented or supported by the OERU. Two noteworthy examples were: the relatively high computer literacy rate among officers at the Ministries of Education, and the use of a performance management spreadsheet application in schools.

Although the OERU has made a significant contribution thus far, there are other issues that the Unit can address in assisting the further development of ICT capacity of the Ministries and schools in the sub region. Some of these issues are addressed in the proposed reform strategies for ICT outlined in the Pillars for Partnership and Progress (PPP). It is however, necessary to re-emphasize some of these strategies or to suggest new ones.

### **3.2.1 Technical Issues**

The concerns here are related to the acquisition and proper installation and use of information and communication technology.

#### **Increasing Access to Technology**

Strategy 14 of the PPP is an excellent suggestion for mobilising resources to modernize school plants and consequently increase access to technology. It is further suggested, however, that the OECS should act as a unified body in negotiation with major suppliers of technologies. With this approach, the OECS would have greater bargaining power than individual territories and could negotiate relatively more attractive and affordable prices from suppliers. As a result, modernising school plants would become a less costly venture.

The dominant ISP in the region is one supplier with whom negotiations can start almost immediately. As indicated earlier, there is a clear disparity in the extent of Internet access between countries that have been able to secure a special package from this ISP and those that have not.

There are other major suppliers such as Microsoft, Dell, and IBM from whom regular purchases are made. These suppliers can also be approached with a view to negotiating special prices or establishing agreements. Representatives from the OERU and the individuals Ministries of Education can form a negotiating group.

#### **Training**

The evidence compiled in this assessment suggests that there is a clear difference between the level of computer literacy at the Ministry and that at the schools. Consequently, although there is a need for training in the application of ICT throughout the education system, emphasis must be place on the training of teachers and school amdinistrators.

Strategy 16 of the PPP focuses on the issue of training. In dealing with the issue of training of teachers a distinction has to be made between in-service teachers with the only option of undertaking training part-time and full-time student teachers. Consideration must also be given to reducing cost through collaboration and cooperation among OECS territories in delivering training. The further development of distance education programs in tertiary institutions in the region is a proposed cost-effective solution for reaching in-service teachers with limited time in any island.

Information and communication technologies offer tremendous possibilities in the area of distance education. ICT provides new and interactive means of overcoming time and distance to reach learners. The following are a few examples outlined in Distance Education at a Glance (University of Idaho)

1. With computer aided instruction (CAI) applications, for example, it is possible to individualise learning while giving immediate reinforcement and feedback
2. Computers are multimedia tools and can therefore integrate graphic, print, audio and video into computer-based instructional units, lessons, and learning environments
3. Computer managed instruction (CMI) technology utilises the computer's branching storage and retrieval capabilities to organise instruction and track student records and progress. The instructions in CMI do not always have to be delivered via computer.
4. Computer mediated communication (CMC) technologies facilitate communication. Examples included electronic mail, bulletin boards and computer conferencing.
  - With e-mail, feedback from instructors can be received very quickly, students can read messages at their convenience and easily store them for later reference.
  - Classroom bulletin boards can be established in order to post all modifications to class schedule or curriculum, assignments/tests, and answers to assignments/test.
  - Computer conferencing and discussion forums can be used in engaging students in dialogue with other students, faculty, and researchers

The OERU, in an effort to upgrade the ICT skills of in-service teachers, should encourage and assist with the development of modern distance education programs at tertiary institutions. Additionally, with the proposed OERU Intranet, computer conferences and discussion forums could be established and teachers could be guided in accessing accredited educational and online learning resources.



## **Organisational Support**

The tendency in the OECS to implement projects without having the necessary institutional framework in place to support and sustain these projects has been noted in the assessment of the EU/GTZ EMIS implementation conducted in November 1998 and many other prior reviews.

In this review, it was noted that, in islands where the integration of IT in education appeared to be relatively more advanced, there were tangible proof of planning (not verbal intentions) and that the individuals or departments/units responsible for executing IT plans were clearly identified. On the other hand, in islands where the IT capabilities were limited, the roles of personnel assigned IT related responsibilities were not formalised. Additionally, there was no formal IT in education programme and associated plan established.

The OERU, in its promotion of the use of IT in education, should emphasize to individual islands the importance of establishing a programme for IT in education, identifying activities within this programme, and formalising the role of the individuals responsible for coordinating and implementing the activities.

The proposed common ICT policy for education systems in the sub-region promises to address part of these issues (Refer to Statements Nos. 2 and 16 of the Model ICT Guidelines and Strategies for the Education System, October 2000). It is therefore important that efforts be made to implement a customised version of this policy in every island.

## **Commitment**

The unavailability of specific information with regard to budget allocation and expenses in ICT in education could be an indication of one of the following:

- Governments had not made specific financial commitments with respect to the development of ICT in education.
- Budget allocations were made. However, the individuals responsible for the implementation of ICT in Education were not made aware of the funds allocated and in some cases, they were not responsible for the management of these funds.

The Strategic Plan for the OERU: 2001 – 2010, the PPP and other prior reports that have outlined strategies for the development of ICT in Education have emphasized the need to work in partnership with the private sector and civil society. It might be easier to achieve such partnerships if Governments first and foremost clearly demonstrate (not express) their commitment.

The draft common policy for ICT in Education in the OECS proposes in Statement No. 22 that the Ministry of Education makes the necessary budgetary provisions (in



collaboration with other stakeholders) for the capital and operating expenses associated with sustaining ICT systems. It is therefore anticipated that the issue of commitment will be addressed with the implementation of this policy in individual islands.

### **3.2.2 Non-Technical Issues**

The implementation plan for the electronic networking initiative as well as subsequent documents on the initiative have placed significant emphasis on the technical issues involved in the transition to a virtual OECS education committee.

Installing a computer system and providing training in its use are usually not sufficient in ensuring the effective use of that system. The shortfall in achieving the objectives of the electronic networking initiative demonstrates this point. There are other non-technical challenges that must be addressed in implementing any computer system, particularly when a relatively large group of individuals with diverse needs is involved. These challenges fall within two broad areas: administrative and psychological:

#### **Administrative Challenges**

Administrative challenges result from the need to change the standard operating procedure in order to gain maximum benefits from the system or technology being introduced. Overcoming this challenge may involve the following:

- Redesigning processes
- Identifying the individuals who are affected by such redesign and the extent to which they are affected
- Communicating clearly to those affected the potential impact of the technology/system on their jobs
- Providing adequate training to allay the fears of those who are affected and may require to perform new functions

For instance, it should be made clear to individuals who are involved in the implementation of reform initiatives that they are expected to utilise the established electronic network in order to consult, collaborate and share ideas with counterparts in other islands.

Also, with the implementation of an online EMIS, business processes (e.g. student registration, recording test scores and attendance) are likely to change. These tasks performed by principals, teachers and other school administrators, are likely to be affected. It is therefore important that such changes be reflected in the job specifications of these individuals and that they are made aware of such changes whether or not these changes may make their work more demanding. It is also necessary to provide sufficient training in performing the new tasks.

### **Psychological Challenges**

These challenges are usually the most difficult to overcome because they involve changing the collective mindset of individuals who must use the new system. Individuals are more likely to adopt new technology if they are convinced that it will be beneficial to them.

Education and training can contribute significantly to overcoming these challenges. However, there may be a need to organise other activities. For instance, incentives may need to be devised to encourage early adoption of the technology and rewards provided for its innovative use. Also, regional competitions or fairs involving all students and educators should be organised.

## 4. OERU'S ELECTRONIC COMMUNICATION MECHANISM AND WEB SITE

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### 4.1 ELECTRONIC COMMUNICATION MECHANISM

#### 4.1.1 Findings

There was a Windows-based network installed at the OERU. This network was used primarily for the sharing of files and peripheral devices such as printers and for communication via electronic mail using Microsoft Exchange.

Generally, the staff of the OERU expressed satisfaction with their internal communication system. However, they reported two major concerns:

1. Their inability to communicate as efficiently and cost effectively with the wider OECS education community.
2. The difficulty in resolving technical issues/problems, particularly when the Information Specialist is not in office.

At the time of the assessment, there was no corporate intranet installed at the Unit. It was reported, however, that an intranet had been implemented in accordance with Activity 1 of the implementation plan for the electronic networking. The intended objective of that intranet was to facilitate the publication and sharing of documents online. This objective, however, was not met. The primary reasons cited for the under-utilisation of the intranet included:

- Intranet technology was relatively new to the sub-region and therefore very few individuals were aware of its potential uses and benefits
- Although training was provided, it was not made mandatory that communication thereafter should be done primarily through electronic means. Consequently after the training, officers reverted to their regular mode of communication i.e. telephone and fax.
- Mailboxes were initially provided to 10 officers from each Ministry. In some of the relatively large Ministries, 10 officers would not be considered to constitute the critical mass required for possible continual use of the technology. Moreover, many of these officers did not apply IT in their day-to-day functions.

#### 4.1.2 Recommendations

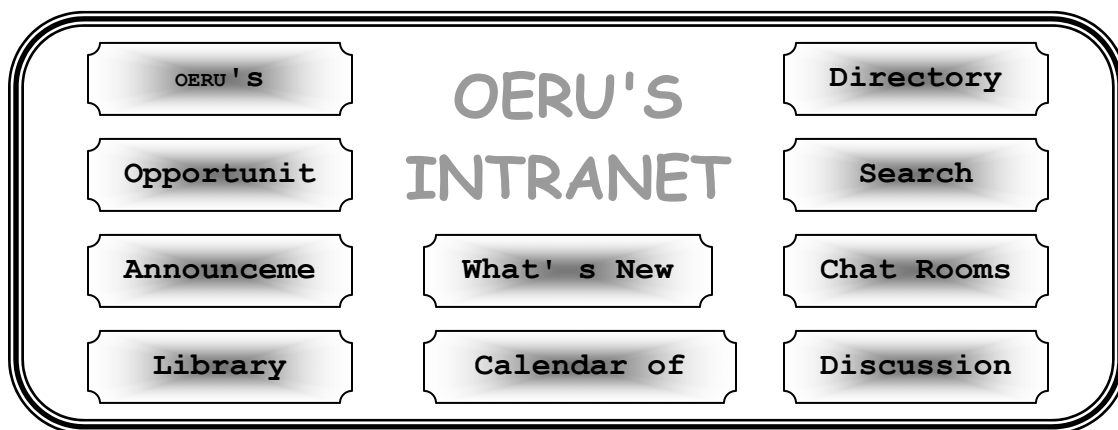
Having identified the issues associated with the establishment of the initial OERU Intranet, it is proposed that a different approach be used to rebuild and implement this intranet. This approach should be participatory in nature, that is, potential users of the intranet should have an input in its design and content. Significant emphasis should also be placed on promoting the use of the intranet. It should be made clear to individuals involved in other education reform initiatives that the intranet would be

the primary medium for communication and collaboration. Additionally, maintenance of this intranet should be performed regularly.

The proposed basic components of the new OERU Intranet are illustrated in Figure 4.1 and are outlined as follows:

<b>OERU Initiatives</b>	– An outline of the various reform initiatives being undertaken by the OERU, as well as reports on these initiatives, minutes of meetings of committee, etc.
<b>Opportunities</b>	– A listing of training and job opportunities for educators in the sub-region
<b>Announcements</b>	– General information that would normally be place on a bulletin board e.g. change on the date of a particular event, new appointments, retirements, awards etc
<b>Library</b>	– A document library with documents produced by the OERU or for the OERU as well as other educational documents
<b>What's New</b>	– A page comprising links to recently added information, documents or features
<b>Calendar of Events</b>	– A listing of major events in the annual education calendar of the sub region. Links to annual education calendars of individuals territories can be provided
<b>Directory</b>	– A directory of officers who work at the various MOEs
<b>Search</b>	– A search engine to assist with locating information required from the intranet
<b>Chat Room</b>	– A virtual room for typing comments that can be seen instantly by everyone else who is in that room
<b>Discussion Forum</b>	– An area for users to make comments on a particular issue, and to see and respond to comments made in the past by other users on that issue

Figure 4.1: Proposed Basic Content of the OERU Intranet



The Information Specialist should focus on coordinating the activities involved in the establishment and promotion of the OERU's Intranet. However, due to the already onerous workload of the Information Specialist, it is recommended that another individual (a Systems Administrator, for instance) should be responsible for the actual establishment and maintenance of the web server for the OERU's intranet and web site. This individual should also be responsible for the administration of the network and other computer applications at the OERU. The recruitment of a System Administrator would also address the latter of the above-mentioned concerns expressed by the officers of the OERU.

## **4.2 OERU'S WEB SITE**

### **4.2.1 Findings**

The OERU web site was developed and launched in 1998. The main objectives of the web site were to publicise information about the OERU and its education reform activities and to provide a medium for sharing of ideas, best practices and information in general.

At the time the assessment was being conducted, the OERU web site was in a transitional state. Significant work was being done on the web site so as to include the following features: chat rooms, discussion forums and a consultant registration form.

Notwithstanding the status of the web site, the consultant sought to obtain, through interviews, the views of OERU officers and educators on the web site. The consultant also solicited suggestions for improving the web site. The responses of individuals who were interviewed revealed the following:

1. The OERU web site appeared to be grossly under-utilised. This was supported by a quantitative report on the usage of web site from the web site host company.
2. Very few educators were aware of the email facility available through the web site and even fewer used that facility.
3. Some officers were not quite satisfied with the look and feel of the web site. They felt that the web site could be more attractive.
4. Officers felt that the structure of the web site was satisfactory. However, the information available was a bit scant.
5. Information on the web site is not updated as regularly as officers would like. Officers, therefore did not see the need to revisit web site because there was the perception that the information available on the web site had not changed since the last time they visited it.

## 4.2.2 Key Issues and Recommendations

The comments of OERU officers and other educators who were interviewed suggested that the OERU's web site was under-utilised, and was therefore not very effective in achieving its intended purpose. The period of transition for the OERU's web site would be opportune for engaging the interest of OECS educators in the web site and motivating them to use the site effectively.

Three key suggestions for engaging interest in the web site are as follows:

### **Involvement in design and maintenance of web site**

Educators should be engaged in the web site development process from a very early stage. They should be allowed to contribute towards its design and content. A web site design competition could be one effective way of involving a significant segment of the OECS education community. As a side and beneficial effect of this activity, the web site would be promoted.

### **Promotion of web site**

Educators must be educated on why the web site is of value to them. The objectives of the web site must be clearly defined and communicated to educators. The following are objectives compiled from interviews:

- To facilitate communication among educators and students in the region
- To enable the sharing of ideas, best practices, lessons plans, and other useful information among educators
- To provide educators easy access to a rich source of educational material
- To be a showcase for development initiatives being undertaken in education throughout the sub region
- To highlight areas in which donor organisations can provide technical and financial assistance
- To provide the general public, specifically non-governmental organisations (NGOs), civil societies, community groups, and the private sector with information that can assist them in undertaking ventures that contribute towards the development of education
- To serve as a valuable resource for students doing research

There are various means through which the web site can be promoted. These include:

- Press releases
- Reference to the URL address of the web site in various forums and at meetings
- Reciprocal links from other site
- Articles in popular publications
- Advertisements in educational journals and school magazines
- Registration with main search engines

- Organisation of schools activities involving the web site

### **Regular updates**

Educators would be encouraged to visit the web site regularly if they knew that there was always something new being offered on the site. It is therefore important that the web site be maintained and updated on a regular basis.

Maintaining a web site that promises to be as comprehensive and extensive as the OERU's web site could be a time consuming and demanding job, which would require a full-time Webmaster. As suggested earlier, the education community should contribute significantly to the content of the web site. Consequently, the function of the 'Webmaster' should be more technical in description.

The proposed responsibilities of the Webmaster should include the following:

1. Coordinate and implement the continuous development and day-to-day improvement of the OERU's web site, including working with content and design contributors such as education officials, teachers, and students throughout the sub region
2. Convert materials submitted for inclusion in the web site to a format appropriate for publishing on the web
3. Represent the OERU in daily communication with individual users of the web site; respond to requests and suggestions; provide further information; solicit feedback, comments and criticism from users with a view towards understanding and improving their experience of the site.
4. Configure and maintain the web server and related software
5. Write the necessary programming code that enables interactivity with users of the web site
6. Design and manage the databases that are used with the web site
7. Serve as the system administrator for the OERU's Intranet





# APPENDIX 1 - TERMS OF REFERENCE

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## **EASTERN CARIBBEAN EDUCATION REFORM PROJECT (ECERP) WBS 2500: ESTABLISH ELECTRONIC NETWORKING**

**CONSULTANT:** Maria Plummer

### **BACKGROUND AND STATUS**

The OERU, under the Eastern Caribbean Education Reform Project (ECERP), has undertaken several activities aimed at establishing an Electronic network for effective communications within and between staff at Ministries of Education and the OERU, and educators in the wider world. These activities have taken several forms including the following: (1) Internet Training workshops to key Ministry officials; (2) Procurement of computers and other equipment for all Ministries excluding St. Lucia and Grenada; (3) the Establishment of Local Area Networks at the OERU and all Ministries, with the assistance of OCOD interns; (4) the delivery of Internet Train-the-trainer workshop to Ministry of Education representatives of all member states; (5) the establishment of a Web site for the Unit and Ministries of Education.

Initial plans under ECERP stipulated that an evaluation of the *Electronic Networking of MOEs and OERU* initiative be undertaken on completion of all activities associated with that initiative. One of the main concerns then was the need to inform Ministries of budgetary implications associated with the sustenance of computer systems implemented during the early years of the project. During the past year other concerns have surfaced. Recent reviews of the unit and the reform strategy reflect a need for ICT to play an even greater role in the reform efforts of the Unit and Ministries of Education.

### **CRITICAL FACTORS**

The main objectives of undertaking an assessment of the ICT infrastructure of MOEs and Schools in the Sub-region are as follows:

- To determine the level of computerization at all MOEs and all government schools (primary and secondary) in the OECS.
- To examine the level of utility of computer systems (hardware & software) in the administrative operation of Ministries and schools.

- To determine the level and type of computer training of Ministry Staff, Principals and teachers in the education systems of the various member states.
- To examine the level and ease of Internet access by ministry officials and schools.
- To examine MOEs annual budgetary allocations to ICT (computer purchases, training, etc).
- To determine Ministries' and schools' annual telecommunications/Internet access cost.
- To assess the level of readiness of member states to the implementation of a computerized EMIS.
- To determine the level educational software used by Schools in the Sub-region.

## **SCOPE OF THE WORK**

The Consultant will:

- Undertake a complete inventory and status of the ICT infrastructure of all MOEs and schools in member states using questionnaires.
- Undertake visits to MOEs in three members states that are presently implementing major ICT projects in their education systems.
- Revise the electronic communication mechanism at the OERU along with the web site with a view to improving its effectiveness.
- Consider and analyze recommendations of recent reviews done by and of the OERU and reform process.

## **OUTPUTS TO BE DELIVERED**

Submit *a detailed report* outlining:

- The ICT status of MOEs and schools in the sub-region;
- Recommendations for improving and sustaining an effective electronic communication mechanism between and within the OERU, MOEs and Schools in the sub-region.

## APPENDIX 2 - QUESTIONNAIRES

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The following questionnaires (instruments)<sup>2</sup> were used to compile information during this consultancy assignment.

- ✦ Form A: Assessment of ICT Capability of the OECS Ministries of Education, Public Primary and Secondary Schools and the OERU
- ✦ Form B: Evaluation of OERU Initiatives
- ✦ Form C: Evaluation of OERU Web Site

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<sup>2</sup> The actual instruments are appended



**EASTERN CARIBBEAN EDUCATION REFORM PROJECT**  
**Form A: Assessment of ICT Capability of the OECS Ministries of Education,**  
**Public Primary and Secondary Schools and the OERU**

Country: \_\_\_\_\_

**1. MINISTRY OF EDUCATION**

1.1 How many employees are there at the Ministry of Education? \_\_\_\_\_

1.2 How many departments/units are there at the Ministry of Education? \_\_\_\_\_

**Hardware and Communication**

1.3 Use the following grid to specify the name, the location, the number of employees and the number of functional computers in each department/unit at the Ministry of Education.

	Department/Unit Name	Location	Number of Employees	Number of computers
1.3.1				
1.3.2				
1.3.3				
1.3.4				
1.3.5				
1.3.6				
1.3.7				
1.3.8				
1.3.9				
1.3.10				
1.3.11				
1.3.12				

1.4 Is there a computer network installed at the Ministry? Yes \_\_\_ No \_\_\_

1.5 If the answer to 1.4 is YES, then name the departments, units and institutions that are linked through this network.

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1.6 Do the officers at the Ministry have access to the Internet? Yes \_\_\_ No\_\_\_

If YES, please respond to questions 1.7, 1.8, and 1.9. If NO, move to question 1.10.

1.7 What type of connection does the Ministry have to its Internet Service Provider? \_\_\_\_\_

1.8 What percentage of the officers use the Internet for work purposes? \_\_\_\_\_ %

1.9 What was the cost of Internet access at the Ministry in the last financial year? \_\_\_\_\_

1.10 How much money was spent on the purchase of hardware and network equipment for the Ministry in the last financial year? \_\_\_\_\_

### **Software**

1.11 Complete the following to indicate the software applications being used by Ministry employees, the purpose for which they are being used, and the type of employees who are the main users of these applications.

	<b>Software</b>	<b>Main Purpose</b>	<b>Main Users</b>
1.11.1			
1.11.2			
1.11.3			
1.11.4			
1.11.5			

1.12 How much money was spent to purchase software for the Ministry in the last financial year? \_\_\_\_\_

### **Employees IT Capacity**

1.13 For the purposes of this assessment, "**computer literacy**" is defined as having the following: (i) a basic understanding of the computer and the function of its components; (ii) a working knowledge of the computer's operating system; and (iii) the ability to use a word processing application, spreadsheet, and the Internet.

Given this definition of **computer literacy**, what percentage of the staff of the Ministry is computer literate?

\_\_\_\_\_

1.14 Have there been formal training programs organised for the staff of the Ministry?

Yes\_\_\_ No \_\_\_

1.15 If the answer to 1.14 is YES, then please complete the following by specifying the training provided and the officers who benefited from that training.

	Training Program	Beneficiaries
1.15.1		
1.15.2		
1.15.3		
1.15.4		
1.15.5		

1.16 How much money was spent on IT training for employees of the Ministry of Education in the last financial year? \_\_\_\_\_

### **Organizational and Technical Support**

1.17 Is there a computer, information technology or information system department at the Ministry?

Yes\_\_\_ No \_\_\_

If yes, please respond to the questions 1.18, 1.19 and 1.20. If No, move to question 1.21.

1.18 How many full-time employees are in this department? \_\_\_\_\_

1.19 Briefly describe the composition of this department.

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1.20 Briefly describe the specific function of this department.

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1.21 Other than an internal computer department, is there another organisation specifically responsible for providing technical support to the Ministry in the area of information technology? Yes \_\_\_ No \_\_\_

1.22 If the answer to 1.21 is YES, then describe the type of services that are provided by that external organisation.

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1.23 How much money was spent on maintenance and repairs of computer equipment at the Ministry in the last financial year? \_\_\_\_\_

### **Projects/Budget**

1.24 How much is allocated for recurrent expenses in education from this year's financial budget estimate? \_\_\_\_\_

1.25 How much of that allocation for recurrent expenses is for information technology development at the Ministry?  
\_\_\_\_\_

1.26 Are there or have there been any projects aimed at improving the Information Technology capability at the Ministry?  
Yes \_\_\_ No\_\_\_.

1.27 If the response to 1.26 is YES, complete the following to indicate the status of each project and the impact on the Ministry.

	Name of Project	Budget	Implementation Period	Status	Impact/Expected Outcomes
1.27.1					
1.27.2					
1.27.3					
1.27.4					
1.27.5					



## 2. PRIMARY SCHOOLS

2.1 How many primary schools are there on the island? \_\_\_\_\_

2.2 How many of these schools are public schools? \_\_\_\_\_

2.3 How many primary school teachers are there? \_\_\_\_\_

2.4 How many students are at the primary school level? \_\_\_\_\_

### **Hardware and Communication**

2.5 Complete the following based on the number of functional computers in each school.

	Public	Private	Total
2.5.1 Number of schools with no computer			
2.5.2 Number of schools with one computer			
2.5.3 Number of schools with 2-5 computers			
2.5.4 Number of schools with 6-10 computers			
2.5.5 Number of schools with greater than 10 computers			

2.6 How many schools have local area networks installed to connect their computers? \_\_\_\_\_

2.7 How many primary schools have access to the Internet? \_\_\_\_\_

2.7.1 How many of these schools have dedicated Internet access line? \_\_\_\_\_

2.7.2 What type of connection do these schools have to their Internet Service Provider? \_\_\_\_\_

2.7.3 What was the cost of Internet access for primary schools in the last financial year? \_\_\_\_\_

2.8 How much money was spent on the purchase of hardware and network equipment for primary schools in the last financial year? \_\_\_\_\_

### **Software/Courseware**

2.9 How many schools use their computers for administration? \_\_\_\_\_

2.10 Complete the following to indicate the software applications being used in administration at the primary schools and the purpose for which they are used.

	Software	Main Purpose
2.10.1		
2.10.2		
2.10.3		
2.10.4		
2.10.5		

2.11 How many schools use their computers for teaching purposes? \_\_\_\_\_

2.12 Complete the following to indicate the software/courseware packages being used for teaching, the subject areas in which they are used, and the levels at which they are used.

	Software/Courseware	Subject Areas	Levels
2.12.1			
2.12.2			
2.12.3			
2.12.4			
2.12.5			

2.13 How much money was spent to purchase software for primary schools in the last financial year? \_\_\_\_\_

### **IT Capacity of Primary School Principals and Teachers**

2.14 For the purposes of this assessment, "**computer literacy**" is defined as having the following: (i) a basic understanding of the computer and the function of its components; (ii) a working knowledge of the computer's operating system; and (iii) the ability to use a word processing application, spreadsheet, and the Internet. Given this definition of computer literacy, what percentage of primary school teachers and principals is computer literate? \_\_\_\_\_

2.15 Have there been formal training programs organised for primary school teachers and principals?  
Yes\_\_\_\_ No \_\_\_\_

2.16 If the answer to 2.15 is YES, then please complete the following to specify the training provided and the teachers and principals who benefited from that training.

	Training Program	Beneficiaries
2.16.1		
2.16.2		
2.16.3		
2.16.4		
2.16.5		

2.17 How much money was spent on IT training for primary school teachers and principals in the last financial year? \_\_\_\_\_

### **Organisational and Technical Support**

- 2.18 Are there teachers or other resource personnel at primary schools who perform computer maintenance and repairs at their schools? Yes\_\_\_ No \_\_\_
- 2.19 If the answer to 2.18 is YES, then at how many primary schools are these resources available? \_\_\_\_\_
- 2.20 Generally, from whom do the primary schools secure services in computer maintenance and repairs? \_\_\_\_\_
- 2.21 How much money was spent on maintenance and repairs of computer equipment in the primary schools in the last financial year? \_\_\_\_\_

### **Primary School IT Projects/Budget**

- 2.22 How much of this year's allocation for recurrent expenses in education is for information technology at the primary school level? \_\_\_\_\_
- 2.23 Are there or have there been any projects aimed at improving the Information Technology capability at primary schools? Yes \_\_\_ No\_\_\_.
- 2.24 If the response to 2.23 is YES, complete the following to indicate the status of each project and the impact on primary school education.

	Name of Project	Budget	Implementation Period	Status	Impact/Expected Outcomes
2.24.1					
2.24.2					
2.24.3					
2.24.4					

### 3. SECONDARY SCHOOLS

- 3.1 How many secondary schools are there on the island? \_\_\_\_\_
- 3.2 How many of these schools are public schools? \_\_\_\_\_
- 3.3 How many secondary school teachers are there? \_\_\_\_\_
- 3.4 How many students are at the secondary school level? \_\_\_\_\_
- 3.5 How many students graduated from secondary schools in the year 2000? \_\_\_\_\_

#### **Hardware and Communication**

3.6 Complete the following based on the number of functional computers in each school.

	Public	Private	Total
3.6.1 Number of schools with no computer			
3.6.2 Number of schools with one computer			
3.6.3 Number of schools with 2-10 computers			
3.6.4 Number of schools with 11-20 computers			
3.6.5 Number of schools with 21-30 computers			
3.5.6 Number of schools with greater than 30 computers			

- 3.7 How many secondary schools have networks installed to connect their computers? \_\_\_\_\_
- 3.8 How many secondary schools have access to the Internet? \_\_\_\_\_
- 3.8.1 How many of these schools have dedicated Internet access line? \_\_\_\_\_
- 3.8.2 What type of connection do these schools have to their Internet Service Provider? \_\_\_\_\_
- 3.8.3 What was the cost of Internet access for secondary schools in the last financial year? \_\_\_\_\_
- 3.9 How much money was spent on the purchase of hardware and network equipment for secondary schools in the last financial year? \_\_\_\_\_

### **Software/Courseware**

- 3.10 How many secondary schools use their computers for administrative purposes? \_\_\_\_\_
- 3.11 Complete the following to indicate the software applications being used in administration at the secondary schools and the purpose for which they are being used.

	<b>Software</b>	<b>Main Purpose</b>
3.11.1		
3.11.2		
3.11.3		
3.11.4		
3.11.5		

- 3.12 How many schools offer CXC Information Technology? \_\_\_\_\_
- 3.13 How many students sat CXC Information Technology in 2000? \_\_\_\_\_
- 3.14 How many students passed CXC Information Technology in 2000? \_\_\_\_\_
- 3.15 How many schools use their computers for teaching subjects other than CXC IT? \_\_\_\_\_
- 3.16 Complete the following to indicate the software/courseware packages being used for teaching, the subject areas in which they are being used, and the levels at which they are used.

	<b>Software/Courseware</b>	<b>Subject Areas</b>	<b>Levels</b>
3.16.1			
3.16.2			
3.16.3			
3.16.4			
3.16.5			

### **IT Capacity of Secondary School Principals and Teachers**

- 3.17 For the purposes of this assessment, "**computer literacy**" is defined as having the following: (i) a basic understanding of the computer and the function of its components; (ii) a working knowledge of the computer's operating system; and (iii) the ability to use a word processing application, spreadsheet, and the Internet.  
Given this definition of **computer literacy**, what percentage of secondary school teachers and principals is computer literate? \_\_\_\_\_
- 3.18 Have there been formal training programs organised for secondary schools teachers and principals?  
Yes\_\_\_\_ No \_\_\_\_

3.19 If the answer to 3.18 is YES, then please complete the following to specify the training provided and the officers who benefited from that training.

	Training Program	Beneficiaries
3.19.1		
3.19.2		
3.19.3		
3.19.4		
3.19.5		

3.20 How much money was spent on IT training for secondary school teachers and principals in the last financial year? \_\_\_\_\_

### **Organisational and Technical Support**

3.21 Are there teachers or other resource personnel at secondary schools who perform computer maintenance and repairs at their schools? Yes\_\_\_ No \_\_\_

3.22 If the answer to 3.21 is YES, then at how many secondary schools are these resources available? \_\_\_\_\_

3.23 Generally, from whom do the secondary schools secure services in computer maintenance and repairs?  
\_\_\_\_\_

3.24 How much money was spent on maintenance and repairs of computer equipment in the secondary schools in the last financial year? \_\_\_\_\_

### **Secondary School IT Projects/Budget**

3.25 How much of this year's allocation for recurrent expenses in education is for information technology at the secondary school level? \_\_\_\_\_

3.26 Are there or have there been any projects aimed at improving the Information Technology capability at secondary schools? Yes \_\_\_ No\_\_\_.

3.27 If the response to 3.26 is YES, complete the following to indicate the status of each project and the impact on secondary school education.

	Name of Project	Budget	Implementation Period	Status	Impact/Expected Outcomes
3.27.1					
3.27.2					
3.27.3					
3.27.4					

## 4. SOURCES OF INFORMATION

4.1 Name and Designation of individual(s) who assisted in completing questionnaire:

	Name	Designation	Department/Institution
4.1.1			
4.1.2			
4.1.3			
4.1.4			
4.1.5			

4.2 Documents that were referenced in completing this questionnaire:

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\*\*\*\*\* THANK YOU \*\*\*\*\*



# EASTERN CARIBBEAN EDUCATION REFORM PROJECT

## Form B: Evaluation of OERU Initiatives

Country: \_\_\_\_\_

Name: \_\_\_\_\_

Institution: \_\_\_\_\_

Position: \_\_\_\_\_

Department: \_\_\_\_\_

1. With respect to the infusion of information technology in the operation of the Ministry and the education system as a whole, what areas do you consider to be a priority for your country?

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The OERU, under the Eastern Caribbean Education Reform Project (ECERP), has undertaken several activities aimed at establishing an electronic network for cost effective and efficient communication among educators in the OECS.

These activities include the following: (1) Internet training workshops to key Ministry officials (electronic counterparts) in 1997; (2) procurement of computers and other equipment for all Ministries excluding St. Lucia and Grenada; (3) the establishment of local area networks at the OERU and all Ministries with the assistance of OCOD interns; (4) the delivery of Internet train-the-trainer workshop to Ministry representatives; and (5) the establishment of a web site for OERU and Ministries of Education.

For each activity please specify (a) whether or not you were directly involved; (b) the effect that the particular activity may have had on your work and on education in your country; and (d) any recommendations that you would have for the OERU for improving the results/outcome of the given activity.

<b>Activity</b>	<b>Directly involved?</b>	<b>Effect on your work and on education in your country</b>	<b>Recommendations for OERU</b>
1. Internet training workshop (1997)			
2. Purchase of computer equipment			
3. Establishment of LAN with OCOD Interns			
4. Internet Train-the-Trainer Workshop			
5. OERU Website			

# **EASTERN CARIBBEAN EDUCATION REFORM PROJECT**

## **Form C: Evaluation of OERU Web Site**

1. In your opinion, what is the main purpose of the OERU web site?

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2. Do you believe that the OERU web site is achieving its objective? YES \_\_\_\_ NO \_\_\_\_

3. Provide justification for your response in 2.

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4. A web site structure is built by organising the content of the web site in logical groups. What are your views of the structure of the OERU web site?

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5. What are your view of the design or the 'look and feel' of the OERU web site? Consider colour, shape, space, layout and text.

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6. What are your views on the OERU web site's content?

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7. What has been done to promote the web site?

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8. Do you have any suggestion for further promoting the web site?

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9. Do you think that the pages in the site do not download fast enough?

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10. Any other general comments about the web site.

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## APPENDIX 3 - INDIVIDUAL ISLAND REPORTS

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The seven territories listed below completed the questionnaire used to assess the status ICT in education. Brief outlines of the responses provided by individual territories are presented in this section.

1. Antigua and Barbuda
2. British Virgin Islands
3. Dominica
4. Grenada
5. Montserrat
6. St. Kitts & Nevis
7. St. Vincent & the Grenadines



# 1. ICT IN EDUCATION – *ANTIGUA AND BARBUDA*

## 1.1 Introduction

At the time of assessment, the Ministry of Education – Antigua had a staff complement of 64 officers employed within eight (8) departments: Accounts, Personnel, Registry, Examinations, Planning, Education Officers, Arts and Crafts, and Training. The Planning Department was responsible for ICT in education.

In Antigua, there were 32 public primary schools (including two special needs schools), which housed 8050 students and employed 443 teachers. There were 14 secondary schools, nine (9) of which were public. The number of students at the secondary school level was 4257 while the number of teachers was 322.

## 1.2 Hardware

Computerization at the Ministry of Education – Antigua appeared to be low and rudimentary. Fewer than 50% of the officers had personal computers that were functional assigned to them. There was a small local area network, which connected three computers within the Computer Room. Other computers within the Ministry operated as stand-alone.

All nine public secondary schools were equipped with a computer lab that comprised 11-20 functional computers and a local area network. At the primary level, however, approximately 40% of the schools had no computer. The following table shows the distribution of primary schools based on the number of computers they possessed.

**Table 1.1: Number of Computers in Public Primary Schools in Antigua**

No. of Computers	No. of Schools
0	13
1	13
2 – 5	3
6 – 10	1
More than 10	2

## 1.3 Software in Administration

In the Ministry of Education, the Microsoft Office suite of applications was used primarily by Secretaries for administrative purposes. A Human Resource Database Application, which was developed in-house, was implemented but was not being used at the time of the consultant's visit to Antigua.

At the secondary schools, there was evidence of at least three specialised software being used in administration, namely:

- SCRESYS – Developed by an IT teacher and used primarily for student record keeping
- Performance Management Tool – A spreadsheet application for compiling school statistics, implemented by the OERU
- Minosa for Windows – Used primarily for timetabling

With the exception of the spreadsheet tool implemented by the OERU, only MS Office was being used at the primary schools.

## **1.4 Software in the School Curriculum**

Three primary Schools used their computers for instructional purposes. Meryl Lynch was responsible for donating the computers as well as the software being utilised at these schools. The exact names of the software being used were not identified.

All nine public secondary schools offered Information Technology for CXC. In the year 2000, 165 students sat the CXC IT examinations and approximately 66% obtained passing grades. Generally, computer technology is not used in any other part of the school curriculum.

## **1.5 Internet Access**

Internet access was restricted to a few officers at the Ministry. Dial-up connections to the Internet were available in the computer room and on one or two other computers. It was estimated that approximately 15% of the staff at the Ministry used the Internet for work purposes.

IT was reported that no primary school had access to the Internet and that four secondary schools had dial up connection, which was provided at no cost by the Internet Service Provider – Cable & Wireless.

## **1.6 IT Capacity of Officers**

It was estimated that approximately 65% of all workers within the Ministry were computer literate. Although the Ministry provided training in Word Processing, Spreadsheets and Databases for senior officers and secretaries, it was noted that most of the officers were able to upgrade their skills through their own efforts.

The Ministry was not able to provide figures for the percentage of primary and secondary school teachers who were computer literate. It was noted however that, in the past, the Ministry had provided, to a limited extent, assistance in the training of schoolteachers and that the Ministry's contribution to training would increase significantly with the opening of the Free Trade Zone Training Institute<sup>3</sup>.

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<sup>3</sup> The Free Trade Zone Training Institute is a new facility, which is expected to accommodate one thousand (1000) students per term. This facility comprises twelve (12) classroom labs and one mega lab with a capacity for ninety (90) students. It was recently outfitted with five hundred (500) new computers.



## **1.7 ICT Budget**

The Ministry of Education in Antigua was not responsible for managing a budget for ICT in schools. The Board of Education, a statutory body funded by a 2.5% levy on all income, was responsible for financing and managing all education projects including the purchase of equipment. The Ministry was therefore unable to provide definite figures for budget estimates and actual expenses for ICT in education.

## **1.8 Organisation and Technical Support**

There was no formally established Information Technology Unit or Department at the Ministry. There were, however, two officers within the Planning Department responsible for providing limited technical support to the Ministry and schools. Two external organisations: National Computer Centre (NCC) and Antigua Computer Technology (ACT) were also responsible for servicing and repair of equipment.



## 2. ICT IN EDUCATION - *THE BRITISH VIRGIN ISLANDS (BVI)*

### 2.1 Introduction

At the time of the consultant's visit to the British Virgin Islands (BVI), there were 36 employees within the two departments primarily responsible for education: i.e., 15 in the Department of Education, Culture, Ecclesiastical Affairs and Youth; and 21 employees within the Library Services Department.

There were eighteen primary schools in the BVI, three of which were private. The public primary schools had an enrolment of 2322 students and were staffed by 125 teachers. There were a total of four secondary schools (including one private). In the three public secondary schools on the islands, there were 1547 students and 150 teachers.

### 2.2 Hardware

Almost every officer within the Ministry had a personal computer assigned to him or her. Computers within the Department of Education (located in the Government Administrative Complex) formed part of a government-wide network. The Government's Information Systems Unit was responsible for the administration of this network.

For the most part, the schools in the BVI (both primary and secondary) were well equipped with computers. There were local area networks installed in all but two public schools (one primary and one secondary). The tables below show the hardware available at the individual schools in the BVI.

**Table 2.1: Inventory of Hardware in Primary Schools**

School Name		Hardware Type				
		CPU	Monitor	Laptop	Printer	Scanner
1	Willard Wheattey	34	33	28	3	1
2	Bregado Flax (Primary)	12	13	-	1	2
3	Robinson O'Neal	6	7	-	1	1
4	Jost Van Dyke	5	3	-	1	-
5	Althea Scatliffe	25	-	-	9	-
6	Leonora Delville	18	-	-	4	-
7	Ivan Dawson	8	-	-	4	-
8	Ebenezer Thomas	14	-	-	4	-
9	Alexandrina Maduro	11	-	-	3	-
10	Belle Vue	6	-	-	3	-
11	Isabella Moris	14	-	-	5	-
12	Enis Adams	15	-	-	6	-
13	Francis Lettsome	16	-	-	3	-
14	Enid Scatliffe	10	-	-	3	-
15	Anegada	4	5	-	-	-

**Table 2.2: Inventory of Hardware in Secondary Schools**

School Name		Hardware Type				
		CPU	Monitor	Laptop	Printer	Scanner
1	Bregado Flax (Secondary)	28	33	-	5	-
2	BVI High*	N/A	N/A	N/A	N/A	N/A

\*N/A – Information not available

The BVI had apparently focussed on improving the hardware infrastructure at individual institutions. There was however very little evidence of any effort to form an island wide network of all institutions.

## **2.3 Software in Administration**

The officers within the Department of Education used general productivity tools such as MS Office in performing their daily administrative functions. The Library Service Department used Alexandria – an online library catalogue system that facilitated the efficient management and circulation of library material. Alexandria was developed by Electronic Online Systems International (EOSI).

All eighteen public schools (15 primary and 3 secondary) had computers designated for school administration. Besides MS Office, there were two specialised tools used at some of these schools:

- (1) School Administration Student Information (SASI) developed by National Computer Systems was installed at a few schools.
- (2) The performance management tool for compiling schools statistics was implemented in some schools by the OERU.

## **2.4 Software in the School Curriculum**

Included in the IT Plan for Primary and Secondary was an initiative to integrate IT in the curriculum of all schools. This project was already underway at the time of the assessment. The BVI had recently purchased a number of software packages for use in core subject areas (such as Language Arts and Mathematics) at both the primary and secondary school levels.

The following table lists the various educational programs that the BVI had been using or intended on using at their schools.

**Table 2.3: Educational Software Being Used in the BVI**

Software/Program	Subject Area	Grade/Level
Seguoyah	Language Arts	1 – 3
CornerStone	Mathematics	4 – 6
Skills Bank	Mathematics, Science	4 – 6
A+ Lab Pack	Science	4 – 6
Math Shop, Fractions	Mathematics	4 – 6
Typing Tutor	Keyboarding	Grade 4 onwards
Story Book Weaver	Language Arts	K - 6
Reading for Meaning	Language Arts	3 – 6
Math Team	Mathematics	K – 6
Word Processors (Microsoft Works, Microsoft Word, Word Perfect, Lotus WordPro)	All subjects	All levels
MS Explorer (The Internet)	Social Studies, research projects	All levels

The Ministry indicated that although the educational tools listed above were recommended for the primary schools level, they could be used with slow learners and to introduce some concepts at the secondary school level. It was therefore the Ministry's intention to use some of these tools at secondary schools.

In addition to being used for CXC IT and for core subject areas, such as those listed above, it was observed that computer technology was being used in optional subject areas. For instance, at the BVI High, the Technical Drawing room had been modernised in order to enable students to enhance their work with the use of computer aided design (CAD) technology.

## 2.5 Internet Access

The Ministry accessed the Internet through a proxy server on the government wide network in the Administrative Complex. The Government of the BVI had purchased a corporate package that included a 128Kb ISDN connection from the ISP. At the time of the assessment, 25% of the officers used the Internet for work purposes.

All fifteen public primary schools and two of the public secondary schools had access to the Internet. The primary schools used a dial up access line, which was provided free of charge. At the BVI High School, the main secondary school, a Digital Subscriber Line (DSL) connection was installed. However, at the other secondary school dialup access was available.

## 2.6 IT Capacity of Officers

It was reported that all officers at the Ministry had attended Microsoft Word, Microsoft Excel and Lotus Notes training programs organised by the Ministry. Senior officers were further trained in Microsoft PowerPoint, and they along with the Accounting Staff were trained to use J.D. Edwards Accounting Systems.

It was estimated that approximately 20% of all primary school teachers and 40% of secondary school teachers were computer literate. Training in the use of Microsoft Office had been provided to some teachers. Also, a selected group of teachers attended a workshop in Evaluating Educational Software.

## 2.7 Budget

The BVI was one of the few countries capable of providing figures for budget estimates and actual expenses for IT in education. In the last fiscal year, over US\$720,000 was spent on software; training; repairs and maintenance; and hardware and network equipment for the Ministry as well as primary and secondary schools. The following summarises the expenditure during the last fiscal year.

**Table 2.4: IT in Education – Expenditure for the Last Fiscal Year (US\$)**

	<b>Hardware</b>	<b>Software</b>	<b>Training</b>	<b>Maintenance/Repair</b>
<b>Ministry</b>	\$50,000.00	\$40,000.00	\$20,000.00	N/A
<b>Primary</b>	\$300,000.00	\$70,000.00	\$6,000.00 - \$8,000.00	\$100,000.00
<b>Secondary</b>	\$50,000.00	N/A	\$8,000.00	\$10,000.00

In this year's budget estimate, approximately US\$500,000.00 was allocated towards the development of Information Technology. This amount represented a little less than 10% of the entire education budget. The activities that would be financed with this sum included:

- Procurement of additional hardware equipment and software for both primary and secondary schools
- Maintenance of existing equipment
- Installation of new networks and expansion of existing networks
- Workshops for principals and teachers
- Provision of IT tools to assist special students in Virgin Gorda and Eslyn Henley
- Development of IT Syllabus for all levels of the school system

## 2.8 Organisation and Technical Support

The Government Information Systems Unit (ISU) was primarily responsible for providing technical support to the Department of Education and to all schools. The work of the ISU was supplemented, however, by Mr. Tyrone Smith who had previously been a teacher and was assigned the duties of Liaison Officer for School Computerisation.

### 3. ICT IN EDUCATION - *GRENADA*

#### 3.1 Introduction

During the period of investigation, there were 105 individuals employed in the five (5) departments of the Ministry of Education – Grenada. There were 74 primary schools, of which 58 were public. Approximately 1,200 teachers instructed a student population of approximately 19,910 at the primary school level.

At the secondary school level, there were 21 public schools and one private school. The teachers' and students' population at the public secondary schools were approximately 450 and 10,150 respectively.

#### 3.2 Hardware

The hardware infrastructure at the Ministry of Education and the secondary schools in Grenada appeared to be relatively more advanced than most of the other OECS territories. A wide area network encompassing the Ministry and all secondary schools had been established. Computer labs were installed at all secondary schools. Twenty schools were equipped with at least twenty computers and the remaining two with at least eleven computers.

In stark contrast to the secondary schools, very few primary schools had computer equipment. The following table provides more details on the availability of computes in primary schools.

**Table 3.1: Number of computers in public primary schools in Grenada**

<b>No. of Computers</b>	<b>No. of Schools</b>
0	44
1	11
2 – 5	1
6 – 10	0
More than 10	2

#### 3.3 Software in Administration

The following were some of the software applications used at the Ministry of Education in Grenada

- Microsoft Project – used primarily by the Project Management Unit and Procurement Officers
- ACCPAC – used in the managing of finances under the Grenada Education Reform Project (GBERP)
- AutoCAD 2000 – used by officers in maintenance for the designing of classrooms
- Smart Stream Financial Management – used by the accounting department.
- Microsoft Office Suite – used by all officers

In the primary and secondary schools, MS Office was the main tool used in administration. There were, however, other specialised applications introduced at some schools. These applications included:

- Classmate – this application was developed by a local programmer and was implemented in some primary schools.
- Performance Management tool – This spreadsheet application used for compiling school statistics was implemented in some secondary schools by the OERU.
- School Vista – This tool was implemented in secondary schools and was expected to assist with classroom management. However, due to the number of technical difficulties experienced almost all teachers have discontinued its use.

### 3.4 Software in the school curriculum

Two primary schools integrated IT into their curriculum. The courseware Skills Bank 4 was used to assist with Mathematics, Language Arts and Library Skills in all levels/grades of the school. The program Autoskills was used primarily for Mathematics, English and General Science.

All 22 secondary schools used their computer facilities to offer CXC IT. In some schools, however, IT was incorporated into other subject areas. The table below lists the software/courseware used.

**Table 3.2: Software/Courseware used in secondary schools in Grenada**

Software/Courseware	Subject Area	Forms
Succession in French and Spanish	French, Spanish	3 – 5
Math for the real world	Math	1 – 5
Skillsbank	Math, Language Arts	1 – 4

### 3.5 Internet Access

Ministry employees and secondary school students and teachers were all capable of accessing the Internet through a gateway or Internet Server located at the Ministry. At the time of assessment, the Ministry was in the process of upgrading its connection from 128kb to 256kb.

It was evident that very little attention was given to the availability of Internet access at the primary schools. It was reported that only two schools had Internet access and that dial-up connections were used at these schools. It was admitted however, that at other schools, principals could have been using their personal Internet accounts.

### 3.6 IT Capacity of Officers

Based on the criteria specified in the instrument used to measure computer literacy, it was estimated that 90% of the Ministry staff was computer literate. Most employees were university graduates and acquired training during their studies. The Ministry also organised the following training programmes for staff members:



- Database Management (Microsoft Access) for Personnel and Registry staff – April to July 2000,
- Microsoft PowerPoint for Testing and Measurement Unit – December 2000,
- Using the World Wide Web for Lesson Development and Delivery for Education Officers – August 2000,
- Microsoft Office for Secretaries – March to June 2001,

About 40% of primary school and 99 % of secondary school teachers were computer literate, in Grenada. Teachers and principals attended several training programs to improve their computer skills. These programmes included:

- Computer literary training for all primary school teachers – 16 July to 15 September 2000
- Computer repairs and maintenance for select primary and secondary school teachers
- Using the computer as a management tool for secondary school principals

### 3.7 Budget

In Grenada, the level of financial commitment to the development of education through IT appeared to be greater than that of many of the other OECS territories. In the last financial year, approximately \$258,000.00 was spent on hardware and networking equipment, software, training and repairs and maintenance. The following table presents a breakdown of expenses.

**Table 3.3: Expenses for last financial year (2000)**

	<b>Hardware</b>	<b>Software</b>	<b>Training</b>	<b>Maintenance/Repair</b>
<b>Ministry of Education</b>	\$60,000.00	\$20,000.00	\$0.00	\$25,000.00
<b>Primary School</b>	\$31,000.00	\$ 0.00	\$20,000.00	(included in the Ministry figures)
<b>Secondary School</b>	\$19,000.00	\$ 0.00	\$83,000.00	

At the time of the assessment, there were a number of ongoing IT projects in education. The following table lists these projects, the estimated cost and expected outcomes

**Table 3.4: IT Project being undertaking in Education - Grenada**

<b>Project</b>	<b>Budget (USD)</b>	<b>Impact/Expected Outcomes</b>
<b>Ministry</b>		
Upgrade internet portals form 128kb to 256kb	\$53,000.00	Increase in Bandwidth Increase in access to Internet
MIS for personnel contracted to Si-Tec	\$12,000.00	Greater efficiency in Personnel Department
Upgrade hardware	\$1.5M	Increased productivity
<b>Primary Schools</b>		
Computerisation of 10 primary schools	\$1.3 M	Increase in access to IT for students
Training of Teachers	\$116,000.00	More proficient users
<b>Secondary Schools</b>		
Windows NT4.0 training for system operators/administrators	\$40,000.00	Decentralisation of computer system maintenance

### 3.8 Organisation and Technical Support

The IS Unit in the Ministry of Education in Grenada was staffed with two full time employees: an Education Officer – IT who was responsible for managing the Unit and an Assistant Education Officer – IT who functioned as a computer technician. This Unit was responsible for managing the computerisation of the Ministry and secondary schools and for providing technical support.

At each secondary school, there was two systems administrators who assisted the IS unit in providing their respective school with support services. Computerisation at the primary schools was minimal. Consequently, there was little need for designated computer resource persons within these schools.

## **4. ICT IN EDUCATION - *MONTSERRAT***

### **4.1 Introduction**

During the assessment time frame, the Department of Education in Montserrat employed twelve (12) officers. There were three schools in Montserrat: one public secondary school, one public primary school and one private primary school. The primary schools employed 24 teachers and accommodated 419 students. At the secondary school, there were 296 students enrolled and 26 teachers on staff.

### **4.2 Hardware**

The Department of Education was equipped with four computers, which formed part of a network that also included the Treasury Department.

Each of the primary schools had between 6 and 10 computers at their disposal and the secondary school had over thirty computers. The computers at the primary schools operated as standalones while those at the secondary school were networked.

### **4.3 Software in Administration**

All primary and secondary schools on the island had computers designated for administrative purposes. The only specialised application used was the Performance Management Tool implemented by the OERU.

### **4.4 Software in the school curriculum**

The Department of Education indicated that IT was used on a limited scale in the curriculum of both the primary and secondary schools. Other than CXC IT, the specific areas in which IT was used were not identified.

### **4.5 Internet Access**

Internet access was available at the Department of Education and the primary and secondary schools on the island. At the Department of Education, only 50% of the officers used the Internet for work purposes. The type of connection used at each location was not specified. However, it was noted that Internet access was provided to schools free of charge.

## **4.6 IT Capacity of Officers**

The Department of Education indicated that approximately 90% of its officers were computer literate based on the definition of computer literacy used for the purposes of this assessment. Training programmes in Word Processing, Spreadsheets and Data Management had been organised for staff members.

At the primary and secondary schools, all teachers and principals were considered to be computer literate. Training programmes, similar to those undertaken by Ministry officers, were provided to all schoolteachers and principals.

## **4.7 Budget**

Specific information on budget estimates and the actual expense for IT in education were not provided by Montserrat.

It was noted however, that an initiative to provide compulsory computer education at the secondary school level had started. Thirty computers had already been purchased under this initiative. A sum of EC\$172,500.00 had been allocated to this project.

## **4.8 Organisation and Technical Support**

The Department of Education employed one computer technician who was responsible for servicing and repairing computers in the Ministry and in all schools. At the secondary school there was one teacher who assisted the Technician in his work. The Department of Education also employed the services of private companies to assist with servicing and repairing computer equipment.

## **5. ICT IN EDUCATION - *ST. KITTS AND NEVIS***

### **5.1 Introduction**

At the time of assessment, the Ministry of Education - St. Kitts and Nevis employed 32 officers within its nine (9) units/departments.

There were 22 primary schools on the islands (16 public and six 6 private) with an enrolment of approximately 5349 and a teaching population of approximately 278. There were six (6) secondary schools, five (5) of which were public. The teacher and student population at the secondary schools were approximately 188 and 3731 respectively.

### **5.2 Hardware**

In the Ministry of Education - St. Kitts and Nevis, the ratio of computers to employees was approximately 1:2. Installed in the Ministry, was a LAN that connected the following units/departments: Computer Support, Payroll, Education Officers, Human Resource, S.E.L.F., and Examinations.

The information provided by the Ministry suggested that the schools in St. Kitts and Nevis were relatively well equipped with computer technology. All but two public primary schools had LANs comprising more than ten computers. All secondary schools had computer labs with 11-20 computers.

### **5.3 Software in Administration**

The following tools were identified as being used for administrative purposes in the Ministry of Education.

- MS Office and Corel Suite – used mainly by secretaries and Education Officers for preparing correspondence and for data management.
- Win Popup – internal messaging application used by everyone

At the primary and secondary schools only general productivity tools such as MS Office, Corel Suite and Creative Writer were used.

### **5.4 Software in the school curriculum**

Information Technology had been integrated to some extent into the curriculum of all secondary schools and almost all primary schools. At the primary school level, educational software such as Cornerstone Mathematics and Language Arts were introduced in grades 4 to 6. At the secondary school level, CXC IT was offered at all schools. IT was used on a limited scale in other subject areas.

## **5.5 Internet Access**

At the time of the assessment, Internet access was available at the Ministry. However only 32% of the staff of the Ministry used the Internet for work purposes. The Ministry was in the process of making the transition from dial-up to cable connections.

All five public secondary schools had Internet access facilities. At the primary level, however, despite the level of computerisation, fewer than half of the schools had Internet connectivity.

## **5.6 IT Capacity of Officers**

The Ministry of Education of St. Kitts and Nevis indicated that, based on the definition used in this consultancy, approximately 80% of its employees were computer literate. These employees had apparently acquired their skills through their own initiative because no training had been provided by the Ministry.

It was reported that 65% of the primary school teachers and 70% of the secondary school teachers were computer literate. It was also reported that the only training provided to primary school teachers was in the use of Cornerstone Mathematics and Language Arts.

## **5.7 Budget**

The information provided by the Ministry of Education suggested that the Government of St. Kitts and Nevis had demonstrated a high level of commitment to the advancement of education through IT.

The Ministry signed a four-year lease agreement with IBM to computerise all public schools. The total value of the lease is \$4 million. Additionally, a sum of \$20,000.00 was allocated towards the development of an Education Intranet.

## **5.8 Organisation and Technical Support**

At the time of the assessment, there was a Computer Support Unit within the Ministry of Education. This Unit, staffed with two employees, was primarily responsible for overseeing the computerisation of the Ministry and schools. This Unit was also responsible for troubleshooting problems and providing general maintenance.

## 6. ICT IN EDUCATION - *ST. LUCIA*

### 6.1 Introduction

During the time frame of this assignment, the Department of Education - St. Lucia had on staff 274 employees, who were distributed across 17 Units. There were 77 public primary schools and 19 public secondary schools. The public primary schools accommodated approximately 28,975 students and 1081 teachers, whilst the secondary schools had on roll 12,530 students and 645 teachers.

### 6.2 Hardware

The Ministry of Education – St. Lucia had apparently invested a significant sum in the purchase of hardware equipment. In most units, the ratio of computers to officers was almost 1:1. Installed at the Ministry was a LAN, which formed part of the government wide network. Also installed at the Ministry was the main server for a wide area network (WAN), which included seven secondary schools and one remote office of the Ministry.

All but two primary schools had at least one computer. However, only three schools had greater than six computers. LANs were established at five public primary schools. Thirteen secondary schools were equipped with computer labs that comprised at least eleven computers. Further details on the availability of computers in secondary schools are presented below.

**Table 6.1: Distribution of Computers in Secondary Schools**

<b>No. of Computers</b>	<b>No. of Schools</b>
0	-
1	2
2 – 10	4
11 – 20	6
21 – 30	5
More than 30	2

### 6.3 Software in Administration

At the time of the assessment, the pilot phase of the OECS EMIS implementation was in progress in St. Lucia. The EMIS application being used in this pilot project is called General and Pedagogy Information (GPI), which was developed by a Canadian firm, called GRICS.

GPI is a client server software application. The pilot project involved the implementation of the software on 35 clients (25 of which were schools). A significant proportion of the student registration data had been entered in the system. However, meaningful or useable reports had not been generated from the system.

Apart from GPI, the other software applications used by the Ministry included:

- Smart Stream used by the Accounts Section in managing government finances
- MS Office used by officers, principals and teachers to prepare reports, correspondence, presentations, etc.
- MS Project used by Heads of Department for project management purposes
- Intuit QuickBooks Pro used by the Accountant of the Project Management Unit.

## **6.4 Software in the school curriculum**

With the exception of CXC IT, there was very little evidence of IT being integrated in the school curriculum. Some preliminary steps had been undertaken in preparation for the infusion of IT into the curriculum. Specifically, an IT Curriculum Officer had been appointed. Additionally, with the assistance of the OERU, a workshop on the evaluation of educational software had been conducted with a select group of teachers and curriculum officers.

## **6.5 Internet Access**

There was a 64Kb leased line connecting the Ministry of Education in St. Lucia to its ISP - Cable & Wireless (St. Lucia) Ltd. This line was shared by seven secondary schools and the Curriculum and Materials Development Unit. Also installed at the Ministry was an ordinary phone line, which was shared by all users on the Ministry's Network. It was estimated that approximately 70% of the Ministry's staff used the Internet for work purposes.

Cable & Wireless (St. Lucia) Ltd. had undertaken to provide Internet access to all schools as part of a cooperation agreement with the Ministry of Education. At the time of the assessment, all secondary schools and 68 out of 77 primary schools had already been provided with Internet connectivity. Dial-up connections were available at the primary schools, and a combination of dial-up and leased line connections were used at the secondary schools.

## **6.6 IT Capacity of Officers**

The Ministry of Education had invested a significant sum in the training of its officers. The training programmes organised for these officers included:

- MS Windows
- MS Outlook
- MS Word
- MS Excel

It was estimated that, in accordance with the definition used for this assessment, approximately 98% of the officers within the Ministry were computer literate.



At the time of the assessment, the Ministry was in the process of organising further specialised training for various groups of individuals such as education officers, heads of departments, principals, and teachers designated to provide technical support.

Approximately 20% of primary school teachers and 20% of secondary school teachers were considered to be computer literate. Some secondary school teachers had benefited from a one-week computer literacy training programme.

## **6.7 Budget**

In the last financial year, the IT Unit spent from its budget allocation, \$136,000.00, \$176,000.00 and \$23,000.00 on the purchase of hardware; training; and repairs and maintenance, respectively, at the Ministry and schools. With the exception of the figure for training, the previously noted amounts represented a fraction of the actual amounts spent on IT related projects, which were undertaken as part of other programmes in education.

These projects included:

- The procurement of additional computer technology for the Ministry (e.g. hardware and software for district offices, and state of the art video editing equipment for the Communications Unit)
- The installation of computer labs in three secondary schools and the upgrade of the Lab in one school.
- The pilot implementation of the OECS EMIS project

## **6.8 Organisation and Technical Support**

Within the organisational structure of the Ministry was an IT Unit primarily responsible for the development of the ICT capacity of the Ministry and schools. This Unit was staffed with an Acting IT Manager, a Software Engineer, a Network Administrator, a Technician and a Secretary.

The IT Unit coordinated and facilitated IT projects implemented within the education system and provided technical support to the Ministry and, to a limited extent, to schools. Due to the limited resources, in terms of personnel, within the IT unit, the major IT projects are outsourced to private service providers.



## **7. ICT IN EDUCATION - *ST. VINCENT & THE GRENADINES***

### **7.1 Introduction**

At the time of assessment, the Ministry of Education in St. Vincent and the Grenadines comprised ten (10) departments/units and employed a total of 68 officers.

There were 66 primary schools in St. Vincent and the Grenadines, 60 of which were public. There were 21 secondary schools: 14 were public and seven (7) private. Figures for enrolment and staffing at the secondary and primary school levels were not provided.

### **7.2 Hardware**

There were a total of 28 computers within the Ministry. Based in the responses provided in the questionnaire, it was not clear whether or not a network had been installed at the Ministry, and if so, the departments connected through this network.

All of the public primary schools in St. Vincent had at least one computer. Three (3) of them were equipped with local area networks connecting at least ten (10) computes.

As was the case with primary schools, all public secondary schools had at least one computer. Half of the public secondary schools were equipped with at least 30 computers, which were connected through a LAN.

### **7.3 Software in Administration**

The software packages used at the Ministry of Education included:

- SmartStream for accounts, financial management
- Microsoft Office 2000 for general administration

All public primary and secondary schools used either the single computer that they possessed, or one of the many computers available, for performing administrative tasks. The software employed in these school included:

- Microsoft Word for preparing correspondence, tests, etc.
- Microsoft Access for managing student database
- Microsoft Excel for recording attendance and examination results

### **7.4 Software in the School Curriculum**

Responses in the questionnaire suggested that Information Technology did not form part of the curriculum in the primary schools. However, at the secondary schools, the CXC IT syllabus was

followed in forms three to five. The software used included: Visual Basic; Visual C++; MS Office 2000 and MS Internet Explorer.

## **7.5 Internet Access**

The officers at the Ministry had Internet access facilities and approximately 10% of the officers used the Internet for work purposes. The type of connection was not specified.

The schools with more than one computer (three primary and seven secondary) seemed to have had Internet access facilities. In all cases a 56K modem was used. The primary schools were offered a package, which included 60 hours of free Internet access per month.

## **7.6 IT Capacity of Officers**

Based on the definition of computer literacy used in this assessment, it was estimated that 80% of the staff at the Ministry was computer literate. Ministry employees had benefited from a number of training programmes, including Microsoft Office 2000 administered by IBM.

Approximately, 40% of primary school teachers and principals and 40% of secondary school teachers and principals were considered to be computer literate. Training in MS Office 2000 had been provided to some teachers. Also, designated IT administrators within the schools were trained, by IBM, in MS Network Administration.

## **7.7 Budget**

The information on the financing of IT in education in St. Vincent was very scant. With the exception of the provision of training for teachers, no IT project specific to education had been identified in the responses in the questionnaire.

During the last financial year, EC\$102,032.96 and EC\$82,624.40 was spent on the training of primary and secondary school teachers respectively. Less than \$10,000.00 was spent on maintenance and repair of computer equipment at the Ministry.

## **7.8 Organisation and Technical Support**

The responses provided in the questionnaire suggested that the Ministry and schools in general relied on private IT service providers for technical support. There were, however, designated IT administrators who provided limited support at the schools in which computer labs were installed (3 primary and 7 secondary).

## APPENDIX 4 - LIST OF INDIVIDUALS CONSULTED

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### **Individuals interviewed**

#### **Antigua**

Anne Jonas - *Advisor to the Minister, Ministry of Education, Culture and Technology*

Dale Jones – *Coordinator of Office Operations, Ministry of Education, Culture and Technology*

Doristeen Etinoff – *Acting Education Planning Officer, Ministry of Education, Culture and Technology*

#### **BVI**

Bernadine Louis – *Deputy PS responsible for IT and Culture, Ministry of Education*

Lucia Donovan – *Deputy Manager, Information Systems Unit*

Tyrone Smith – *Teacher, Grade 4*

#### **Grenada**

Leo Cato – *Education Officer Information Technology, IT Unit*

Martin Baptiste – *Chief Education Officer, Ministry of Education*

#### **OERU**

Lorna Callender – *Director, OERU*

Candia Alleyne – *Project Officer (European Development Fund), OERU*

Mark Ernest - *Information Specialist, OERU*

### **Individuals who completed questionnaires**

#### **Montserrat**

Oeslyn Jemmotte – *Director, Department of Education*

Rosemund Meade – *Education Officer, Department of Education*

#### **St. Lucia**

Jackie Sarvay – *IT Manager (Acting), Ministry of Education*

Athanadia Thomas – *Software Engineer, Ministry of Education*

## **St. Kitts and Nevis**

Nigel Carty - *Director, Education Management Information, Basic Education*

Shelly Elmes – *Senior Assistant Secretary, Education*

Wrentford Rogers – *Personnel Officer, Education*

Quinton Morton – *Research Officer, Basic Education*

## **St. Vincent and the Grenadines**

Name of officer(s) who completed questionnaire was not recorded.

## APPENDIX 5 - DOCUMENTS CONSULTED

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- 1. A Review of the Coordinating Mechanisms for Achievement of the OECS Education Reform Strategy (first draft)**  
*John Hilsum and Verieux Mourillon; February 2000*
- 2. Development of IT in Education: Status and ICT Workshop (Progress Report)**  
*Dr. Moses Peart; August 2000*
- 3. Distance Education at a Glance: Guide #6 – Computers in Distance Education**  
*College of Engineering, University of Idaho; <http://www.uidaho.edu/evo/dist6.html>; Jun 2001*
- 4. ECERP – Education Management Information System Review**  
*Mr. Grant Brown – EMIS Specialist, Dr. Una Paul – Education Specialist; Nov. 1998*
- 5. ECERP Initiative 1: Electronic Networking of the OECS – Implementation Plan,**  
*OERU and Tecsalt Eduplus Inc.; May 1997*
- 6. Education Management Information System Bulletin**  
*Ministry of Education, St. Kitts; 1999-2000*
- 7. Financial Estimates - 2001**  
*Ministry of Finance, Grenada; 2001*
- 8. Information and Communication Technology in the Education Systems of the OECS – Model ICT Guidelines and Strategies for the Education System**  
*OERU, October 2000*
- 9. Information Technology Plan for Primary and Secondary Schools in the BVI (Draft Copy)**  
*Department of Education – BVI; 2001*
- 10. Mid-Term Review of Eastern Caribbean Education Reform Project (ECERP)**  
*Jack Loughton and Rosalind Coleman from SALASAN Associates and Zellegnne Jennings (Regional Consultant); May 2000*
- 11. OECS Education Reform Unit – Strategic Plan 2001 – 2010**  
*OERU; April 2001*
- 12. Pillars for Partnership and Progress – The OECS Education Reform Strategy: 2010**  
*Professor Errol Millar, Dr Didacus Jules and Mr. Leton Thomas; December 2000*
- 13. St. Kitts Annual Budget Document 2000-2001**  
*Ministry of Finance, St. Kitts; 2000 - 2001*

**14. Schools Statistics 2000 – 2001 School Year**

*Ministry of Education and Culture, Department of Education and Culture (BVI); 2000*

**15. Student Manual for the MIS for School Principals Module of the Management Development Training for Education Officers;**

*UWI Institute of Business; November 2000*