

**MINISTRY OF EDUCATION, HUMAN RESOURCE
DEVELOPMENT, YOUTH AND SPORTS
Information Technology Unit**



**Integration of Information and Communication Technology
in Education: Proposed Policies**

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ABBREVIATIONS

CAI	Computer Aided Instruction
CMC	Computer Mediated Communication
CMI	Computer Managed Instruction
DSS	Decision Support Systems
EMIS	Education Management Information System
EPIE	Educational Products Information Exchange
ESS	Executive Support System
ICT	Information and Communication Technology
ILS	Integrated learning Systems
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
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
TESS	The Educational Software
TPS	Transaction Processing Systems
WAN	Wide Area Network

BACKGROUND

This document is the primary output of a two-day consultation, which was organized with the express purpose of customizing, for the education system of St. Lucia, a model Information and Communication Technology (ICT) policy document developed by the OECS Education Reform Unit (OERU). In this consultation, educators and representatives of various stakeholder groups throughout the island were given an opportunity to examine critically all aspects of the model ICT policy document and to make appropriate recommendations that would suit the needs of St. Lucia.

OERU's model ICT Policy document was embraced by the Ministry of Education, St. Lucia because it included some key guidelines that could be pursued in ensuring the successful implementation of ICT in the education system of St. Lucia. Further, the model ICT Policy document was the result of an extensive refinement process, in which various representatives from the education systems of St. Lucia and the other OECS territories participated. The refinement process included the following steps:

- (1) The development of initial *Guidelines for the Development of an ICT Policy and Strategy*, which were reviewed by the OECS Education Technical Committee (OETEC) in November 1999,
- (2) The preparation of a *Model ICT Policy for the Education System* document which was presented to OETEC in May 2000,
- (3) The further revision of the *Model ICT Policy for the Education System* document which was presented to OETEC in June 2001.
- (4) A comprehensive review of the revised Model ICT Policy document by members of the OECS ICT Education Committee, who met in July 2000 upon the recommendation of OETEC.

It is the intention of the Ministry to refine this document further by carrying out consultations with a larger group of educators representing all levels and aspects of the education system and with a broad cross section of stakeholders.

When this policy document is finalised, the Ministry intends to focus on specific strategies in implementing ICT in education. The OERU has the mandate of developing a document that outlines methods and approaches that can be used to implement the policies formulated. As was done for this policy document, the Ministry hopes to model its National ICT Implementation Plan on the document that is to be developed by OERU.

1.0. INTRODUCTION

Throughout the world, information and communications technologies (ICTs) are changing the face of education. It is believed that, fundamentally, there are two distinct factors propelling this change:

- (1) ICTs are changing the nature of work and the workplace. The “knowledge revolution”, combined with economic globalization, has created conditions in which countries that have focused on knowledge-based industries have been able to reap significant rewards. Knowledge-based industries require an educated labour force of computer-literate individuals who themselves understand and can harness the power of ICT. In response to the demands for producing such a labour force, many countries have changed the objectives of their education system and have directed much of their attention to the development of ICT skills in schools.

- (2) ICTs offer tremendous possibilities in enhancing students’ learning, developing teachers’ professional capability and strengthening institutional capacity. The following are a few examples of such possibilities
 - With computer aided instruction (CAI) applications, for example, it is possible to individualize learning while giving immediate reinforcement and feedback
 - Computers are multimedia tools and can therefore integrate graphic, print, audio and video into interesting and captivating computer-based instructional units, lessons, and learning environments
 - Computer managed instruction (CMI) technology utilises the computer's branching, storage and retrieval capabilities to organise instruction and track students’ progress.
 - Education Management Information Systems (EMIS) can improve individual school administration as well as nation-wide management of all schools and educational facilities.
 - Computer mediated communication (CMC) technologies (such as instant messaging, electronic mail, bulletin boards and computer conferencing) facilitate communication among students, teachers, researchers and other individuals of similar interest.

Educators in St. Lucia, like those in other countries, are cognizant the benefits of utilising ICT in the learning environment and have undertaken many initiatives aimed at doing so. These initiatives, however,

have been implemented in the absence of a carefully thought-out national plan with guiding policies and strategies.

The introduction of ICT in the education system requires careful planning. ICT, like any powerful tool, 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 the tremendous responsibility of ensuring that the introduction of ICT into the classroom is managed with great care so that the potential benefits are realised, while the dangers are eliminated or minimised.

The introduction and sustainability of ICT in the education system is also expensive. The capital cost of the equipment needed to begin the process is obvious. A little less obvious is the high level of recurrent costs associated with the effective use of ICT. An attempt must therefore be made to optimize the benefits of such large investments, and to develop cost effective maintenance procedures.

2.0. OBJECTIVES OF ICT POLICIES FOR EDUCATION

The ICT policy statements in this document reflect general guidelines, intentions and standards that the Ministry wish to implement and uphold. This document is not intended to prescribe specific strategies and approaches that are to be used in implementing ICT in schools and the wider education system. This will be done in a separate document.

The specific objectives of this ICT policy document are as followings:

1. Promote the harmonization of activities, approaches and standards in the educational uses of Information and Communications Technology (ICT) within the Education System.
2. Encourage the principals, teachers and students within the education system to use ICT, meaningfully, to enhance the teaching-learning process.
3. Ensure that there exists equitable access to ICT resources by all students and teachers within the Education system.
4. Demonstrate the MOE's commitment to ensure that all students and teachers attain the skills necessary to be considered computer literate.
5. Ensure that all school leavers are provided with the required ICT skills for employment or entry to specialized training in the Information Technology field.
6. Foster the concept of Life Long Learning among students and teachers and also within the general populace of St. Lucia.
7. Provide greater professional development opportunities for all ICT educators in St. Lucia.
8. Create a cadre of ICT educators with the requisite skills and competencies to use and promote ICT as a tool in the enhancement of the teaching / learning process
9. Make provisions for the continuous upgrade of the ICT skills of educators.
10. Encourage and facilitate the use of the Internet as a research and communication tool among students, parents, teachers, principals, other MOE officials and members of the community.
11. Provide the avenue for increased electronic networking and collaboration of educators and students in St. Lucia, regionally and internationally.
12. Facilitate the implementation of information systems that enhance efficiency within administration.

13. Encourage partnerships between the various stakeholders in the Education Sector in undertaking IT related ventures.
14. Make provisions for the frequent upgrade of all ICT tools including software used for educational purposes.
15. Increase the awareness of intellectual property and copyright laws in respect to the use of software and information in general.

3.0. ICT PHILOSOPHY OF THE MINISTRY OF EDUCATION

The Ministry of Education, St. Lucia recognizes that:

1. Accessibility to and utilization of knowledge are fundamental to the development of the Country's citizenry;
2. In light of the growing impact of advanced Information and Communication Technologies (ICTs) on the economy of St. Lucia, each student must be provided with access to up-to-date computer-based tools so as to make a valid contribution to society;
3. The integration of ICT in the education system can eventually boost the economic engine of St. Lucia because course developed by St. Lucian educators can be exported;
4. ICT must be exploited to allow students greater control over their learning and thus develop skills at their own level and speed;
5. The potential of all individuals (including the mentally and physically challenged) can be enhanced by the use of multimedia packages and other electronic learning tools;
6. Curriculum reform is necessary for ICT to be introduced and utilised effectively in the classroom;
7. The introduction of ICT in the Education Sector necessitates the training of all education officers, principals and teachers in the system;
8. The availability of authoring packages for use by teachers in the development of their own instructional material can have positive impact on the teaching-learning process.
9. The utilization of computerized management tools can strengthen the institutional capacity of the Ministry, education offices and schools.
10. The implementation and sustenance of ICT projects in the Education System must be done by a partnership approach involving the community, private and public organizations, and funding agencies;
11. The copyrights laws of St. Lucia must be respected by all individuals involved in the incorporation of ICT into the education system

4.0. ICT GUIDELINES AND POLICY STATEMENTS

The ICT Guidelines and Policy Statements of the education system have been categorized into three areas: (1) utilising ICT in the curricula and in education administration; (2) planning and implementation of ICT initiatives; and (3) sustaining, supporting and evaluating ICT initiatives

4.1. Utilising ICT in the Curricula and in Education Administration

In formulating policies relating to the utilisation of ICT in the curriculum, and in education administration, consideration must be given to the diversity in forms and use of ICT, the potential benefits, as well as the possible dangers.

With the availability of so many advanced technologies and software tools, the benefits of computers in education are endless. Only a few examples can be noted here.

- ◆ With tools such as computer-aided instruction (CAI) software, lessons can be presented in a manner, which is captivating and is more likely to be retained by students.
- ◆ Many instructional applications provide an objective means of assessment. They can also maintain records of individual progress of each student and can assist teachers in identifying students' weaknesses and in determining measures that can be taken to address such weaknesses.
- ◆ Courseware designed for secondary and tertiary levels makes it possible for students to model and test physical systems through simulation.
- ◆ The Internet (a phenomenal medium) not only provides access to a wealth of resource material for research, but also facilitates networking and communication among educators, students, and other stakeholders such as parents.
- ◆ Computers can be used in schools as they have been used traditionally, as a tool for writing and presenting. Word-processing, spreadsheet and database applications all have their uses for project writing and information handling.
- ◆ In respect to education administration, there are various types of information systems that can be used in making informed decisions at all levels and in improving efficiency of operation.

Many avid proponents of ICT in education will admit that along with the benefits of introducing computers in the classroom come numerous challenges. A few of these challenges are noted below:

Professional Development of Teachers

The success of any classroom ICT project depends on the teacher ultimately. If teachers are not comfortable with the technology, they will not use it. Training and orientation of teachers must therefore be a priority. Training of teachers must focus on developing proficiency in the use of various technologies (software applications, in particular), as well as, in the application of modern pedagogical methods.

Misuse of computers and the Internet

There are many forms of computer misuse, from financial fraud to hacking and introducing viruses for the fun of it. An area that is of primary concern in the education system is the use of computers and the Internet to access and disseminate inappropriate material such as pornographic material and extreme political or religious views and ideas. In order to detect and control such incidents, action must be taken on several fronts: the Ministry, in schools, and at home.

Widening of the Digital Divide

There is the concern among some educators that with the introduction of computers in the classroom, students from households that can afford computers are likely to advance faster in the curriculum than those who do not have a computer at home or have never used one before. It is believed that those who have computers at home and are more comfortable with the technology are likely to take control of the use of the computers in the classroom. Further, it is possible for them to continue their schoolwork at home and to access invaluable information from the Internet.

The Ministry, in its efforts to minimize the split between the haves and the have-nots must put in place appropriate measures such as ensuring that new teaching methods are friendly to all and establishing computer facilities that are accessible to students who do not have computers at home.

Environmental issues

With the rate of obsolescence for computer equipment being so high, environmentalists are becoming increasingly concerned about expanding technology graveyards. This is an issue of paramount importance, particularly in third world countries, like St. Lucia, that are usually recipients of donated used computers. Having used computers may appear to be a better option than having no computer at all. However, one must be cautious in accepting used equipment because the disadvantages may far outweigh the advantages of doing so.

Health and social issues

It is the view of some sceptics that, often with the introduction of ICT, more emphasis is placed on the technology and less on the physical, emotional, social and cognitive needs of the child (Alliance for Childhood, 2001). This can result in the weakening of children's bonds with teachers, other students, and families and the strengthening of connections to trivial games, inappropriate adult material, and aggressive advertisements. Additionally, there are health risks associated with prolonged use of computers: repetitive stress injuries, eyestrain, and obesity.

Cognizant of the potential benefits and the challenges associated with using ICT in the curricula and in education administration, the following policy statements are proposed:

Statement No. 1:

The MOE shall ensure that ICT in the education system serves several purposes, all of which will contribute to the establishment of a knowledge-based economy.

Statement No. 2:

The MOE will ensure that ICT will be effectively integrated into the curricula and that all school leavers will be computer literate.

Statement No. 3:

The MOE will liaise with other public agencies and private organizations with the express purpose of ensuring that the Education ICT programme is relevant to the needs of all stakeholders.

Statement No. 4:

The MOE will establish an ICT integration team (comprising curriculum, subject, ICT and assessment specialists as well as representative students), which will co-ordinate, in collaboration with the OECS Education ICT Committee, the approach for the use of computers in the teaching and learning of each subject area.

Statement No. 5:

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

Statement No. 6:

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

Statement No. 7:

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

Statement No. 8:

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.

Statement No. 9:

The MOE will ensure that instructional software is evaluated before being introduced in the classroom.

Statement No. 10:

The MOE will ensure that control mechanisms will be put in place to prevent access to obscene material and undesirable sites on the Internet.

Statement No. 11:

The MOE will work with other stakeholder groups to establish rules and procedures for the acceptable use of ICT in all areas of the education system.

Statement No. 12:

The MOE will work with Principals of Educational Institutions to ensure that the guidelines for acceptable use of ICT in education have been incorporated into the School Rules.

Statement No. 13:

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. Recommended workstation specifications are detailed in Appendix B.

Statement No. 14:

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

Statement No. 15:

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

Statement No. 16:

The MOE will liaise with the Sir Arthur Lewis Community College Community College and other similar educational institutions to ensure that subject-specific pedagogy includes adequate coverage of the integration of ICT in the classroom. If necessary, it will be advised that courses be modified or new courses be introduced.

Statement No. 17:

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.

Statement No. 18:

The MOE will provide in-service training to teachers throughout the education system.

Statement No. 19:

The MOE will provide the opportunity for fostering the creative capacity of students and teachers in the development of multimedia software.

Statement No. 20:

The MOE will employ various information systems such as executive support system (ESS) and decision support systems (DSS) in order to assist with handling of structured and unstructured decision making at all levels of administration.

Statement No. 21:

The MOE will encourage the use of knowledge work systems (KWS) that can assist in the creation and integration of new knowledge in schools e.g. timetable systems and computer managed instruction (CMI) systems

Statement No. 22:

The MOE will ensure that office automation systems (OAS) such as word processing, electronic mail, and scheduling applications are used through the education system

Statement No. 23:

The MOE will implement transaction-processing systems (TPS) that can assist in performing routine transactions such as registration, attendance, budget preparation and examination grading.

Statement No. 24:

The MOE will provide training in appropriate technologies to officers involved in administration at all levels.

4.2. Planning, and Implementing ICT Initiatives

There are a number of issues to be considered in the planning and implementing ICT initiatives¹ in education:

- ◆ Curriculum goals, and instructional and evaluation methods
- ◆ Professional development of educators in order to make them more effective in using computers for teaching and for other purposes
- ◆ Selection of equipment (hardware and software) with specific consideration to new and emerging technologies
- ◆ Estimated timelines and proposed schedule for completing various components of the implementation plan
- ◆ Possible establishment of incentive/reward programmes
- ◆ Procurement: the entire process of researching, comparing various options and actual purchasing
- ◆ Availability of community resources that can be tapped
- ◆ Legal issues such as software piracy
- ◆ Infrastructure – networks in particular
- ◆ Maintenance of equipment and facilities
- ◆ Special needs learners such as the visual, hearing/speech or physical impaired as well as exceptional students or those with learning disabilities
- ◆ Security or measures that should be taken to protect the computers, networks, personnel and software from destruction, misuse and harm
- ◆ Funding from various sources: grants, loans, fund raising activities, partner-in-progress programmes
- ◆ Facilities or anything needed to house or power the chosen technology equipment
- ◆ Obsolescence, environmental issues, equity of access, ergonomics and standards

In countries like St. Lucia where financial resources are limited, special attention ought to be given to the acquisition of equipment (hardware and software), the rationalisation of such equipment, and cost effective implementation methods.

¹ Some of these issues were identified by graduate students of Mississippi State University, 1996 [7]

Generally, hardware has a finite life span because it can become technologically obsolete or due to wear and tear. Further, users often demand improvement in the performance of their systems and this is usually dependent on an upgrade in hardware. Flexible and open architectures are usually recommended for purchase in order to minimise the cost of upgrade and to reduce the time to replace defective components.

Software acquisition decisions fall into two categories: (i) those relating to general productivity tools (such as word processing, spreadsheets, databases, e-mail, browsers, graphics, etc.) and (ii) those specific to instructional software or courseware. For general productivity tools, choices should be guided by observing what is most widely used elsewhere. Students benefit by becoming familiar with the packages that they are most likely to meet in the workplace and at home.

Choosing instructional software is much more complex. The field is changing rapidly and there is a wide variety of material available (it is estimated that there are about 20,000 titles in English alone). Many educators, however, are aware of a real shortage of educational software that have been adequately tested and have proven to be effective (other than the developer's own claims, which are hardly objective!). Finding good software to meet particular instructional needs is therefore a major challenge.

There is a myriad of web sites with information on educational software. On most sites, however, the information is anecdotal and is usually based on the individual reactions and experiences of teachers who have used the software in their classes. There are also organisations and consultants involved in evaluating and selecting appropriate software for use in the school system. One of these organisations is the Educational Products Information Exchange (EPIE) Institute, the developers of The Educational Software Selector Database (TESS), which is available on CD and on their website (<http://www.epie.org>). The MOE will work with the OERU to obtain access to the resources of that Institute.

With educational software, there are also issues specific to content, cultural appropriateness, and linguistic and cognitive style because many of the software packages available on the market are developed outside St. Lucia and the Caribbean. Further, there is the issue of cost. Software applications (with teachers' guide and assessment modules) designed for use in the classroom are sold under site licences and can be prohibitively expensive in some cases.

It is important to ensure that, in the initial stages of integrating ICT in education, people are not demoralized by weak or disastrous results from expensive investments² (Mauro Castro, 1999). Effective management is therefore critical in implementing any ICT initiative in education.

At the national level, it is necessary to have the institutional framework in place to coordinate an ICT programme for all educational institutions. The IT Unit at the Ministry has been assigned this responsibility. Unfortunately, this Unit has never been adequately staffed since its establishment in January 1998. With the increasing use of ICT throughout the education system, it has become absolutely imperative to have a full complement of staff within the IT Unit and to provide the Unit with the resources necessary to manage the national ICT programme effectively.

In light of the issues specific to planning, and implementation of ICT initiatives, the following policy statements are proposed:

Statement No. 25:

The MOE will make the necessary budgetary provisions (in collaboration with other stakeholders) for the planning, implementation and sustenance of ICT systems.

Statement No. 26:

The MOE will establish the appropriate organizational framework to plan and manage the integration of ICT into the education system.

Statement No. 27:

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

² Claudio de Moura Castro, 10 Points to Avoid Past Errors

Statement No. 28:

The MOE will work with stakeholder groups to develop strategies to deal with issues such as: licensing³; intellectual property rights; use of software; disposal of used computer equipment; security; and privacy of personal data.

Statement No. 29:

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

Statement No. 30:

The MOE will establish protocols for the identification, evaluation and selection of appropriate software for use in instruction at all levels of the education system.

Statement No. 31:

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

Statement No. 32:

The MOE will periodically (at least every year) review its hardware and software standards and recommend changes/upgrades as needed.

Statement No. 33:

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

Statement No. 34:

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

³ Some regulatory statements are provided in Appendix A.

Statement No. 35:

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.

Statement No. 36:

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.

Statement No. 37:

The MOE will assist Principals of Educational Institutions in ensuring that records of all software and software upgrades acquired by their institutions are kept and that their institutions have the appropriate licences for the use of such software.

Statement No. 38:

The MOE will assign the responsible for all ICT resources on the school premises to Principals.

4.3. Sustaining, Supporting, and Evaluating ICT Initiatives

The sustenance of information technology equipment in schools, like in any environment has proven to be very expensive. In the last four years, the Ministry of Education has been able to furnish sixteen (16) secondary schools and a few primary schools with computer labs. On average, the computer labs at the secondary schools have been designed and equipped in order to facilitate the training of twenty students. The average cost of computer hardware and general productivity software for these labs (furniture and infrastructure such as electrical and network installations excluded) has been estimated at \$ 120,000.00 XCD.

Under rather generous assumptions about amortization (for example, a 5 year useful life of computers and peripherals) and interest rates of 10%, one can surmise that the computer systems in the lab can be established and maintained indefinitely for an annual charge of about \$ 31,700.00 XCD per year⁴. There are other recurrent costs such as accessories, staff, repairs and servicing expenses.

It must be noted that based on the experience with earlier installations such as those at the Castries Comprehensive, the Corinth Secondary, and the Vieux Fort Comprehensive, a three-year amortization period is more realistic. Consequently, the estimated recurrent cost can be more significant.

Consideration must therefore be given to implementing a maintenance strategy that can prolong the life span of the computer equipment installed in schools and minimize any additional cost associated with the malfunctioning of equipment. In devising this strategy, consideration must be given to the limited resources, in terms of finance and manpower, available to the Ministry.

Continuous evaluation of ICT initiatives implemented in schools is absolutely necessary in order to justify further investments (i.e. money, time and effort) in the integration of ICT in education.

⁴ The annual charge is calculated as a fixed amount to be paid each year for a loan of \$120,000.00 with an interest rate of 10% on a reducing balance.

Generally, it is difficult to evaluate the effectiveness of any IT initiative because most of the benefits are not tangible, and are therefore, difficult to quantify. In education, the simplest and most obvious indicator of the effectiveness of any programme is students' scores.

The following are proposed in order to address the issues associated with support, sustenance, and evaluation of ICT initiatives:

Statement No. 39:

The MOE acknowledges that there are recurrent costs associated with the support of ICT in the education system and will make the necessary annual budgetary allocation.

Statement No. 40:

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.

Statement No. 41:

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

Statement No. 42:

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

Statement No. 43:

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

Statement No. 44:

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 the

use of these facilities for maintenance, upgrade and sustenance, as long as such use does not compromise access and the quality of services to the students.

Statement No. 45:

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

5.0. REFERENCES

1. Model ICT Policy Document for the Education System, OECS Education Reform Unit, June 2001.
2. The Millennium Project Proposal- The Incorporation of IT in the Education System, Ministry of Education, Human Resource Development Youth & Sports (Draft Copy), St. Lucia, February 1999.
3. Draft Education Policy, Ministry of Education, Sports and Youth Affairs, Education Planning Unit, Dominica, September 2001.
4. Information Technology Policy for the Public Service, Ministry of Public Administration and Information, Republic of Trinidad and Tobago.
5. 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
6. Computers in Schools: 10 Points to Avoid Past Errors by Claudio de Moura Castro, TechKnowLogia, September/October, 1999, www.TechKnowLogia.org
7. Guidebook for Developing an Effective Instructional Technology Plan version 2.0, by Graduate Students at Mississippi State University, 1996.
8. Fool Gold: A Critical Look at Computers and Childhood; Alliance for Childhood; August 25, 2001.

7.0. APPENDICES

Appendix A: Regulatory Statements

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

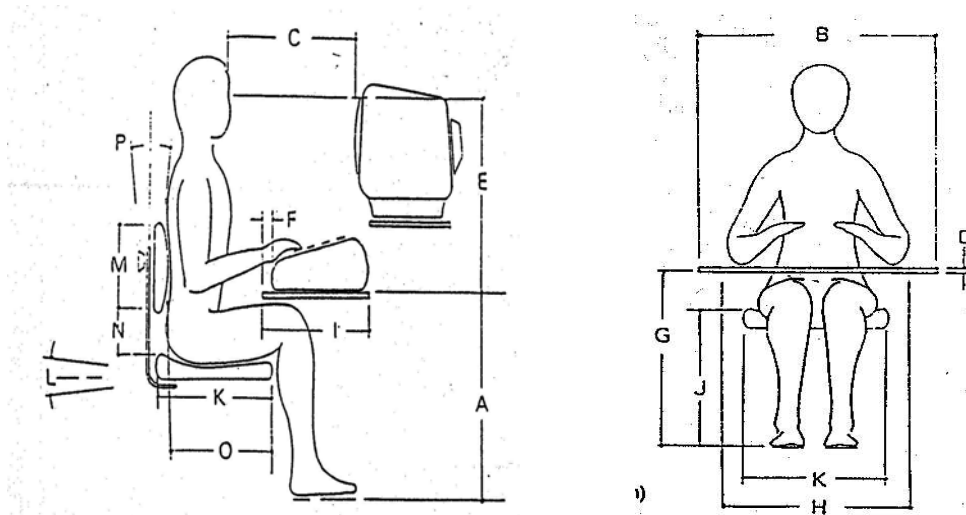
1. All requests for software and software upgrades shall be submitted to the School's Principal, where possible.
2. All software and software upgrades not procured by the Principal shall be documented and reported to the Principal, who will verify that the School has an appropriate license for the use of such bundled software.
3. All software acquisitions that are bundled with hardware shall be documented and identified to the Principal, who will verify that the School has an appropriate license for the use of such bundled software.
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.
6. No staff member or students 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 Principal or designated staff member shall destroy all copies of software that are obsolete or for which the school lacks the appropriate license. Alternatively the Principal 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 freewares and sharewares) on the School's computers or networks.

12. All software to be used in schools must first be evaluated by the software Evaluation Team.

(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 educational mandate of the School.
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. Fraudulent, harassing, offensive or obscene messages or materials 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 programmes and files brought on the premises (downloaded or otherwise) must be examined 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: Recommended Specifications for Computer Workstations⁵



- A - Height of work surface: adjustable 23 to 28 inches (584 to 711 mm)
- B - Width of work surface: 30 inches (760 mm)
- C - Viewing distance: minimum 12 Inches (305 mm); hard copy distance 12 to 16 inches (305 to 406 mm); typical eye to keyboard distance 18 to 20 inches (457 to 508 mm)
- D - Thickness of work surface: 1 inch (25 mm)
- E - Height of screen: Top of screen at approximately eye level (maximum 0 deg. to horizontal, or 0 deg. to - 60 deg.)
- F - Palm rest: 11/2 inches (40 mm)
- G - Knee room height: minimum of 26.2 inches (665 mm) non-adjustable surface; 20.2 inches (513 mm) adjustable surface
- H - Knee room width: 20 inches (510 mm) minimum
- I - Knee room depth: minimum of 15.0 inches (381 mm) knee level; 23.5 inches (597 mm) toe level
- J - Seat height: adjustable 16 to 20.5 Inches (400 to 521 mm)
- K - Seat size: 15 to 17 Inches (381 to 432 mm) depth, 17.7 Inches (450 mm) width, "waterfall" front edge
- L - Seat slope: adjustable 0 deg. to 10 deg. backward slope
- M - Backrest size: 7 Inches high (180 mm), 13 Inches wide (330 mm)
- N - Backrest height: adjustable 3 to 6 Inches (80 to 150 mm) above seat
- O - Backrest depth: adjustable 14 to 17 Inches (350 to 430 mm)
- P - Backrest tilt: adjustable \pm 15 deg.

⁵ Source (TBD)

- *Other* - Angles between back rest and seat 90 deg. to 105 deg.; between seat and lower leg 60 deg. to 100 deg.; between upper arm and forearm 70 deg. to 135 deg.