



MINISTRY OF EDUCATION, CULTURE & TECHNOLOGY

ANTIGUA & BARBUDA

Information & Communications Technology (ICT)

POLICIES AND STRATEGIES FOR IMPLEMENTATION

FOR THE EDUCATION SYSTEM IN ANTIGUA & BARBUDA

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1.0. BACKGROUND

In October 1998, the members of the then Island Representative Committee (IRC) observed that many of the member states were proceeding to introduce computers into secondary and, in some cases, primary schools. Although, these interventions of ICT in the classroom were welcomed, there were worries, however, that these developments were occurring in the absence of a carefully thought-out plan and guiding policies and strategies. The OERU was therefore requested to assist the Ministries of Education by preparing generic guidelines, a model policy and strategy that could then be used by individual Ministries in developing their own individual policies and implementation plans.

A Model ICT Guidelines and Strategy document, which represented a further refinement of (1) the *Guidelines for Development of ICT Policy and Strategy* paper submitted to the OECS Education Technical Committee (OETEC) in November 1999, and (2) the *Model ICT Policy for the Education System* document, was presented to OETEC in May 2000. Most importantly, the model document also involved the work and comments of members (listed in Appendix D) of the ICT Education Committee, which met in July 2000 on the recommendation of OETEC.

It was felt that a sub-regional approach to the preparation of the model ICT policy would be most beneficial for the following reasons:

- ❖ It would increase the likelihood that the OECS states will pursue parallel strategies and thus facilitate long-term co-operation, cost-effectiveness, and the sharing of expertise in this emerging area;
- ❖ It would contribute to harmonization of education within the sub-region;
- ❖ It could draw on external resources, expertise and experiences in other jurisdictions so that the OECS could benefit from the lessons learned in other regions over the past fifteen years.

The Model ICT document reflected the general guidelines and strategies that Ministries of Educations were prepared to pursue with regard to ICT and some of the regulations that would facilitate the successful implementation of ICT in the education system of the OECS member states.

Each Ministry of Education was then presented with the model document and encouraged to use it as a guide to develop its own policy and strategy in this area.

The Ministry of Education in Antigua and Barbuda was represented on the Sub-regional Committee which prepared the Model ICT document and agreed to use the document as the template for its national policy on ICT in the education system.

In Antigua and Barbuda, the education reform initiatives outlined in the regionally produced 'Foundation for the Future' and 'Pillars for Progress' documents have been accepted and it was decided that in addition to the usual sources used to finance education, that the Caribbean Development Bank (CDB) would be approached to provide additional funding. The resulting project, which was entitled the CDB) Basic Education Project, has a number of consultancies including one on Education Management Information Systems (EMIS). One of the recommendations coming out of this committee was the formation of a broad-based Education Management Information Systems Project Advisory Committee (EPAC). This committee would have the responsibility to consider all issues related to the management of information systems in education in Antigua and Barbuda and advise the Administrators in Education on each issue. EPAC was therefore responsible for the review of the Model OECS ICT Policy with a view to nationalising it. This draft document is therefore the product of the work of EPAC, whose membership is listed in Appendix B.

2.0. Introduction

Throughout the world, information and communications technology (ICT) is changing the face of education. Two fundamental and complementary factors are at work. First, ICT is changing the nature of work and the workplace, and education systems must respond to this. The so-called “knowledge revolution”, combined with economic globalization, create conditions which strongly reward those countries that focus growth on knowledge-based industries. A prerequisite for this is an educated labour force of computer-literate individuals who themselves understand and can harness the power of the ICT revolution. More generally, *every citizen in this and the next generation will need to have a high “comfort level” with technology to live in and contribute to a society increasingly part of an interdependent “wired world”*. So ICT is changing the *objectives* of education.

Second, *ICT provides educators with a powerful new tool to enhance the learning opportunities for students and the professional development opportunities for teachers*. Thus ICT is also changing the methodologies through which educational services are delivered.

But, like all, powerful tools, ICT can do as much harm as good. Bad pedagogy implemented on a computer may have its harmful effects multiplied many fold by the power of the technology. Educational leaders and planners thus bear a heavy responsibility to ensure that the introduction of ICT into the classroom is managed with great care so that the very real benefits are realised efficiently and effectively, while the dangers are eliminated, or at least minimised. Careful planning, in the context of a long-term educational vision, is therefore essential.

Moreover, the introduction and sustainability of ICT in the education system is expensive. The capital cost of the equipment needed to begin the process is obvious. Not so well understood is the high level of new recurrent costs that effective use of ICT requires on a continuing basis.

The central focus of ICT in education is on the use of the computer. In this context the computer, as a piece of hardware animated by a variety of software packages, must be viewed as a multi-purpose device whose educational applications include:

- ❖ Manipulating text and numerical data (word processing, spreadsheets, statistical and

mathematical software, desktop publishing)

- ❖ Manipulating graphic information (scanning and drawing software)
- ❖ Storing and analysing digitized information (databases)
- ❖ Accessing and disseminating information (world wide web, CD-ROMs)
- ❖ Communicating (e-mail, listservs, chatrooms, e-fax, real-time conferencing, etc.)
- ❖ Instructional processes (software for teaching specific skills)

3.0 ABBREVIATIONS

CAI	Computer Aided Instruction
CMC	Computer Mediated Communication
CMI	Computer Managed Instruction
CMMS	Computerised Maintenance Management System
DSS	Decision Support Systems
ECDL-F	European Computer Driving Licence Foundation
EMIS	Education Management Information System
EPIE	Educational Products Information Exchange
ESS	Executive Support System
ICDL	International Computer Driving Licence
ICT	Information and Communication Technology
ILS	Integrated learning Systems
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISTE	International Society for Technology in Education
ITU	Information Technology Unit
IT	Information Technology
MOE	Ministry of Education
OAS	Office Automation Systems
OECS	Organisation of Eastern Caribbean States
OERU	OECS Education Reform Unit
OETEC	OECS Education Technical Committee
PC	Personal Computer
SPA	Software Publishers Association
TESS	The Educational Software
TPS	Transaction Processing Systems
WAN	Wide Area Network

VISION AND MISSION STATEMENTS

Vision

An education system that is able to develop a society in which its entire citizenry has the capability of contributing positively to its development in the information age.

Mission Statement

To improve the teaching, learning and administrative processes in the education system with the use of ICT and to provide all students with the basic ICT skills that are necessary for the information age.

5.0. Policy Statements and Strategies

5.1 Curriculum, Training & Instruction

Statement 1: The MOE will ensure that students at all levels are computer literate as defined in the national curriculum guidelines, and acquire, through integration of ICT into the curriculum, the skills outlined in the national curriculum guidelines.

Strategy 1: Integrate ICT into the curricula with the aim of ensuring that all school leavers are computer literate.

Activities	Identifiable Actors	Expected Results
<p>1.1 Examine critically the existing curriculum with the view of continuing programmes and practices that have proven to produce positive results and eliminating or enhancing through ICT those that are not as effective.</p> <p>1.2 Implement, jointly, ICT Learning Outcomes document prepared for the OECS and the International Computer Drivers Licence (ICDL) syllabus in the first three forms of secondary schools and Grades 7-9 of Post Primary Schools.</p> <p>1.3 Develop achievement standards specifying the understanding and levels of competencies that students are expected to attain at specific levels.</p> <p>1.4 Conduct evaluations to determine whether or not curriculum goals and objectives have been met.</p>	<p>Curriculum Specialist, Students, Education Technology Consultants, Teachers.</p> <p>Curriculum Specialist, Students, Education Technology Consultants, Teachers, ECDL-F.</p>	<p>i. The identification and consequent widespread implementation of programmes and practices that produce positive results.</p> <p>ii. The introduction of promising techniques that is enabled by ICT.</p> <p>iii. Secondary school graduates with internationally recognised ICDLs that certify that they have knowledge of the basic concepts of IT and are able to use a personal computer and common computer applications at a basic level of competence.</p> <p>iv. Clear guidelines that ensure that students in the education system at the same level of competencies and can be transferred to a different class or school with very little difficulty.</p> <p>v. Statistics/ Results that provide the basis for decisions such as whether to continue or abandon a program or practice in the curriculum.</p>

Statement # 2:

The MOE will identify, recruit, train and deploy suitable persons for the development, management and operation of ICT programme at all levels in the education system.

Strategy 2: Facilitate the planning and management of the of ICT programme in the education system.

Activities	Identifiable Actors	Expected Results
<p>2.1. Formalise an ICT in Education National Steering Committee comprising representative of stakeholders in the education system.</p> <p>2.2. Seek advice and conduct research on the resources that would be required to oversee and manage effectively the integration of ICT in the education system.</p> <p>2.3. Establish an ICT Department within the MOE, with a view to ensuring that it has the capacity to manage national ICT projects in education.</p> <p>2.4. Establish committees that will be responsible for specific issues. These committee will be expected to advise the IT department and report to the National Steering Committee.</p> <p>2.5. Provide appropriate training to all individuals involved in the planning and management process (e.g. Steering Committee members, staff of the IT Department, committee members, etc).</p>	<p>Ministry of Planning, Attorney General's office, Employers' Association, Legislature, teachers from various levels, Principals, Parents.</p>	<p>i. Effective co-ordination of the implementation of the strategic plan for ICT in education.</p> <p>ii. A representative body that will advocate and communicate the issues and impact of ICT programmes in education to key policy makers.</p> <p>iii. A clearly defined and formalised body from which educational institutions and other stakeholders can seek advice on the implementation, monitoring and revision, if necessary, of the strategic plan for ICT in education.</p> <p>iv. Reduction or elimination of duplication of effort by entities that would normally work in isolation in the absence of a co-ordinating body.</p>

Statement #3: The MOE will implement mechanisms for attracting and retaining teachers in ICT within the education system.

Strategy 3: Attract and retain teachers in ICT within the education system.

Activities	Identifiable Actors	Expected Results
3.1. Provide training opportunities for continuous professional development for ICT Teachers. 3.2. Revisit with a view to reducing the teaching workload of ICT skilled teachers who are given additional non-teaching responsibilities. 3.3. Encourage the development of marketable products by ICT skilled teachers and the payment of royalties to these teachers.	Teachers, Teachers' Union, MOE, Principals.	i. A critical mass of teachers who can motivate other teachers in using ICT in their work. ii. A cadre of experts who can provide ICT training and contribute to the overall professional development of other teachers. iii. Teachers with the capability of providing technical support and hence reduction in the cost and the time it takes to resolve technical problems in schools.

Statement # 4: The MOE will award teachers/individuals and institutions who are exceptional in effectively promoting and utilising ICT in the classroom and transmitting positive attitude while performing other functions.

Strategy # 4: Publicly recognise individuals/institutions who have contributed significantly to the development of ICT in Antigua and Barbuda.

Activities	Identifiable Actors	Expected Results
4.1. Appoint a subcommittee to recommend awardees for recognition. 4.2. Ensure that annual recognition ceremonies are held.	As determined by EPAC MOE	i. A set of guidelines, which would govern the selection process. ii. A mechanism of public recognition. iii. Increase public awareness of ICT development. iv. A greater willingness to utilise ICT in everyday life.

Statement #5:

The Ministry of Education will ensure that curriculum officers, lecturers and teachers, at all levels of the Education System, attain a certain level of competency in ICT and its integration in the curriculum as stipulated by the MOE.

Strategy 5: Ensure that all curriculum officers, lecturers and teachers receive training in the integration of ICT in the classroom irrespective of the subject in which they specialise.

Activities	Identifiable Actors	Expected Results
<p>5.1. Provide training college with specific information on the general ICT skills and the subject specific skills required for entry into the teaching service.</p> <p>5.2 Encourage the review of existing teacher training programmes in order to determine the changes necessary to prepare teachers for the reformed education system.</p> <p>5.3. Contribute some of the resources required by the training colleges to: (a) include a compulsory ICT literacy course in the teacher training programme, and (b) make the necessary changes to other courses so as to assist teachers in effectively utilising ICT in other subject areas.</p> <p>5.4 Assist in seeking resources (financial, expertise, equipment) required to revise the teacher training programme.</p> <p>5.5. Develop distant education and part-time programs for in-service teachers.</p> <p>5.6. Promote the enrolment in the above mentioned programmes</p> <p>5.7 Provide rewards and incentives, similar to those described in Policy 3, to teachers who have advanced significantly</p>	<p>Policy Makers – MOE, Teacher Training Colleges.</p> <p>Teacher Education Institutions, Computer Training Institutions.</p>	<p>i. Graduate student teachers or qualified teachers (under the revised programme) with minimum requirements, in terms of ICT skills, for entry into the teaching service.</p> <p>ii. Qualified teachers (under the revised programme) who are comfortable with the use of ICT in the learning environment.</p> <p>iii. Qualified teachers (under the revised programme) who can serve as pioneers in the use of ICT in their schools and can impart some of their knowledge to other teachers.</p> <p>iv. Some of the cost of training in-service teachers being offset by the peer-to-peer training.</p> <p>i. Widespread use of ICT in the learning environment.</p> <p>ii. Better understanding of the extension of the role of the teacher to include facilitator in the learning process; organiser and distributor of information; mentor; and aspirators.</p> <p>iii. Greater efficiency in performing administrative and other non-teaching functions in which the teachers' ICT skills can be utilised.</p>

Statement #6: The MOE will include computer literacy as a pre-requisite for being recruited into the teaching service.

Strategy 6: Ensure that all teachers being recruited into the service are computer literate.

Activities	Identifiable Actors	Expected Results
<p>6.1. Increase the opportunities for the development of ICT skills.</p> <p>6.2. Stipulate clearly in Teachers' Application Forms the minimum certified qualifications required in respect to ICT.</p>	Policy Maker at the MOE, Teachers' Union, Personnel Department.	<p>i. New recruits who are less fearful of utilising ICT in their lessons.</p> <p>ii. A greater sense of responsibility for self-development among teachers.</p> <p>iii. Reduction in the cost of training in-service teachers.</p>

Statement # 7: The MOE will ensure that ICT is used in the classroom to support the mastery of numeracy, literacy, problem solving and creative thinking skills.

Strategy 7: Utilise ICT to support the mastery of numeracy, literacy, problem solving and thinking skills.

Activities	Identifiable Actors	Expected Results
<p>7.1. Establish objectives, learning outcomes at various levels and in various subjects¹ and devise methods of assessing whether or not these outcomes were achieved.</p> <p>7.2. Conduct research on the educational advantage of emerging technologies.</p> <p>7.3. Adopt technology that supports the different modes of learning.</p> <p>7.4. Encourage the sharing of experiences (lessons learnt and best practices) in relevant meetings and fora.</p>	Curriculum Specialists, teachers.	<p>i. Students who graduate from the school system with higher order skills and competencies.</p> <p>ii. Students who are able to handle or operate in complicated, dynamic and ambiguous situations.</p> <p>iii. A more advanced and productive society.</p>

¹ The ICT Learning Outcomes in Mathematics and Language Arts for Lower Secondary School Level in the OECS can be used as a template.

Statement 8: The MOE will ensure that ICT is used in the classroom to address the individual needs of students.

Strategy 8: Utilise ICT in the classroom to address the individual needs of students.

Activities	Identifiable Actors	Expected Results
<p>8.1. Develop instructional methods or modify existing ones in order to ensure that they meet the needs, interests and learning styles individual students.</p> <p>8.2. Explore the use adaptive technologies for special needs students (e.g. visual, hearing, and physically impaired).</p> <p>8.3. Establish special programmes for students with learning disabilities and for students who are gifted or talented.</p>	<p>Curriculum officers</p> <p>Special Education Teachers</p> <p>ICT Unit</p>	<p>i. More student controlled learning.</p> <p>ii. Better monitoring of individual student's progress.</p> <p>iii. Increase in access to technology and its benefits for special needs students.</p> <p>iv. Increase in students' engagement and motivation (including those who are at the extreme ends of the learning ability spectrum).</p>

Statement #9: The MOE will provide the opportunity for fostering the creative capacity of students and teachers in the development of multimedia educational software.

Strategy 9: Foster creativity in the development of multimedia software.

Activities	Identifiable Actors	Expected Results
<p>9.1. Encourage the attendance of key personnel in conferences, expositions, etc. in order to discover the potential of ICT in education and the areas in which they and other individuals can be creative.</p> <p>9.2. Organise competitions and technology fairs, with attractive prizes, to showcase the multimedia products developed by teachers and students.</p> <p>9.3. Provide focused training to teachers and students who demonstrate the aptitude to develop quality products.</p> <p>9.4. Seek endorsement of quality products by reputable institutions (e.g. ISTE and SPA).</p> <p>9.5. Provide and seek financial assistance for the marketing and sale of good products internationally.</p>	<p>IT Department, Curriculum Specialist, Students, Teachers.</p>	<p>i. Increase in availability of indigenous courseware.</p> <p>ii. Less reliance on foreign software with contact that is not culturally relevant.</p> <p>iii. Revenue generated from the sale of locally produced software.</p>

Statement #10:

The MOE will ensure that training of teachers in computer literacy and the educational uses of ICT will precede the introduction of equipment into the classroom.

Strategy 10: Provide appropriate training to teachers before they attempt to introduce any ICT tools in the classroom.

Activities	Identifiable Actors	Expected Results
<p>10.1. Include professional development as a criterion to be considered in the procurement of educational technology that must be used by teachers.</p> <p>10.2. Make available training material on the national education Intranet.</p>	<p>Policy Makers-MOE, IT Department, Principals, IT Suppliers.</p>	<p>i. Increase in teachers' level of confidence in the use of the specific technology. This confidence is likely to be transferred to students.</p> <p>ii. More effective use of technology in teaching and learning.</p>

Statement #11: The MOE will ensure that control mechanisms will be put in place to prevent access to profane or obscene material and undesirable sites on the Internet.

Strategy 11: Prevent access to obscene material and undesirable sites on the Internet.

Activities	Identifiable Actors	Expected Results
<p>11.1. Formulate and include, in the acceptable use of technology regulations in each educational institution, clear statement on the use of the Internet².</p> <p>11.2. Install at all educational institutions appropriate technology that restricts access to undesirable sites.</p> <p>11.3. Conduct educational programmes to inform students, teachers, and parents of the benefits and dangers of the Internet and the appropriate action that can be taken to restrict access to inappropriate material.</p>	<p>IT Department, Principals, Teachers.</p>	<p>i. Reduction in students' exposure to inappropriate material.</p> <p>ii. Greater use of the Internet for class activities and research.</p>

² Refer to Appendix A for Regulatory Statements on Acceptable Use of Online Information Resources

5.2. Planning and Administration of ICT Initiatives

Statement #12: The MOE will implement various information systems that can be integrated to strengthen Administration at all levels in the education system.

Strategy 12: Acquire and implement various easily integrated information systems.

Activities	Identifiable Actors	Expected Results
<p>12.1. Conduct research on and evaluate various types of information systems and applications that are used in education administration.</p> <p>12.2. Acquire or develop suitable information systems such as:</p> <p>12.3. Executive Support Systems (ESS) and Decision Support Systems (DSS) for strategic decision making.</p> <p>12.4. School or education management information systems (EMIS) for registration, attendance, budget and inventory control, and processing of examination grades.</p> <p>12.5. Office automation systems (OAS) for word processing, electronic mail and scheduling appointments.</p> <p>12.6. Implement the information systems acquired or developed using the most suitable configuration.</p> <p>12.7. Provide the appropriate training to teachers, principals and officers at all levels of the education system.</p>	<p>Software Suppliers, Software Developers, Representatives from all levels of administration, Principals, Teachers.</p>	<p>i. Informed decision-making or decision based on factual data rather than gut feeling.</p> <p>ii. Availability of online data that can be used for research purposes.</p> <p>iii. Enhancement in the quality of work being produced by officers.</p> <p>iv. Increase in the efficiency of performing routine administrative functions.</p> <p>v. Less time being spent by teachers in undertaking administrative or non-teaching tasks leaving more time to be spent with students.</p>

Statement #13: The MOE will work with stakeholder groups to develop strategies to deal with issues such as: licensing; intellectual property rights; use of software; disposal of used computer equipment; and security and privacy of personal data.

Strategy 13: Address appropriately legal and ethical issues such as: licensing; intellectual property rights; use of software; disposal of used computer equipment; security; and privacy of personal data.

Activities	Identifiable Actors	Expected Results
<p>13.1. Establish a legal and ethical committee.</p> <p>13.2. Develop regulatory framework and policy guidelines for (i) the acquisition, use and distribution of software; (ii) the acceptable use of online information resources; (iii) access and publication of data on students; and (iv) the proper disposal of computer equipment.</p> <p>13.3. Conduct public awareness programmes to sensitise all concerned on the above issues and the associated regulations.</p>	<p>Solid Waste Authority, legislature.</p>	<p>i. Reduction in the illegal acquisition and distribution of software.</p> <p>ii. A thriving educational software development industry.</p> <p>iii. The protection of students' rights to privacy.</p> <p>iv. Reduction in health hazards that may result from the inappropriate disposal of computer equipment.</p>

Statement #14: The MOE will ensure the establishment of the necessary infrastructure to facilitate the installation of ICT within the education system.

Strategy 14: Establish the necessary infrastructure to facilitate the installation of ICT within the education system.

Activities	Identifiable Actors	Expected Results
<p>14.1. Undertake assessment of the physical and learning environment in all educational institutions including the MOE in order to determine the technical infrastructure requirements.</p> <p>14.2. Develop standards specifications for appropriate construction of new educational institutions.</p> <p>14.3. Develop a phased plan for retrofitting existing institutions to support technology-enriched learning environment.</p> <p>14.4. Execute the plan developed.</p>	<p>Engineering committee, MOE, funding agencies.</p>	<p>i. A clear articulation of the needs of each institution in terms of technical infrastructure.</p> <p>ii. Very little disparity in the physical plant of various educational institutions.</p> <p>iii. Improvement in physical environment (e.g. security, students' workspace, adequate electrical outlets and network points).</p> <p>iv. More conducive learning environments (suitable furniture, lighting, etc.).</p> <p>v. Less costly future school ICT projects that funding sources might find more palatable and principals might find more manageable.</p>

Statement #15: The MOE will work with stakeholder groups to establish procurement guidelines and procedures for the acquisition of ICT equipment, peripherals and accessories.

Strategy 15: Establish procurement guidelines and procedures for the acquisition of ICT equipment, peripherals and accessories.

Activities	Identifiable Actors	Expected Results
<p>15.1. Develop clear guidelines for the procurement/acquisition of equipment and software.</p> <p>15.2. Conduct workshops/seminars to explain the procurement/acquisition guidelines to relevant individuals in the education system as well as suppliers and donors.</p>	<p>IT Department, Accounts Departments, Principals, Suppliers, Donor Agencies.</p>	<p>i. Awarding of contracts being done in a transparent and impartial manner.</p> <p>ii. Reduction in the wastage of funds that could result from the purchase of inappropriate equipment by individuals who do not have adequate technical knowledge.</p> <p>iii. More caution being exercised in accepting donated used equipment and reduction in the negative consequences of doing so.</p>

Statement #16: The MOE will establish protocols for the identification and selection of appropriate software for use in instruction at all levels of the education system.

Strategy 16: Identify, evaluate and select appropriate software for use in instruction at all levels of the education system.

Activities	Identifiable Actors	Expected Results
<p>16.1. Establish teams/committees for evaluating software in various subject areas.</p> <p>16.2. Adopt (OERU-developed) standardised instruments for software evaluation and set up procedures that must be adhered to before introducing software in the learning environment.</p> <p>16.3. Conduct awareness campaigns to sensitise principals and teachers on the process of evaluation and selection that must followed before using software in the learning environment.</p> <p>16.4. Tap into the resources that provide guidance such as Software Publishers Association, Educational Products Information Exchange (EPIE).</p> <p>16.5. Make available online (through the national education Intranet) actual evaluated and approved software or information relating to approved software titles.</p>	<p>Teachers, students, curriculum specialist, examination officers.</p> <p>Teachers, students, curriculum specialist, examination officers, Educational Technology Consultants.</p> <p>OERU, MOE's Software Evaluation committee.</p>	<p>i. Reduction in the indiscriminate use of instructional software in the learning environment.</p> <p>ii. Decrease in the tendency to acquire software illegally.</p> <p>iii. Decreasing damaging effects of using software with inaccurate content and poor pedagogical techniques.</p>

Statement #17: The MOE will establish mechanisms that foster collaboration between the private sector and educational institutions in the implementation ICT initiatives.

Strategy 17: Foster collaboration between the private sector and educational institutions in the implementation ICT initiatives.

Activities	Identifiable Actors	Expected Results
<p>17.1. Encourage programmes such as adopt-a-school, adopt-a-business, and donations of computers.</p> <p>17.1. Provide special concessions to businesses that fund ICT project in schools.</p>	<p>Principals, CEO or representative of business.</p> <p>Cabinet, Inland Revenue, Policy Makers at the MOE.</p>	<p>i. School benefiting not only from the financial assistance provided by businesses from the technical knowledge and expertise of individuals who have extensive experience in a wide-range of uses of ICT in businesses.</p> <p>ii. Businesses benefiting from reciprocal gestures from their beneficiaries e.g. educational institutions can supply their donors with products and services free of charge or at reduced rates.</p>

Statement #18: The MOE will establish rules and procedures for the acceptable use of ICT in all areas of the education system.

Strategy 18: Establish rules and procedures for the acceptable use of ICT in all areas of the education system.

Activities	Identifiable Actors	Expected Results
<p>19.1. Conduct research on rules and procedures for acceptable use of ICT in education in other regions and develop similar rules specific to education systems in the OECS.</p> <p>19.2. Conduct awareness programs on acceptable use of ICT in educational institutions.</p> <p>19.3. Incorporate guidelines for acceptable use of ICT into School Rules and into policies in other parts of the education system.</p>		<p>i. Reduction in the use of technology for unauthorised non-educational purposes such as commercial use and political lobbying.</p> <p>ii. Reduction in deliberate attempts (such as spread of viruses) to disrupt the operations of computer systems.</p> <p>iii. Increase in system security and in the prevention of access to personal information.</p> <p>iv. Individual rights to privacy protected.</p> <p>v. Reduction in plagiarism and copyright infringement in respect to online material.</p>

Statement # 19 The MOE in collaboration with other stakeholders will adopt a common set of standards for hardware and software for use in the education system.

Strategy 19: Adopt a common set of standards for hardware and system architecture for use in the education system.

Activities	Identifiable Actors	Expected Results
<p>20.1. Develop a comprehensive set of standards for the various pieces of hardware and software that are likely to be used in the education system.</p> <p>20.2. Conduct awareness programmes to ensure that individuals responsible for acquiring equipment, principals, suppliers and donors are informed of these standards</p> <p>20.3. Publish information relating to these standards on the national education Intranet.</p> <p>20.4. Review these standards periodically, at least once a year.</p>	<p>Engineering committee, curriculum reform committee, bureau of standards.</p>	<p>i. Little disparity in the technology available in various educational institutions.</p> <p>ii. Reduction in (a) the acceptance of obsolete or near obsolete equipment and (b) the efforts expended in disposing such equipment.</p>

Statement #20: The MOE will assist every school to develop a Technology Plan, which would act as a guide for that school's integration of ICT into its curriculum.

Strategy 20: Facilitate the development of a Technology Plan at every school.

Activities	Identifiable Actors	Expected Results
<p>22.1. Encourage the formation of school ICT leadership and implementation teams.</p> <p>22.2. Develop clear and practical guidelines for the preparation of the school plan.</p> <p>22.3. Provide training in the development of technology plans to members of the school ICT leadership and implementation teams.</p> <p>22.4. Endorse the plans that are developed by schools and ensure that these plans are inline with the national plan.</p> <p>22.5. Monitor the progress of the implementation of the technology plan in each school.</p>	<p>MOE, Principals, School Leaders, Education Technology Consultants.</p>	<p>i. Effective coordination and management of the ICT deployment process in schools.</p> <p>ii. ICT in Education Steering Committee and the IT Department of the MOE being relieved of managing school-level projects and being able to focus more on national projects.</p> <p>iii. School having a sense of ownership of projects and therefore being more committed to their success.</p>

Statement # 21: The MOE will ensure that all educational institutions are linked in a secure network that will be used for various purposes: such as administration, communication, lesson sharing.

Strategy 21: Establish a secure network encompassing all educational institutions.

Activities	Identifiable Actors	Expected Results
<p>23.1. Conduct an assessment of existing networks within the education and how they can be interlinked. This can be done as part of activity 27.1.</p> <p>23.2. Prepare a detailed design of a cost effective, equitably distributed and secure national network. This design must take into consideration various communication technologies such as fibre optics, wireless, cable, existing public telephone wiring.</p> <p>23.3. Prepare a phased plan for installing the network.</p> <p>23.4. Execute the plan.</p>	<p>IT Department, Engineering Committee, ICT in Education Steering Committee.</p> <p>IT Department, Engineering Committee, ICT in Education Steering Committee, Network Service Providers.</p>	<p>i. Easy and cost effective access to leading online libraries and educational resources available locally, regionally and internationally.</p> <p>ii. The availability of a medium that facilitates greater collaboration and sharing of resources, information and ideas among educators, students, parents and other stakeholders.</p> <p>iii. Access to online learning opportunities (that have little restriction in terms of time and place of learning). This is particularly valuable to in-service teachers.</p> <p>iv. Efficient and timely distribution of education management information.</p>

Statement #22: The MOE, cognizant of the potential of bodily harm that users may be exposed to after the prolonged use of computers, will ensure that standard ergonomic principles are adhered to, including the proper design of computer workstations.

Strategy 22: Acquire and install furniture and equipment that comply with standard ergonomic design principles.

Activities	Identifiable Actors	Expected Results
24.1. Compile and disseminate among all computer users (including teachers and students) in the education system information pertinent to ergonomics ³ and Cumulative Trauma Disorders ⁴ (CTDs).	Ministry of Health, IT Department.	i. Reduction in CTDs among computers users, and in the associated consequences such as costly medical bills and increase in absenteeism. ii. Avoidance or reduction in contention between the MOE and suppliers that could result from the supply of equipment or furniture that were not considered to be ergonomically designed.
24.2. Develop detailed and clear specifications for the design of furniture and equipment that the MOE considers to be acceptable.		
24.3. In the procurement of equipment and furniture ensure that suppliers are aware of the specifications developed by the MOE.		

Statement #23: The MOE will work with educational institutions to make available the facilities, equipment and personnel to permit equitable access to ICT for all students.

Strategy 23: Facilitate equitable access to ICT for all students.

Activities	Identifiable Actors	Expected Results
25.1. Establish targets for student and community access to ICT.	Policy Makers at MOE, Administrators of Educational Institutions, Cabinet, Attorney General's Office. Policy Makers at MOE, Administrators of Educational Institutions.	i. Access to ICT by economically disadvantaged students after school hours. ii. Students with no computers at home being equally comfortable with ICT in the classroom as those who have computers at home.
25.2. Develop regulatory framework to address access constraints.		
25.3. Enhance existing and establish new community technology centres.		

³ Ergonomics is the science of how the body performs desired tasks most efficiently

⁴ Cumulative Trauma Disorders (CTDs) are injuries that arise from putting excessive pressure on the body to perform the same task over a period of time.

Statement #24: The MOE will adopt a standard suite of productivity tools as the general-purpose software package for all computers used in the education system.

Strategy 24: Adopt a standard suite of productivity tools as the general-purpose software package for all computers used in the education system.

Activities	Identifiable Actors	Expected Results
26.1. Investigate the most commonly used tools currently on the market. 26.2. Develop clear guidelines for incorporating these tools into the curriculum. 26.3. Provide the necessary training to teachers. 26.4. Review the relevance of these tools at least once every year or as the need arises (with the introduction of new products or new versions of products).		i. Students to be better prepared to enter the working environment. ii. More productive working environments. iii. Reduction in budget allocated by businesses to train new recruits. iv. Greater responsiveness to developments and changes in ICT.

Statement # 25: The MOE will assign the responsibility for all ICT resources on the school premises to Principals and will assist them in undertaking that responsibility.

Strategy 25: Assist Principals in undertaking responsibility for all ICT resources on their school premises.

Activities	Identifiable Actors	Expected Results
27.1. Develop or purchase and implement a database application to keep records of all hardware and software (including licensing information) acquired centrally by the MOE or separately by individual institutions. A computerized maintenance management system (CMMS) may provide this functionality. 27.2. Provide training in the use of the applications. 27.3. Conduct audits from time to time.	IT Department, Principals and Vice-Principals.	i. Greater accountability for ICT resources available in schools. ii. Reduction in the illegal possession of software. iii. Principals being more vigilant in reducing misuse, theft, and poor maintenance of equipment.

5.3 Assessment, Support and Sustainability of ICT Initiatives

Statement #26: The MOE will seek financial or other assistance and make the necessary budgetary provisions (in collaboration with other stakeholders) for the planning, implementation and sustenance of ICT systems.

Strategy 26: Seek financial or other assistance and make the necessary budgetary provisions for the planning, implementation and sustenance of ICT systems.

Activities	Identifiable Actors	Expected Results
18.1. Seek funding and other forms of assistance from various organisations. 18.2. Facilitate attendance at meeting and conferences at which personalised (face-to-face) contact can be made with key personnel from funding agencies. 18.3. Establish partnership programs such as 'partners-in-progress', 'adopt-a-business', and 'adopt-a-school'. 18.4. Encourage fund raising activities.	Minister for Education, Permanent Secretary, IT Department, Planning department, Principals, Teachers, and Parent Associations.	i. More funds available for (a) increasing the availability of technology; (b) upgrading ICT capacity/skills of teaching and administrative staff; and (c) enhancing learning environment. ii. Increase in the likelihood of success of various projects in which assistance such as the professional expertise of experienced individuals is utilised. iii. Greater motivation and eagerness being displayed by individuals responsible for managing ICT projects instead of the usual frustration of having to manage project with limited resources.

Statement # 31: The MOE will adopt a partnership approach with stakeholders in order to finance the initial investment and recurrent expenses associated with the use of ICT in education.

Strategy 31: Share the cost of investment and recurrent expenses associated with the use of ICT in education.

Activities	Identifiable Actors	Expected Results
<p>31.1 Develop co-operations or work cooperatively in negotiating contracts with major suppliers. Co-operations can be established at various levels e.g. inter-institutional, national, bilateral or inter-national, and regional.</p> <p>31.2 Work co-operatively in other areas e.g. policy/ strategy formulation, research and development, human resource networking, train-the-trainer programmes.</p> <p>31.3 Conduct public relations programmes to highlight the benefits of ICT in education and the various ways in which the community, business, professional associations and individuals can help.</p>		<p>i. Greater bargaining power in dealing with suppliers and therefore ability to negotiate relatively more attractive and affordable prices.</p> <p>ii. Reduction in the budget required for areas such as professional development, and research and development, etc.</p> <p>iii. Savings realised as a result of various forms of contributions made by the community, business, associations and individuals e.g. free labour, materials and ideas.</p>

Statement #27: The MOE will adopt an explicit strategy for technical support (including preventative maintenance), in order to service efficiently the needs of all users and computers in the education system.

Strategy 27: Decentralise technical support services.

Activities	Identifiable Actors	Expected Results
21.1. Identify individuals in the school system who have the potential to serve as technical resources. 21.2. Examine the workload of these individuals with the view of reducing other responsibilities. 21.3. Provide necessary training to the individuals identified. 21.4. Compile a list of reputable technical service providers who can serve schools in their community.	Principals, Teachers, IT Department, Personnel Department.	i. More efficient resolution of technical problems. ii. Equipment being non-operational for shorter periods resulting in a decrease in loss of productivity. iii. Savings realised from the decrease in the need to hire external technicians. iv. Greater willingness to adopt the technology due to individuals having more confidence that they are likely to receive assistance and support in the event that they encounter a problem.

Statement #29: The MOE will collaborate with educational Institutions to decide on the optimal configuration that can be used in classroom/library/lab for learning and instructing with ICT.

Strategy 29: Select and implement the optimal configuration that can be used in classroom/library/lab for learning and instructing with ICT.

Activities	Identifiable Actors	Expected Results
29.1. Conduct research on the experience of others in the use of various configurations. 29.2. If necessary pilot various configurations in order to determine which one is most practical and effective.	IT Department, Education Technology Consultant, Engineering Committee, Teachers.	i. Increase in feasibility in incorporating the use of computers in lessons. ii. Teacher being more willing to utilize the computers in their lessons because they are not frustrated by the extensive time and effort that would be required to organise students if the set-up was poor. iii. Average length of computer access time per student being optimal.

Statement #28: The MOE will encourage educational institutions to make available, with effective monitoring, ICT facilities to the community. Further, the Ministry will endorse the use of revenue generated from these facilities for maintenance, upgrade and sustenance, as long as the revenue generating activities do not compromise access and the quality of services to the students.

Strategy 28: Facilitate the use of ICT by the community and the generation of revenue to maintain equipment.

Activities	Identifiable Actors	Expected Results
28.1. Consider the introduction of non-discriminatory cost recovery mechanisms for public access to computers installed in schools. 28.2. Ensure that Principals account for the use of revenue generated 28.3. Undertake community awareness programs on the benefits of acquiring ICT skills.	Principals, teachers.	i. Increase in public access to ICT. ii. Decrease in the likelihood of schools becoming digital graveyards due to poor maintenance of computer equipment.

Statement #30: The MOE will ensure that the ICT in Education programme is relevant to the needs of all stakeholders.

Strategy 30: Ensure that the ICT in education programme is relevant to the needs of all stakeholders.

Activities	Identifiable Actors	Expected Results
30.1. Include representatives of various stakeholders in the ICT in Education Steering Committee and other committee in the planning team. 30.2. Conduct a comprehensive needs assessment to determine the needs of all stakeholders. 30.3. Conduct extensive consultation with stakeholders in order to ensure that their interests are reflected in this national strategic plan.	MOE, Other Government Agencies, Business Corporations.	i. Valuable input to the planning process from individuals who have extensive experience and expertise in a wide-range of uses of ICT. ii. From the stakeholders' perspective, a better understanding of the issues involved in the integration of ICT in education and constraints faced by educational institutions. iii. A greater sense of ownership and willingness to support ICT initiatives and consequently increase in the availability of ICT in educational institutions.

Statement #32: The MOE will explore all possible options of procuring computer systems given due consideration to the upgrading, maintenance and eventual replacement of these systems.

Strategy 32: Adopt a prudent approach in the procurement of computer systems.

Activities	Identifiable Actors	Expected Results
<p>32.1. Ensure that written agreements are signed between the MOE and suppliers that are awarded contracts.</p> <p>32.2. Compile a list of authorised suppliers and update that list regularly to exclude suppliers who have breached previous agreements with the MOE.</p> <p>32.3. Explore options such as leasing equipment for a fixed period with the leaser having full responsibility for the maintenance of the equipment being leased.</p> <p>32.4. If feasible, award contracts for complete solutions (hardware, software, professional development and maintenance) to the same vendor.</p>		<p>i. A higher level of integrity being displayed by suppliers.</p> <p>ii. Greater satisfaction with the goods and services received by the MOE, schools, etc.</p> <p>iii. Reduction the maintenance workload of in-house staff, and consequently, either a need for fewer technical employees or more efficiency in addressing other technical problems.</p> <p>iv. Prevention of one vendor blaming another and evading its obligations in cases where various components of the solution are provided by different vendors.</p> <p>v. Increase in the likelihood of securing financing for maintenance if it is included in initial purchases. It is usually easier to obtain funds for initial purchases than for subsequent maintenance.</p>

Statement # 33: The MOE will devise a strategy for minimising the cost of maintaining ICT (hardware and software) throughout the education system.

Strategy 33: Minimise the cost of maintaining ICT in the education system.

Activities	Identifiable Actors	Expected Results
33.1. Develop training policies and programs to ensure ICT resources are properly utilised and maintained. 33.2. Perform preventive maintenance at scheduled times and predictive maintenance as the need arises. 33.3. Train individuals from each school to perform basic troubleshooting and minor repairs 33.4. Consider, in the procurement of equipment, contracts that include a warranty package and special training. 33.5. Implement a computerised maintenance management system (CMMS) to maintain a service log on each piece of equipment (include date of service, problems, date of next service, individual who performed service).		i. Increase in longevity of equipment. ii. Decrease in the need and the cost associated with the replacement of computer equipment and components. iii. Decrease in the need to contract the services of external technicians and in the cost associated with doing so. iv. Reduction in interruptions in the work of computers users, and consequently in the loss of productivity due to downtime of equipment.

Statement #34: The MOE will establish appropriate mechanism for educators to undertake research and to evaluate the impact of ICT in the education system.

Strategy 34: Encourage and support the research on and evaluation of the impact of ICT in the education system.

Activities	Identifiable Actors	Expected Results
34.1. Seek funding and encourage participation in workshops, training programmes, and relevant forums on the evaluation of the impact of ICT in education. 34.2. Acquire information pertaining to evaluations done in other countries, regions, etc. 34.3. Publish research findings in education reports and annual Education statistical Digest.		

6.0 REFERENCES

1. *Model ICT Policy Document for the Education System - OERU June 2001*
2. *Draft Strategies for Implementing ICT Policies in The Education Systems of the OECS - JANUARY 2003*

7.0. APPENDICES

Appendix A: Regulatory Statements

(I) Software Acquisition, Use, Installation and Distribution Procedures

1. All requests for software and software upgrades shall be submitted to the appropriate officer in the Ministry of Education through the School Principal.
2. All software and software upgrades not procured by the Ministry of Education or its agents shall be documented and reported to the Ministry, who will verify that the School has an appropriate license for the use of such bundled software.
3. All hardware/software acquisitions, that are bundled with hardware, but are not issued by the Ministry of Education or its agents, shall be documented and identified to the Principal, who will then forward this information to the appropriate officer in the Ministry for verification.
4. The Principal shall store in a secure, central location all original software licenses, diskettes, CD-ROMs, and documentation upon receipt of all new software.
5. No staff member shall install software on the School's computers without being authorized to do so by the Principal, who would so authorize based on technical advice from the Ministry.
6. No staff member or student shall install, use or distribute software for which the School lacks appropriate license.
7. No staff member shall install any software upgrade on a computer that does not already have resident on it the original version of the software.
8. The Ministry of Education or its designated agents shall destroy all hardware and copies of software that are obsolete or for which the school lacks the appropriate license. Alternatively the Ministry of Education may obtain the license(s) necessary to maintain such software on the School's computers.
9. The School shall conduct an inventory and review of all its hardware and installed software on a periodic (at least annually) and random basis.

10. The School shall establish and maintain a record keeping system (preferably computerized) for software licenses, hardware, original CD-ROMs and diskettes, user information and assessment information.
11. No staff member may use or distribute personally owned software (excluding free wares and sharewares) on the School's computers or networks.

(II) Acceptable Use of On-Line Information Resources Guidelines

1. All use of school Local Area Networks (LANs) and Wide Area Networks (WANs) including access to the Internet must be consistent with the Ministry's ICT Policy.
2. Any use of the Internet by students and teachers for commercial purposes, without authorization by the Principal, is prohibited.
3. Network accounts are to be used only by the authorized owner of the account. The sharing of passwords is prohibited.
4. All network/Internet users shall not seek information on obtaining copies or modified files, data or passwords belonging to other users, or misrepresent other users on the network/Internet.
5. All information accessible on the Internet shall be assumed to be private property. All copyright issues regarding software information and copyrights must be respected. The unauthorized copying or transferring of copyrighted materials may result in a loss of network privileges.
6. Malicious use of the network to develop programs that harass other users; infiltrate a computer or computer system and/or damage the software components of the computer or computer system (locally or on the Internet) is prohibited.
7. Hate mail, harassment, discriminatory remarks and other anti-social behaviours are prohibited on the network/Internet. All users of the school network shall use language appropriate for school situations.
8. All files brought on the premises (downloaded or otherwise) must be examined by the Lab Manager/Technician for viruses before being used on any computer.
9. The access or downloading of inappropriate materials or files unsafe to the integrity of the Local Area Network is forbidden.
10. No student addresses, phone numbers or individual photographs linked to student names may be published under any circumstances.

Appendix B: Members of EPAC (EMIS Project Advisory Committee)

Name	Title
Anne Jonas – Executive Assistant to the Minister	Chairperson
Acres Stowe - Illuminat Sales Team	Deputy Chairman
Arlene Weste – Network Engineer	Secretary
Catherine Bucher – Peace Corps Volunteer - IT Trainer	Member
Curtis McKay – Head of Information Systems, APUA	Member
Dale Jones – Network Administrator	Member
David Henry - Vice President, ABITTA	Member
Doristeen Etinoff – Education Planning Officer	Member
Dorothea Nelson – Chief Librarian, Public Library	Member
Dr. Patrick Lay – President - Nic.ag	Member
Earl Skerritt – Science Co-ordinator	Member
Eban Thomas – IT Commissioner	Member
Ekua Richards – Curriculum Development Officer	Member
Edrys Joseph – Education Officer, Zone 3	Member
Gladwin Henry – CEO, ABITT	Member
Jacintha Pringle – Senior Education Officer	Member
Jacqueline Martin - Senior Lecturer, ASC	Member
Jeannette Mason - Admin. Assistant –Planning Unit	EMIS Champion, Assistant Secretary
Joanne Walsh – Crown Counsel II, Office of the Director of Public Prosecution	Member
Jocelyn Simon – Deputy Education Planning Officer	Member
John Davis – Peace Corps Volunteer - IT Trainer	Member
Kevin Joseph – Cable & Wireless	Member
Lenore Henry –Chief Education Officer (Ag.)	Member
Leslie Ann Yearwood - Financial Administrator, BOE	Member
Richard Lewis – President, ABITTA	Member
Rolston Nickeo – 1 st Vice President – ABUT	Member
Rosita Francis – Permanent Secretary	Member