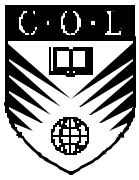


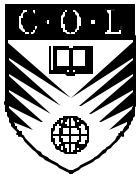
THE COMMONWEALTH *of* LEARNING

Identifying Barriers Encountered by Women in the Use of Information and Communications Technologies (ICTs) for Open and Distance Learning in the Caribbean

Sponsored by
The Commonwealth of Learning

November 24, 1999
Bridgetown, Barbados

SUMMARY REPORT



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Organised by: ***The Commonwealth of Learning***

Supported by: ***The Commonwealth of Learning (Canada)***

Report Prepared by: ***Ms. Helena Fehr and Ms. Jenny Leach***

CONTENTS

Foreword

Open and distance learning methodologies help girls and women overcome some of the challenges they face in attaining education when the only opportunities available to them are provided through conventional means. With the onslaught of the new information and communications technologies (ICTs) to deliver open and distance learning, however, it is feared that this trend may be reversed and that women may become marginalised in accessing distance education due to issues relating to the use of these technologies. Further, the influx of the new technologies may have an impact on the staff employed to work in distance learning environments. If women are disadvantaged in accessing and using the new technologies, this may influence the type of positions for which they are employed.

The Commonwealth of Learning (COL) saw an opportunity to further explore these concerns and to identify and initiate possible avenues for change. The first step was to contract a consultant to scan the research and information available on issues pertaining to women and access to information and communications technologies, with particular regard to open and distance learning. The consultant found that little research had been done in this area although it was acknowledged that barriers exist for many women in accessing ICTs, particularly in parts of the developing world.

In view of these findings COL decided to support activities that would provide information and research data that could assist the following groups to ensure equal access regardless of the gender of potential users:

- institutions delivering education and training through distance modes;
- organisations and agencies concerned with women's access to information and communications technologies; and
- government agencies and others working in the field.

Preface

In November 1999, The Commonwealth of Learning organised a regional expert group meeting for education providers in the Commonwealth Caribbean countries. This was the second meeting in a planned series of four regional expert group meetings to focus on the new ICTs and the opportunities and challenges they create for women in distance education. Participants from across the region were invited to meet in Bridgetown, Barbados. The meeting was held in conjunction with a COL-sponsored conference focusing on educational technology in the region — *TEL-isphere 99: The Caribbean and Technology Enhanced Learning*.

The meeting was designed to draw on the experience and knowledge of participants involved in distance education provision, or in the uses of ICTs with women, or both. In addition to providing a forum for participants to address the needs of women in distance education using ICTs, the meeting provided a valuable forum for the educators to consult with each other, to share their experiences and expertise, to discuss the policy implications of increased use of ICTs, and to build their own awareness of the issues that women face. The meeting is expected to have a multiplier effect, both through participants' networking and work during the meeting and through follow-up and spin-off activities.

Acknowledgements

The Commonwealth of Learning is grateful for the assistance and support provided by the organisations and individuals who contributed to the success of this meeting. Specifically, COL would like to acknowledge:

- The meeting participants who gave their time to attend and provide insightful and interesting contributions to the proceedings.
- Ms. Jenny Leach, Deputy Director, Learning School's Programme, The Open University (OUUK) who assisted in the facilitation of this meeting and summarised the meeting's proceedings for inclusion in the final report.
- Ms. Nidhi Tandon, the consultant who completed the environmental scan.

ABBREVIATIONS

BTC	Belize Teachers' College
BTL	Belize Telecommunications Ltd.
CARICOM	the Caribbean Community
CCDESP	Canada Caribbean Distance Education Scholarship Programme
CIDA	Canadian International Development Agency
COL	The Commonwealth of Learning
COSTAATT	College of Science, Technology, and Applied Arts of Trinidad and Tobago
CUNet	Caribbean Universities Network
CXC	Common Entrance Examination
DFID	Department for International Development (United Kingdom)
GT&T	Guyana Telegraph and Telecommunications Company
GUIDE	Guyana In-Service Distance Education Programme
HEART/NTA	Human Employment and Resource Training Trust/National Training Agency
HTTP	Hinterland Teacher Training Programme (Guyana)
ICTs	Information and Communications Technologies
JCSEF	Jamaica Computer Society Education Foundation
NCSE	National Certificate of Secondary Education (Trinidad & Tobago)
NSF	National Science Foundation (U.S.)
OAS	Organisation of American States
OECS	Organisation of Eastern Caribbean States
OERU	Organisation of Eastern Caribbean States Education Reform Unit
TLI	Tele-learning Institutes
TVET	Technical and Vocational Education and Training
UCJ	University Council of Jamaica
UNDP	United Nations Development Programme
UWI	University of the West Indies
UWIDEC	University of the West Indies Distance Education Centre
UWIDITE	University of the West Indies Distance Teaching Enterprise
WANs	Wide Area Networks

1.0 INTRODUCTION AND BACKGROUND

1.1 Background

In 1998, following discussions with various interested and concerned parties, The Commonwealth of Learning (COL) proposed to work with other agencies to develop strategies to increase the 'comfort level' of women's uses of the new information and communications technologies in the open and distance learning arena. This initiative proposed a series of activities to address specific issues that women face in the use of ICTs and suggested strategies through which these obstacles might be overcome.

1.2 Rationale

Education and training by open and distance learning is one of the few educational areas in which women are well represented. This is particularly true in countries where the characteristics of distance education help to overcome some of the challenges that girls and women face when education provision is limited to conventional institutions. With the increased opportunities that the new ICTs offer to deliver open and distance learning it is possible, however, that this trend could be reversed. Women could become disadvantaged in accessing education delivered by distance methodologies due to a variety of issues relating to the use of, or access to, these new technologies.

Additionally, the introduction of new information and communications technologies has implications for staff employed to work in distance learning environments. If women are disadvantaged in accessing and using the new technologies this may influence the types of positions for which they are employed or decrease their chances of being hired for certain positions.

1.3 Project Methodology

1.3.1 Phase One: Regional Surveys

During the first phase of the initiative preliminary surveys were distributed to key respondents in each of the four developing geographical regions of the Commonwealth — the Caribbean, the Pacific, South and Southeast Asia, and Africa. These surveys asked respondents to outline the uses of information technology by women for distance learning in developing Commonwealth countries. The regional survey for the Commonwealth Caribbean countries[1] can be found in Appendix 1.

Each regional survey also identified a series of questions intended to guide the content of country reports, which are intended to provide the background and context for discussions at subsequent regional meetings. The questions guiding the development of the country reports can be found in Appendix 1 - point 6, *Questions that Country Reports Need to Cover: National Issues* (1998, 6.1).

1.3.2 Phase Two: Regional Meetings

The regional expert group meetings comprise the second phase of the project. It is anticipated that regional meetings will be held in each of the four developing geographical regions of the Commonwealth to identify the spectrum of information and communications technologies that are,

[1] The Commonwealth Caribbean countries include: Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

or are becoming, regionally prevalent for the delivery of education and to outline barriers to their uses for girls and women, both in their roles as distance educators and as distance learners. The meetings are also expected to deliberate on and identify possible strategies to overcome these barriers and to recommend courses of action to assist girls and women in accessing and using the new ICTs.

Invited participants will have a background in either distance education, educational technologies and media, or both. Key participants will be identified to compile and present a country report addressing the list of questions posed in the regional survey before the meeting. It is anticipated that the country reports will identify:

- barriers to the uses of information and communications technologies women experience in distance education;
- ways in which these barriers have been overcome;
- examples of the effects of the implementation of technologies on female learners;
- 'lessons learned' as a result of these innovations; and
- implications of a national telecommunications policy for women's access to information and communications technologies.

A specialist in the field of information and communications technologies and women will also be invited to attend the meetings to provide insights and to act as a resource person and facilitator.

This document reports on the second regional meeting held in Bridgetown, Barbados in November 1999.

1.3.3 Phase Three: Publication of Findings

A proposed third phase of the project will involve consolidation of the reports from the four regional meetings into a publication outlining the current situation in each region. Additionally, it will identify strategies to increase access by girls and women to education and training involving ICTs. It is anticipated that this final document will include examples of best practices from Commonwealth countries as a means of demonstrating initiatives, and lessons learned which could then be adapted in other regions and countries. This final document will be made available to:

- distance education providers in Commonwealth (and other) countries;
- organisations and agencies interested in information and communications technologies issues for women;
- institutions involved in education provision to girls and women in developing countries; and
- international women's organisations' resource centres.

Additionally, key findings and recommendations emerging from the overall project will be made available on COL's web site **(www.col.org).**

1.4 Meeting Outputs

The primary output from each regional meeting will be a report summarising the discussions, identifying barriers to the use of ICTs by women, and outlining strategies to assist girls and women

in overcoming these barriers. The reports will also include proposed activities and lessons learned from across the regions about the integration or use of ICTs in educational initiatives.

A secondary output will be the publication of the country reports.

It is anticipated that the regional meetings will also help to forge links between and among persons, institutions, and agencies using open and distance learning techniques and methodologies, as well as ICTs in the education of girls and women.

1.5 Beneficiaries

- Girls and women in the developing Commonwealth who must, or who would prefer to, undertake their education through alternative means such as open and distance learning.
- Professional distance educators (trainers, tutors, managers, and course developers among others) who are women and who work, or are seeking work, in an educational environment employing the new information and communications technologies.
- Policy decision-makers interested in the interface between educational objectives, including access, telecommunication policies, and gender development.

2.0 SUMMARY OF THE CARIBBEAN REGIONAL MEETING

2.1 Background to the meeting

In November 1999, The Commonwealth of Learning convened a regional expert group meeting of distance education providers in the Commonwealth Caribbean countries. This meeting was the second in a planned series of regional group meetings focusing on the new information and communications technologies and the opportunities and challenges they create for women in education. Participants from Barbados, Belize, Dominica, Guyana, Jamaica, St. Lucia, and Trinidad and Tobago met at The PomMarine Hotel in Bridgetown, Barbados for a one-day meeting.

Drawing upon the experience and knowledge of participants involved in either or both distance education provision or uses of ICTs with women, the meeting provided a valuable forum for consultation with each other and for understanding some of the issues that women face. The meeting is expected to have a multiplier effect, both through participants working together during the meeting and in eventual follow-up activities.

Each participant was asked to write a report identifying issues of concern, best practices, and suggested courses of action, particular to the country, on the use of ICTs in education and barriers to their use that girls and women encounter. Report guidelines, including a list of questions to be addressed, were distributed before the meeting along with a copy of the Summary Report from the Asia Meeting held in November 1998. Participants were asked to submit their papers to COL before the meeting so that their colleagues could review them in advance. When that was not possible the papers were distributed at the group meeting.

2.2 Summary of meeting agenda and methodology

Expectations for all four meetings are the same:

- participants will identify the spectrum of information and communications technologies prevalent in their country for the delivery of education; and
- outline barriers to their uses for girls and women, both in their roles as distance educators and as distance learners.

The meetings are also expected to deliberate on and identify possible strategies to overcome these barriers and to recommend courses of action to assist girls and women in accessing and using the new ICTs. The Caribbean meeting programme can be found in Appendix 2.

Given the limited amount of time allotted for this meeting — one day — and the range of participants' experiences and backgrounds, the group decided to limit the discussion of broad policy issues on the integration and use of ICTs in the educational sector. Rather, short self-introduction by participants preceded a modified presentation of the project objectives and framework. This decision was made on the assumption that all participants had read the Summary Report emerging from the Asian Regional Meeting and thus were familiar with the policy framework within which the discussions would be taking place and the key variables relevant to those discussions.

With the framework and objectives of the meeting laid out, participants were asked to summarise and highlight the key observations and responses presented in their country reports. A dynamic discussion of the key issues raised in the individual reports followed each presentation. All participants received a copy of each of the country reports presented either before or on the day of the meeting.

While it was difficult to strike a balance between individual presentations focusing on country-level issues and the broader discussion of regional issues because of time limitations, participants expressed their satisfaction with the process in general and the subsequent recommendations. These recommendations can be found in Section 4.0 of this report. There was also a striking dissimilarity of the challenges and issues facing girls and women in the Caribbean and their colleagues in South and Southeast Asia.

2.3 Profile of participants

Participants invited to the Caribbean meeting either had a background in distance education or educational technologies and mediums, or both, and included both practitioners and representatives from relevant Ministries. All of the participants were also the authors, or co-authors, of the country papers. Participants from a number of Caribbean countries and regions were invited: the Windward Islands, the Leeward Islands, Belize, Guyana, Barbados, Jamaica, and Trinidad and Tobago. The interesting mix of backgrounds, experiences, and perspectives enhanced the discussions. Three observers, two from Trinidad and one from St. Lucia, also actively participated in the discussions. A list of participants and observers is included in Appendix 3.

3.0 HIGHLIGHTS OF COUNTRY REPORTS

3.1 Barbados

Ms. Barbara Parris, Deputy Principal of the Erdiston Teachers' Training College presented the paper on Barbados. The majority of information for this paper is based on interviews with key personnel directly involved in distance education. Respondents indicated that at the present time open and distance learning is primarily offered through tertiary institutions. Programmes offered range from certificates to full undergraduate degrees and are provided by three local institutions: the University of the West Indies (UWI), Erdiston Teachers' Training College, and the Barbados Community College, as well as two overseas institutions. Current areas of national priority are human resource development, education, and management. Although the respondents identified no specific priorities for women, the overall situation for women is positive. Moreover, indications are that women outnumber men in the area of distance education as well as in the general population of the whole. For example, at the 1999 graduation ceremony at UWI's Cave Hill Campus in Barbados, the Chancellor noted that of 286 graduates in the Faculty of Social Science 193 were women; in the Faculty of Natural Sciences fifty-one males were graduating compared with sixty-four females. Similar discrepancies were realised in UWI's distance education programme for the academic year 1999-2000.

While no policy barriers were identified, a lack of equipment does present some barriers despite the Barbadian government's Education Enhancement Sector Programme (EduTech 2000) which aims to equip all public primary and secondary schools with varying technologies over a seven-year period. While a lack of equipment can cause impediments, working women have the opportunity to enhance or upgrade their skills and knowledge of ICTs through several centres across the island which offer courses for personal and professional development. Currently, the government subsidises continuing education programmes at three secondary schools across the island specifically for early school leavers and other members of the community.

Gender sensitive training methodologies, materials, and language are in wide-spread use in distance learning programmes. Indeed, ICTs are playing a role in encouraging young women to enter science and technology-related areas of study. Women are also generally organised and mobilised for empowerment through the work of several women's groups on the Island and respondents indicated that a greater use and understanding of ICTs could only serve to enhance their function.

3.2 Belize

Ms. Wilma Wright, Head of the Extramural Department at the Belize Teachers' College presented a paper prepared by her colleague, Ms. Cynthia Thompson, Head of the Teachers' College. In general, there has been a growing awareness of the significance of ICTs and their potential for education and economic development in Belize. Data for the report was collected from the open and distance learning literature, through a survey of tertiary level institutions, and through interviews with a number of people working in key areas related to women or information technology and open and distance learning. The interviewees were asked to determine what policies and programmes exist for women and ICTs.

A review of the tertiary institutions indicate that only two institutions offer training through open and distance learning, the Belize Teachers' College and the UWI School of Continuing Studies. Under the Belize Primary Education Development Project, education centres were constructed in the country's six districts to act as resource centres for teachers; the Belize Teachers' College distance

education programme also operates in the centres. Additionally, plans are underway with the Ministry of Education and Sports to establish a network of these centres throughout the country. The University of the West Indies School of Continuing Studies is an off-campus centre of UWI that offers courses aimed at adult learners, primarily through face-to-face interaction and distance methodologies. Data obtained from their annual report indicates that thirty-five of the forty-three students enrolled in UWI's programmes for the 1999-2000 academic year are women.

At the secondary level, the government has pledged to support the establishment of information technology programmes in every school and to assist with the development of computer-based teaching and learning programmes in select primary schools. Yet, although the potential for the integration of open and distance learning in addressing issues of literacy and numeracy has been recognised, no training or policies have been implemented. An attempt has been made, however, to address specific needs of women through the Department of Women's Affairs in the Ministry of Human Development, Women and Youth. Priorities for women identified by the department that can be addressed by open and distance learning methodologies include reproductive health, economic empowerment, domestic violence, sexual harassment, women in decision-making positions, and education in non-traditional areas. An opportunity exists to offer programmes to a broader cross-section of the population in these priority areas through the collaborative use of facilities at the Belize Teachers' College, UWI, and the Ministry of Education's education centres.

While Belize has seen significant growth in telecommunications service and the use of computers over the past four years, the high cost of access has created severe limitations for both the public and private sectors. Despite these costs, however, the use of computers and other forms of ICTs have increased in schools and the workplace. In addition to the cost barrier under-privileged women, women in rural areas, and women with families are further hampered by child-care challenges and the time when courses are scheduled. In response, the Department of Women's Affairs now offers computer-training classes for unemployed women at a time convenient to the women. Surprisingly, with the exception of the Teachers' College and UWI, none of the other tertiary institutions in Belize currently utilise open and distance learning as a means of instruction. Survey results and interviews indicate that information technology is seen primarily as a delivery mode rather than as an instructional tool.

Women continue to be present in greater numbers at the tertiary level although they still have a tendency to opt for non-technical programmes. The introduction of computers into the workplace has also had an impact on women, particularly older women who find that retooling is critical for long-term employment. The challenge of learning how to use the new information and communications technologies is particularly difficult in some of the remote rural areas that lack electricity, telephone service, and reliable transportation.

While no clear national telecommunications policies addressing gender discrimination appear to exist, neither do clear policies on open and distance learning and the role of ICTs in education. Yet government policy-makers view the development of information and communications technologies as a major strategy for creating job opportunities in the service sector for both genders. Currently, though, high costs prohibit the expansion of the telecommunications industry and possible opportunities for creating more jobs in the sector. While the data seems to suggest that boys and men remain more at risk, discrimination against girls and women continues. And even though girls outnumber their male counterparts in tertiary education they still shy away from courses in mathematics, science, and technology. Information and communications technologies are perceived, however, as a powerful tool for changing attitudes, retooling for the workplace, and for addressing some of the challenges currently facing Belize.

3.3 Dominica

Mrs. Frances Harris, Principal of the Dominica Teachers' College delivered the paper for Dominica, noting in her introduction that currently the potential for using information and communications technologies to address the need for more and varied educational programmes remains largely unexplored.

The introduction of ICTs in Dominica has been recent but phenomenal. Because of its late start, however, the country has benefited from the introduction of state-of-the-art telecommunications technology; for example, Dominica is now part of a regional fibre-optic network that provides high bandwidth transmission capabilities within the region and internationally. At the same time, however, challenges at the local level in the use of various technologies at the classroom level include class space, storage, frequent equipment breakdowns, tardy repairs, and the high cost of replacement parts. These factors combine to make the regular use of 'older' technologies marginal. On the flip side, in the past five years the private sector has witnessed a rapid increase in the awareness and use of ICTs. The government, too, has been supportive of moving towards a computer literate society and has introduced concrete measures such as reducing the import duty on computers and gradually placing computers at the disposal of civil servants. The Ministry of Education is also actively encouraging the use of computer technology in schools but faces a prohibitive cost in equipping every school.

Despite these challenges, youth throughout Dominica, both male and female, are increasingly accessing the Internet. Currently, it is estimated that the island boasts approximately 5,000 computers. While users tend to be concentrated in the urban areas (estimates are 65% in Roseau and environs, 20% in Portsmouth, and 35% in the rest of the island), the contrast is not as great as in other Caribbean countries. Indeed, four private 'cybercentres' have been established in Roseau and one in Portsmouth allowing users to access the Internet for a fee. The government has been supportive of these initiatives, introducing a new telecommunications policy in 1999 aimed at liberalising the communications sector by encouraging investment in the sector from all appropriate sources and by adapting an appropriate legal and regulatory framework to ensure this happens. However, there was no specific indication about the provision of telecommunications to deliver education and training nor does the document refer to gender issues.

Compared to other regions in the developing Commonwealth the Caribbean appears to be uniquely different for gender issues and access to educational opportunities. In Dominica this pattern is evident in the predominance of females enrolled in secondary schools and in higher education. Statistics continually indicate that it is men who are marginalised. Common Entrance Examination (CXC) figures for the period 1984-1994 confirm this perception: there is a predominance of females writing, and passing, these exams and thereby gaining entry into secondary schools. Surveys of computer-training programmes also show a predominance of female participants, particularly in the computer-training programme that the Youth Division of the Ministry of Education commenced in 1996, in which 86% of the participants were female. Two reasons for this disparity were given: (1) there was a perception by males that computing skills is a female preserve; and (2) the entry requirement into the programme was a pass in either English or Math and more females possessed those requirements. Mrs. Harris provided other examples of computer-training programmes including her own institution. In each case the number of females outnumbered the males, sometimes as much as five to one. In the area of open and distance learning, the government does not have a stated policy but is committed to supporting relevant initiatives.

Given the strong presence of women in a variety of professions it is difficult to define specific priorities related to training and education. Informal research, however, confirms that where technologies are available women access them far more than do men. Moreover, no obvious barriers to the access of ICTs exist for women. Two of the three private computer-training institutions in Dominica indicate that between 80% and 90% of their clientele are female. And according to the

privately owned 'cybercentre' managers, few men register for computer courses and women appear to use the Internet more.

Given these reverse circumstances, as a matter of urgency, research needs to be undertaken to determine the factors influencing ability and desire, or the lack thereof, to access educational opportunities and related technology. While there is evidence that men own and use computers both at home and in the workplace, more women make use of computer training facilities. Regardless of the circumstances there is an urgent need to remove or minimise the barriers deterring citizens, regardless of gender, from realising their full potential. Indeed, it is expected, and hoped, that as educational opportunities are expanded through the integration of open and distance learning and ICTs that the allure of these new modes of delivery and access will serve as a catalyst to rekindle in males an interest in education.

3.4 Guyana

Ms. Lynette Anderson from the Institute of Distance and Continuing Education at the University of Guyana summarised the current situation in her country. Gathering data through interviews with representatives from key women's organisations she supplemented her primary research with relevant literature and documents.

To provide a context for the study Ms. Anderson described the specific geographical and socio-economic context that currently hinders education providers. A key challenge is the number and small size of many hinterland communities which defy efforts to provide effective face-to-face education making quality secondary education rare and tertiary education even more rare. Women dominate education both in the teaching profession and university graduating classes. Perhaps not surprisingly, women are under-represented in the field of technology — in 1997-1998 the proportion of female graduates from the Faculty of Technology was only 12.8%. Nevertheless, access by women to education is relatively positive. This optimism is not replicated in the employment sector as female unemployment exceeds male unemployment countrywide by 10% and in rural areas by 11%. Gender is not integral to development policies and programmes although the government passed a National Policy on Women in 1996, establishing an inter-Ministerial Committee within the Women's Affairs Bureau to facilitate the mainstreaming of gender in the country's developmental process.

Popular technologies range from low tech to high tech and include radio, audio-cassette, video, and film, with newer ICTs, audioconferencing, and computer technologies being less evident. While no empirical data exists on the use of these technologies, the use of those at the higher end of the scale — both in terms of cost and ease of use — are linked to the urban-rural divide and disparities in economic status. Several women's groups, tertiary institutions, schools, and corporate agencies possess audio-visual technologies, computers, and access to the Internet.

While these technologies could assist Guyana in providing greater access to education in the hinterlands, the cost of establishing institutions to meet the needs of inadequately served hinterland and coastal communities remains prohibitive.

Distance education offerings span primary to tertiary education and are currently provided by several publicly owned institutions. The level of female involvement in these programmes is high because the programmes focus on training for traditional female roles: low-paying, low-status jobs, notably in teacher education, junior supervisory positions in the public sector, and food service. While the providers did not specifically develop programmes aimed at attracting female students, women are the main beneficiaries as distance education is seen to provide an avenue for women to upgrade their knowledge and skills thereby preparing them for upward mobility. Despite these gains distance education programmes for women are currently lacking in specific areas such as science

and technology, entrepreneurship, health, building self-esteem, and accommodating women with special needs.

Barriers to accessing ICTs tend to be similar for both men and women: limited access and availability of information and communications technologies, inadequate infrastructure in some areas of the country and the inherent strengths and weaknesses of various media. As a result, distance education providers have opted for interactive self-study print materials complemented by easy student access to tutorial sites and a minimal disruption of students' daily schedules. Barriers specific to women include the extent of poverty among women and the fact that some ICTs require synchronous contact, a situation that is more likely to place women at a disadvantage given the higher demand on their time and mobility.

Discussions with the facilitators of women's organisations revealed that most women who have access to computers use them primarily or solely for word-processing. This observation reveals that more programmes are required to sensitise women to the potential of information and communications technologies and the provision of training relevant to their needs.
Ms. Anderson concluded from her interviews that the goal of increasing female awareness of the benefits of ICTs is achievable through consciousness raising activities and appropriate training programmes. This goal can be attained through increased access to ICTs and the development and implementation of an appropriate ICTs policy in addition to the initiative of the individual, access to, and the women's ability to pay for training in the non-formal sector. Currently, there is also a consensus that the current public policy is, to a large extent, not working for women. This perception is reinforced by the fact that little or no information is available about relevant telecommunication policies; in practice public policy does not address gender differentials despite the existence of the National Policy on Women; and collaboration between policy-makers is not a reality, even on the inter-Ministerial Committee. Moreover, the telecommunications sector is not liberalised with respect to ownership or access.

In sum, steps to ensure women's access to information and communications technologies have been peripheral to policy-making and development activities in Guyana. To rectify this situation the issue of access to ICTs must be undertaken as part of the general drive to mainstream gender and an articulation of government policy that addresses the key issues of access to ICTs by women.

3.5 Jamaica

Ms. Christine Marrett, Campus Co-ordinator and Head of the Distance Education Unit at the Mona Campus of the University of the West Indies presented the paper on Jamaica.

Ms. Marrett carried out a limited review of documents and relevant literature as well as conducting interviews with administrators of Jamaican distance education programmes that use information and communications technologies.

Jamaica's population is largely young, with a fairly even distribution between genders. Similar to its regional neighbours, the participation rate of females in the education system is higher than for males. As this gender gap is growing UWI's Centre for Gender and Development Studies has been commissioned to investigate the implications of this phenomenon.

Until September 1999, Cable and Wireless Inc. held a monopoly licence for the provision of all telephone services throughout the country. A new agreement, part of a new national telecommunications strategy, must greatly expand the number of available lines within three years and, within eighteen months, install sixty Internet terminals at post offices to allow greater public access. The first such centre opened in July 1999, with three other smaller focal points established in different parishes across the country; three more should be completed shortly.

Distance education activities in Jamaica occur primarily at the tertiary level and are principally print-based although other technologies are being introduced. UWIDEC is the largest provider of distance education in Jamaica and offers a range of programmes through various faculties. UWI is in the process of upgrading its teleconference network with loan and grant funding assistance from the Caribbean Development Bank. It is anticipated that the first phase, which includes the establishment of both linked computer labs and state-of-the-art teleconferencing facilities, will be completed in early 2000. The second phase will involve the establishment of compressed video capability with transmission capability from any one of the three campuses in the region to all sites. In addition to UWIDEC's activities the School of Education is currently offering master's level courses on the Web to teacher educators in teachers' colleges across the country. It is anticipated that all eight courses will eventually be offered on the Web. Students are required to spend their first week on campus during which time an orientation to computer skills and the overall programme is provided.

Two other local institutions are either currently offering or developing a capacity to offer open and distance learning programmes. They are the University of Technology, which caters to students not only from Jamaica but across the region, and the Jamal Foundation Ltd., whose mission is to improve the literacy, numeracy, and life skills of adults through non-formal educational programmes. Interestingly, it is information and communications technologies themselves that have also provided an opportunity for individuals to select an external provider institution with which to link to access their learning, with institutions from both the United States and Canada currently offering a range of courses and programmes. Registrations in these programmes reflect the overall trends in gender participation in education with women largely outnumbering men. The Jamal Foundation also observed that more women than men tended to make use of the computer-based literacy programmes.

In conversations with various programme administrators on the topic of differences in access by men and women to computers responses ranged from 'initially equally incompetent' to 'equally competent', depending on previous exposure to computers. One administrator noted that women without basic computer exposure initially had more difficulty than their counterparts, but that they were eager to learn. Further differences in men's and women's approaches to programmes outside their daily use were noted, particularly that women tend to use the computer only to do what they have to do while men will sit and fiddle with different programmes.

Gender does not appear to be an issue in the use of ICTs in open and distance learning. In 1998, the Ministry of Education formulated a draft policy on the use of ICTs in the education system; it is now under debate. This policy, while not specifically addressing gender issues, does recognise the risk of increasing the knowledge gap and thus pays special attention to issues of access and equity. In addition to the formal measures being introduced by the Ministry, individual schools are implementing their own projects to increase their information and communications technologies infrastructure.

In sum, the intra-regional infrastructure within the Caribbean remains very weak and congestion on the lines often results. The outcome for the user is often an inability to access the Internet. Training programmes for people at all levels and in all sectors are also required. Specific training for faculty who use traditional instructional methods and who find it difficult to devote sufficient time to learn to integrate the new technologies into their instructional design is a further need. And while policy-makers both in government and educational institutions increasingly appreciate the importance of incorporating ICTs into all sectors, progress is slower than may be desired. Further, the issue of gender appears not to focus on women and their ability to access information and communications technologies but rather on the needs of men in the education system in general.

3.6 St. Kitts and Nevis

Ms. Lorna Callender, Head of the OECS Education Reform Unit provided a very brief overview of the situation in St. Kitts and Nevis. Like its neighbours, women dominate the education system in St. Kitts and Nevis: the majority of teachers are women and females academically outperform their male counterparts on local and regional levels. In the field of information and communications technology women dominate the computer literacy classes yet, to date, men continue to dominate the 'technician' level within the industry. The University of the West Indies' School for Continuing Education is the sole provider of education utilising open and distance learning methodologies.

Recently, however, the government has introduced policies aimed at dramatically promoting the introduction of information and communications technologies at all levels of the education system. Secondary and tertiary institutions have taken the lead introducing computer labs. The result is a great need for teacher training in three areas: computer literacy, the use of the computer as a research tool, and the use of the computer to assist learning.

Apart from some in-service training courses for staff very little is being done by the private sector or the Chamber of Commerce to provide training, although some small private computer enterprises have begun to offer classes in computer literacy. Ms. Callender noted that the national efforts are fairly piecemeal and the islands are still searching for the correct approach. These efforts may be helped by the OERU, which has been asked by Ministries of Education from member-states to develop an information technology policy for the region to be adopted or adapted for local use. The first draft of the guidelines has already been submitted and approved, and work is currently underway on a more comprehensive document.

3.7 St. Lucia

Ms. Maria Plummer, Manager of the Information Technology Unit and Ms. Esther Brathwaite, Director, Human Resource Development at the St. Lucian Ministry of Education, Human Resource Development, Youth and Sports jointly wrote and presented this paper, noting immediately that the application of ICTs in education is uncommon in St. Lucia. Indeed, less than five schools nationally are able to provide students with some form of exposure to computer education.

Training through open and distance learning is available only at tertiary institutions and not one employs ICTs for the delivery of open and distance learning programmes. Instead, courses are delivered using print materials, videotape, and, in some instances, CD-ROMs. The Ministry of Education is, however, pursuing the establishment of an accreditation committee responsible for verifying the credibility of foreign institutions offering open and distance learning programmes, the integrity of such programmes, and the validity and quality of assessment. Its main focus in this area will remain at the tertiary level, in addition to adult and continuing education.

While there are no gender-specific priorities in the area of open and distance learning there is a greater participation in open and distance learning programmes by women. To rectify this imbalance one of the long-term objectives of the current national educational plan is to 'rescue' boys who tend to lag behind their female counterparts in academic performance and to attract more men to continuing education programmes.

Assuming that local institutions harnessed information and communications technologies for the delivery of open and distance learning programmes they would face barriers, irrespective of gender, related to cost and to some extent availability, particularly in the rural areas. These barriers would also directly affect the users. To address this situation, the Ministry of Education is embarking on a number of projects aimed at increasing the availability of information and communications technologies for educational purposes throughout the island. They encompass technical and vocation education, the incorporation of information technology into the school curricula at all

levels, and the restructuring of the Adult Education Programme which focuses on literacy and life skills, to deliver instruction via distance.

Specific opportunities for women to upgrade their skills or to enhance their knowledge in this area depend on the organisation for which they work and the function that they perform within the organisation. In general, women receive an opportunity to enhance their knowledge if they work in an area in which computers are conventionally applied extensively such as accounting, secretarial, project management, and planning.

The Ministry of Communications, Works and Transport recently developed a national telecommunications policy. While they sought input from various government sectors, including the Ministry of Education, the public's perception was that the consultation was not broad enough. Moreover, very little follow-up with the public to sensitise them to the policy's contents has been done. Nor were issues of gender and telecommunication policies in the education sector addressed. It is hoped that the OECS Education Reform Unit (OERU), which is in the process of developing a regional information and communications technologies policy for education, will address some of the issues not clearly articulated in the St. Lucian telecommunications policy.

3.8 Trinidad and Tobago

Dr. Olabisi Kuboni, Campus Co-ordinator for the University of the West Indies Distance Education Centre at the St. Augustine campus represented Trinidad and Tobago.

Acknowledging that the paper was less a report on the relationship between gender and access to ICTs because of the recent incorporation of distance education into the general education system and because women are well-represented in higher education, at least according to the enrolment numbers, Dr. Kuboni made three recommendations:

(1) the current drive to establish wide-area networks (WANs) must materialise as must the goal to link UWI with the distance learning institutions;

(2) educational institutions introducing open and distance learning should emphasise internal restructuring as they move towards merging with other institutions; and

(3) policy-makers should be sensitive to the difference between information technology and information and communications technologies, particularly as they begin to implement policies about the role of computers in all levels of education.

Dr. Kuboni began with an historical overview of the provision of education, particularly as related to distance education. She noted that during the 1960s and 1970s, when larger developing countries were establishing infrastructure to support distance education, Trinidad and Tobago was focusing on providing contiguous education for all levels and in all sectors of society. Indeed, it was not until the late 1980s that the education system's capacity and ability to satisfy a new wave of demand was challenged. The key to this challenge was threefold:

(1) the introduction of new telecommunications and computer-networked technologies began gaining prominence within the international education sector;

(2) this increased reach coincided with, and facilitated, the internationalisation of educational provision; and

(3) at the national level workplace demands and a growing need for continuous professional upgrading gave rise to the perception that Trinidad and Tobago's national institutions could not adequately meet the increasing demand.

It is within this context that initiatives aimed at expanding educational provision have recently started to emerge in Trinidad and Tobago.

While foreign institutions have had, and continue to have, a strong presence within the education system, particularly on the delivery side, the University of the West Indies has emerged as the only indigenous institution to engage in the development of distance education programmes in the country. While UWI's Distance Education Centre has upgraded its delivery format in recent years to include the new ICTs, its core remains pre-packaged self-instructional print materials. Thus, while each of the twenty-six sites located in fourteen countries is equipped with one or two audioconference rooms and a ten-station computer laboratory with Internet access (a wide area network is soon to be established), print remains the dominant medium. The fact that UWIDEC has the option of engaging both synchronous and asynchronous communication technologies poses several policy and implementation challenges for the organisation. In the first instance, should both technologies be used to complement one another or should they be used independent of one another? In the second instance, the most appropriate teaching and learning strategies for each type of technology must be identified, particularly in light of its historical context, which saw the persistent use of audioconferencing in remote classroom delivery, coupled with students' apparent demands for lectures.

These issues, indeed the broader issue of integrating ICTs into education, will be tested by the proposed establishment of the College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT), due to be fully operational by September 2000. When fully operational it will bring together seven existing tertiary institutions under a single umbrella organisation. Of special significance is the intent to establish a wide area network linking the seven campuses and thereby developing, or enhancing, their distance learning capabilities. Moreover, the Ministry of Training and Distance Learning has recently established a Distance Learning Secretariat responsible for sourcing distance-based educational and training programmes from various local, regional, and international institutions and for setting up structures to make these programmes widely available throughout the country. A key component of this initiative is the establishment of community-based distance learning centres. Their purpose is to provide residents with the opportunity to access courses of their choice delivered through a variety of mediums. Concurrent with these initiatives is a rising consciousness that the population as a whole needs to be computer literate.

To the extent that tertiary education is available to the broad population, there is a strong indication that women form a substantial portion of those who are able to access this level of education. This pattern repeats in the emerging sector of open and distance learning. Numerically, women are adequately represented as a proportion of the total enrolment in the tertiary sector. Additionally, it appears that women from all socio-economic levels are represented. Part of the reason for this may be a reflection of the type of employment opportunities available to women. There are those who would argue, however, that employers deliberately target and promote women over men for certain sectors of the workplace thereby providing women with a strong motivation to access continuing education. Alternatively, others argue that women are being trained to occupy positions that provide a high degree of visibility but not necessarily an equally high level of authority. Regardless of the outcome, information and communications technologies have not yet been substantially integrated into the provision of education to adequately assess whether women are more disadvantaged than men with respect to access. In essence, two issues are of concern regarding women's participation in further and higher education:

(1) a perception that the nature and purpose of the education women receive to qualify for positions within the workforce may be directly linked to the types of positions they are offered; and

(2) the underdeveloped nature of educational institutions' technological infrastructure constitutes a major barrier to the meaningful participation of women in further and higher education.

In conclusion, steps must be taken within the educational system to harness the capabilities of information and communications technologies for the benefit of all students and, by extension, all of society.

3.9 Discussion following presentation of country reports

Questions and an animated discussion of the issues followed each country presentation. Many papers incorporated the presentation of original research relating to gender differences in access and attitudes towards ICTs within the Caribbean countries. The impact of these differences on open and distance learning was also explored with some papers provoking critical debate.

It became clear over the course of the meeting that although significant differences between countries were important, more important still were key commonalties of experience in relation to gender. It was generally agreed that three informing issues were emerging.

These issues broadened the frame of the sessions, as well as provided a critical edge to the original brief required for the reports (see Appendix 1, point 6.1):

(1) consideration of gender differentials in respect of ICTS should encompass issues for both women and men in the Caribbean context;

(2) women/men cannot be categorised into gender specific, homogenous groupings. Educational experiences and needs vary, depending on social and economic circumstances and country contexts;

(3) ICTs are of themselves only neutral tools. They cannot, nor should they, be considered in isolation from the radically varied purposes, philosophies and contexts for learning which they enable.

3.9.1 Gender Differences

The first of these informing issues provided a thread throughout the meeting. There was widespread agreement that women are taking advantage of new technologies where they are available and at every level of the educational sector. There are no obvious barriers to ICTs use for many groups of women in the Caribbean. At all levels and in all countries the participation rate of females in education outstrips that of men and, where data is available, this includes the use of ICTs either as a focus or means of study, or both. There is greater participation in open and distance learning programmes among women and considerable anecdotal evidence that more women are making use of computer based literacy programmes. Indeed, across all of the islands, long term education plans focus the need to raise the participation levels and academic performance of males to that of females, as well as to attract more men into continuing education.

At the same time, data provided by the Belize report highlighted a further common issue, that while there is high *visibility* for women in information and communications technologies, there is low *authority*. This gender issue remains constant across the Caribbean. In the Ministry of Education in Belize, for example, the higher administrative posts are filled with more males than females and in primary classrooms, even though 70% of the teaching force is female, only 47% hold posts as principals. Men still hold top executive jobs and leadership positions in the school system.

It was generally agreed that since ICTs have the potential both to help raise academic achievement and to promote individual self esteem, the new context should be seen as an opportunity to improve education for both genders in appropriate ways.

3.9.2 Educational Needs Vary According to Gender

Numerous distinctions within gender groupings were made that require further research, for example:

- age was seen to be a barrier to the use of information and communications technologies for some women. Older females were considered in many instances to display attitudinal fear towards this medium. There was some discussion about the potential problems of job losses for older women for example, who feel unable to retrain in the use of information and communications technologies;
- curriculum specific issues were raised. For example many women are ICT-literate but do not participate in areas such as programming, mathematics, science and technology, architecture or software design. There is a continued view that technology means dealing with 'machines' and that this is a 'man's job';
- males continue to dominate in policy/management including those areas relating to access to and deployment of information and communications technologies. By and large policy makers risked either
  - (1) not addressing gender differences to the detriment of the different needs of male and female groups or
  - (2) focusing solely on male under-participation to the detriment of women's development in general;
- rural women — mainly the poor and unemployed — were being left behind in the Caribbean's quest for development. Research indicates that women in general tend to be very clear about their purposes for information and communications technologies use. Where it is not of obvious relevance to their day-to-day experience, it is unlikely to become integrated into their lives. Women in rural communities need to be able to do the kind of training most relevant to their livelihood and to understand the use of ICTs that might support this. It was noted that women also need to be involved in software development, including that which might best relate to indigenous and traditional knowledge;
- as the majority of teachers are women in the Caribbean countries, it is essential that technology appeal to them. How could it be made exciting, the group asked, to ensure they used it well in practice?

3.9.3 Educational policy

It was strongly agreed by all workshop participants that many new technologies are being placed in institutions across the countries of the Caribbean (schools, workplaces, universities, and colleges) on a large scale with

(1) little or no policy informing how they will be deployed;

(2) scant discussion about their potential for improving either educational or working practices;

(3) little if any training for users.

The meeting discussed the need for good educational policy and theory to inform the selection of appropriate technologies for appropriate purposes. One participant likened current practice to bringing a cricket bat into the classroom without ever forming a team. Pedagogical principles were seen to be as essential to the development of open and distance learning courses, school curricula and adult educational programmes delivered through information and communications technologies, as they are to traditional methods. The representative from Trinidad and Tobago urged the distinction to be made between IT and ICTs. Too many policies were ignoring the 'communications' dimension of new technologies, in particular its potential for supporting active learning and collaborative approaches to the educational process.

3.9.4 Taking Technology in Context

The potential of new technologies to support the development of the rural poor was a strong focus of discussion. Participants noted the inequalities of access to ICTs in these areas, exacerbated by the high cost of equipment but also by the cost of maintenance, trouble shooting, replacement parts, software and other essentials often forgotten, such as printing ink, storage facilities, and reliable access to power supplies. It was generally felt that more flexible facilities needed to be developed to provide better access in rural areas. In particular the pooling of resources needed to be explored further, by providing a developmental model based on the local study centre public library system. For example, multi-media resources centres or telecentres could be developed which provide access to ICTs, including teleconferencing equipment linked to central locations.

There was also a need to ensure that successful 'older' technologies be integrated with the newer computer-based technologies. The Islands' diverse geographies and physical conditions need to be kept in view, with combinations of a variety of media including radio and TV, building on available facilities and infrastructures. The setting up of a large centre for use by multiple users, for example, encompassing community radio stations, would reduce costs and allow for ongoing maintenance.

Above all, it was felt that the potential for information and communications technologies in education remained largely unexplored in the Caribbean counties, with some notable experimental exceptions as outlined in the country reports. Educators and policy makers need more training in ICTs and its potential for pedagogy — in how to make informed choices, not merely on the basis of cost but in relation to the most appropriate technologies for particular teaching and learning contexts. Users need to be able to choose to use ICTs or not to use them in an informed way. In particular, the retraining and orientation of teachers and teacher trainers is essential in order that they be assisted in adapting to the new educational environment.

4.0 RECOMMENDATIONS

Because of the time scale it was not possible to develop specific recommendations, although many ideas emerged during the course of the discussion in an informal manner including:

- encouraging educational providers in the region to research and make available information on gender-related challenges and possible solutions in the Caribbean countries;
- making the findings of this meeting widely available through COL and country Web sites;
- making available information about successful projects in information and communications technologies use within open and distance learning;
- building on this initial meeting to encourage regular networking among the countries and the development of common strategies and projects relating to open and distance learning and information and communications technologies;
- support of a Caribbean-wide database of information about open and distance learning and information and communications technologies use including useful software materials; and
- the development of a regional policy on telecommunications and access to information and communications technologies not only for women but also for men. Concurrent with the development of this policy should be research into how to increase the number of males within the education system and specifically within the distance education sector.

4.1 Identification of specific projects

1. *National surveys on the needs of learners, current information and communications technologies provision and the appropriateness of different ICTs for open and distance learning in the Caribbean context.*

The meeting concluded that there was inadequate comprehensive data available on the different needs of women learners, for example, current open and distance learning provision and the technologies used. It would be invaluable for more comprehensive data to be collated including:

- the specific needs of open and distance learning learners, including the unemployed;
- local capacities of open and distance learning providers;
- obstacles faced in accessing open and distance learning and the information and communications technologies used;
- ICTs provision and related costs;
- appropriateness of different ICTs to teaching and learning contexts.

The key objectives of such research would be:

- better understanding of target audiences and their specific needs;
- enhanced knowledge of learning opportunities through ICTs;
- promotion of ideas and plans to support life-long learning in a new educational context.

2. *Regional training workshops for educators, teacher educators and educational policy makers in the use of information and communications technologies to support teaching and learning as well as personal and professional use.*

There was a strong view expressed that educators were widely in need of training in the integration of ICTs into the teaching and learning process. It would be invaluable to bring together educators from across the Caribbean region to receive hands-on training on the range of ICTs available for teaching and learning purposes.

The key objectives of such a workshop would be:

- to raise awareness amongst educators of the potential of ICTs to support teaching and learning;
- to raise awareness amongst educators of the potential for ICTs to enhance the profile and use of science and technology amongst female learners;
- to explore the potential of ICTs to enhance participation and achievement amongst males in the education system;
- to discuss strategies for developing an open and distance learning programme for educators in ICTs and their use in teaching and learning.

3. *Development of pilot media centres.*

The meeting recommended the need for a more flexible approach to the provision of ICTs to enable access for rural communities. It is suggested that some pilot media centres be developed building on existing infrastructures.

4.2 Lessons learned

While a variety of issues were covered both at a country and at a regional level, due to the one-day timeframe there was not enough time to formulate detailed recommendations nor to identify concrete courses of action. Lessons learned for future regional meetings, therefore, include the following:

1. Strive for a balanced meeting, one which looks at the issues, challenges and possible solutions at both the country and the regional levels;
2. Encourage participants to incorporate primary sources of information such as interview data. This would imply the need for enough lead-time for participants to incorporate the time required to conduct this type of research into their regular workload. While more lead-time was provided for participants of this second meeting – approximately three months – to research and write their country reports, all participants still found it difficult to conduct the research and write the paper in addition to their regular workloads. This challenge will probably persist, as the most appropriate authors are practitioners either within the education system itself or within the Ministries of Education. That primary research needs to be conducted also reflects the difficulty in obtaining reliable and up-to-date sources of secondary information and this area remains a relatively unexplored area of research.
3. Increase the number of days allotted for the workshop. One day does not provide enough time to present the methodological framework, the papers and to engage in meaningful dialogue on both challenges and solutions.

4. The mix of practitioners, policy-makers, and Ministry representatives that made up the Caribbean group ensured that a wide range of perspectives was brought to the table. Ensuring such a mix at the next two regional meetings should be seriously considered.

APPENDIX 1

DISTANCE EDUCATION IN COMMONWEALTH COUNTRIES

CARIBBEAN REGION

A Survey on Gender Differentials in Access to Information and Communication Technologies

Compiled by: Ms. Nidhi Tandon
August 14, 1998

Distance Education in Commonwealth Caribbean Countries
A Survey of Gender Differentials in Access to Information and Communication Technologies

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References and Further Reading

Tables:

Annex 1:
International Telecommunication Union, Telecommunication Development Bureau: World Telecommunication Development Conference (WTDC 1998) - Proposal for the adoption of a resolution addressing gender and telecommunications policy in developing countries. March 1998

Annex 2:
Glossary of terms

Introduction

This report is one in a series of four regional surveys of the uses of ICTs in the delivery of distance education programmes in Commonwealth developing countries, and the particular gender considerations around access to these technologies.

While ICT has emerged as a common acronym for Information and Communication Technologies, in fact the range of technologies covered by the term is very much open to interpretation. Technologies are usually defined in terms of their properties and can also be defined in terms of their appropriateness to specific contexts — which implies that the definition of technologies is reflected in their specific contexts and uses. If there are two defining characteristics of ICTs, they are[1]

- the relative strengths of the various technologies (telephones, radios, television, pagers, the Internet) as synchronous and/or asynchronous communications channels and workspaces, and
- the rapid growth of the wireless component (such as wireless phone systems).

For the purposes of this report references to ICTs will focus primarily on the 'new information and communication technologies'. These include the developing technologies of telecommunications, computing and microelectronics and their convergence which has created a range of new possibilities for information collection, manipulation, transmission, storage and presentation and through these possibilities have created a whole new industry in the service of education and training. Current developments in digital communications and the convergence of telecommunications technologies exemplified by international standards such as ISDN[2] make audio, video, graphic and data communication available through an ordinary telephone line on a desk top computer. Older technologies such as television and radio, which are used in innovative ways through their combination with newer devices, are called 'user devices' — these include optical and video disks.

There is a seamless spectrum of communication technologies which are progressively converging and integrating with each other to serve distance education needs — computer mediated communications (CMCs), low lying satellites, radio and television broadcasting, telnet, and technologies using alternative sources of energy. Some of these uses of information technology will be mentioned in the series of reports as examples of the adaptability of the new technological wave of ICTs.

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1 Sam Lanfranco, lanfran@bellanet.org - Senior Program Specialist, Bellanet International Secretariat, Canada, June 1998

2 Integrated Services Digital Network

1 Some Preliminary Notes

1.1 Trends in Education

World-wide demand for education by working adults is growing exponentially, it is being driven by a number of factors including globalisation, the need for continual re-training, and the complexity of employment requirements in the Age of Information.

"In 1997, the 74 business schools in Asia-Pacific ... reported a record 170,000 applications for the 11,000 full time MBA degrees in English that they will award in 1999"[3].

In response to this need, academic and private sector initiatives are burgeoning everywhere to capitalise on the use of communication technologies to link courses and trainers with the largest possible number of students. In most cases, the easiest and most profitable way to do this is to link 'established brand-name' universities with technology firms who then cater for students already in the education pipeline.

The market for education, however, is very large and fragmented with only a fraction of demand for education being met by current educational systems. Within that fraction even less attention is directed towards girls and women. Given its experience and its commitment to a whole range of education and skills development for Commonwealth citizens, The Commonwealth of Learning needs to consider where its own capacities lie in order to address some of the specific needs of people who might otherwise be marginalised by both:

- the new education and information technologies, and
- the course content delivered through this medium.

Women who have been cut off from educational resources in the past have an uncertain future on the Internet. If men continue to dominate the computer labs, access to computer skills and related employment opportunities — which is a likely scenario since men are mostly the gatekeepers — the future of women in the Information Age may suffer. (see Table I: Gender Disparities).

1.2 Telecommunication Policies and Gender Equity - New Resolutions

There now exists substantive documentation addressing the gender policy issues related to the evolving information technologies. Notable amongst these are:

- *Gender Equity, Telecommunication Development and the ITU* (International Telecommunication Union) - submission to the Session on Gender Issues, in conjunction with ITU's WTDC 98, March 23-April 1998, prepared by CIDA and
- *Gender and Telecommunications, an Agenda for Policy* prepared by the United Nations University Institute for New Technologies (UN/INTECH) and the United Nations Development Fund for Women (UNIFEM).

The first paper notes that

"...in order for telecommunications to contribute most effectively to its broader purpose of increasing socio-economic development, the needs and priorities of both women and men have to be taken into account, as well as a recognition of the different, gender-based constraints on access to and benefits from technologies."

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3 Asia Inc.' Sept. 1997 - there were no statistics for proportion of women students.

Table 1: Gender Disparities, 1993

Region	Adult Literacy rate (%)		Gross enrollment rate, all educational levels (%)		Earned income share (%)	
	Female	Male	Female	Male	Female	Male
Sub-Saharan Africa	45.4	64.7	37.2	45.9	35.6	64.4
East Asia and Pacific (a)	71.9	89.1	55.0	61.0	37.5	63.5
South Asia	35.0	61.7	43.2	59.6	23.9	76.1
Latin America and Caribbean	84.2	87.0	68.2	68.9	26.1	73.9

(a) includes all of Southeast Asia, East Asia and the Pacific

Source: UNDP (1996)

Both of these papers were fed into the most recent ITU conference, which held a special session on gender issues and telecommunications. As a result of the gender session the main conference adopted a detailed resolution addressing gender and telecommunications policy in developing countries. A task force will be established within the ITU with representatives from Member States and others including NGOs (see Annex I).

The members of the task force are expected to participate in ITU-Development activities to ensure that a gender equity perspective is included in its policies and work programmes, including human resource development activities, study groups, seminars, conferences, and workshops. Their focus will be two-fold:

- ensuring that the benefits of telecommunications and the emerging Information Society are made available to all women and men in developing countries on a fair and equitable basis,
- encouraging the recruitment, employment, training, and advancement of women throughout the telecommunications field.

1.3 ICTs are no Quick Fix

While the new wave of developments following the evolving information and communication technologies (ICTs) are exciting and hold great potential, the technologies themselves do not present a quick fix to deeply entrenched development problems. ICT tools are important when they serve to overcome physical, material, and technical obstacles to teaching and learning, but in themselves are insufficient as tools aimed at improving the quality of education and its output.

It is sometimes difficult to distinguish between problems that may follow in the wake of a new technology and problems that existed before the technology was introduced. An assessment of access issues that prevent women from using one form of an education delivery system cannot be isolated from an assessment of the overall system that limits women's education opportunities in the first instance. In other words, access to ICTs is only a small aspect of a much deeper and systemic problem around the provision of education to girls and women (see Table 2: Education Trends).

As well, ICTs are just one of the tools of education delivery, the benefits of introducing expensive ICT tools need to be carefully evaluated on a country by country basis. Where it is too expensive to be efficient, then concentration on enhancing current delivery systems is just as, if not more, important in the short term.

As such, this report's focus on the gender differentials to ICT access while important, is narrow and needs to be read with the wider context in mind.

1.4 The Technology is Constantly Evolving

As the Web matures, the technical aspects tend to be far more advanced than what exists on the Net. This suggests that any strategy on the technical capacity building side of things needs to be as far-sighted as possible. As an example, one research survey in Africa found that even during the first year of the survey there was a major migration of subscribers from the former Fidonet nodes toward providers of full Internet access. Within the same year full Internet access, and even competing commercial providers of access, had appeared in two countries, Uganda and Zambia, and were emerging in a third one, Senegal. Originally, the survey had intended to consider exclusively the use of electronic mail through store-and-forward systems. Mid-way through the survey, however, the

Table 2: Education trends

Region	Primary enrollment rate (a)(%) Total		Primary enrollment rate (a)(%) Female		Secondary enrollment rate (%)		Adult Illiteracy
	1965	1992	1965	1992	1965	1992	1995 (%)
Sub-Saharan Africa	41	67	31	60	4	18	43
East Asia and Pacific (b)	88	117	–	113	–	52	17
South Asia	68	94	52	82	24	39	50
Europe	102	99	97	–	45	–	–
Latin America and Caribbean	99	106	97	105	20	45	13
Middle East and North Africa	61	97	43	89	17	56	39

– = not available
(a) for some countries with universal primary education, gross enrollment ratios may exceed 100% because some pupils are younger or oder than the country's standard primary school age.
(b) includes all of Southeast Asia, East Asia and the Pacific
(c) includes Europe and Central Asia for 1992 data.
Source: World Bank (World Development Reports1992, 1995 and 1996)

scene of electronic communications had transformed, electronic mail was now possible with a much more powerful technology, thus transforming the users' experience and possibly their appreciation of the outcomes[4].

Even in a country like Australia, where education institutions recognise the importance of having an information technology plan, it is difficult to keep the plan up to date due to the rapid changes occurring in the technology field[5].

It pays to know what the range in options of technology are — a comprehensive overview of the structure and basic function of telecommunications such as satellite technology, electrical information access networks, telephony, wireless radio, and other multimedia such as television, audio/video reproduction is needed. Particularly important is an update assessment of the availability of basic connectivity through electronic mail. Communities are better equipped then to make an informed choice about which of the options most closely relates to their immediate needs and what options might be open to them in the future.

1.5 Characteristics of ICTs in Developing Countries

At the drawing board level it is expected that the convergence of broadcasting technology with telephony will open up all kinds of opportunities for education development. It is also expected that the benefits of economies of scale in running all types of communications through the same 'pipe' are especially realisable in Commonwealth developing countries where the bulk of the population has still to be wired for television and telephones.

At the ground level, however, the rate of change in ICT development ranges from country to country, with much depending on the supporting infrastructure base. Historically, technological developments have tended to have both positive effects on, say production, in terms of rate of growth and cost reduction, and negative effects through marginalising or excluding whole sections of the population from those benefits. In the case of the information and communication technologies (ICTs) this is particularly true in developing countries because most telecommunications infrastructure or connectivity is inherently urban-biased. For instance, Kampala, the capital city of Uganda has 4% of the nation's population but 60% of the share of all telephone lines. This urban bias especially affects women because they usually constitute the majority in rural areas.

"In a context of large disparities of wealth and access to services — the introduction of new technologies is likely to benefit those who are already privileged and thus deepen the gaps between the haves and have-nots. Access to electricity, phone lines, money and security play a major role in determining who can enjoy the advantages of the new opportunities opened by technology."[6]

The rationale for using educational technologies is different for developed and developing countries. Developed countries have well-established schooling systems and high enrolment levels. They primarily use technologies to improve the effectiveness of teaching and learning, to individually tailor instruction, and to provide specialised education to small groups of learners. In developing

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4 ECA/IDRC ongoing research project: Electronic communications in African development: tracking their impact (1st phase) http://www.bellanet.org/partners/aisi

5 Delaney, Bernadette and Dyson, Chloe. Women: Creating the Connection, Women and Information Technology in the Vocational Education and Training Sector, Dept of Education, Australia. 1998

6 Ran Greemstein — on-line narrative report on ICT and Education, Education Policy Unit. University of Witwatersrand, South Africa, 1997

countries, on the other hand, where good schools are affordable only to the relative few, policy makers seek alternatives that make significant improvements in educational and research effectiveness while at the same time increasing access to education, particularly at the secondary and tertiary levels, at lower cost per student.

The managerial and technical capacity for implementing educational innovations has increased in many developing countries. In addition, the infrastructure necessary for using more sophisticated technologies is steadily being strengthened. Availability of electricity, telecommunications, and computers is generally on the increase. Therefore, in spite of educational and technological differences between low- and high-income areas, the introduction of interactive educational technologies will ultimately become more feasible in developing countries[7]. It is a question of time.

Table 3: Information Technology Access, gives the most recent figures that show the disparities in computer access and Internet connectivity within the regions that this report is concerned about. For example, in the Caribbean, Guyana — a low-income country, has no available data on either Internet service providers (hosts) or estimated users of the Internet. In Trinidad and Tobago, an upper-middle income country, there are fifty-five hosts, just under 2000 Internet users and just under two computers available for every 100 people. Somewhere in between the two countries lies Jamaica, a lower middle income country, which has more hosts per population but only 1600 users.

What these figures show is that developing countries are at very different levels of Internet connectivity and one has to be careful about making generalisations even at a regional level. The figures by themselves probably need to be combined with the socio-economic data of each country to present the actual distribution and spread of computer access. This extends to an analysis of women's access to ICTs, as a middle income country is more likely to have a higher literacy rate and a higher proportion of women taking up education and employment opportunities than a low income country.

In Nattering on the Net, Spender notes that women's marginalisation from the new communication technologies is "less to do with women and more to do with computers" which she argues are the sites of wealth, power and influence[8]. I would suggest that this is probably true to varying degrees in developing countries.

Suffice it to say, that even if we agree that there are very specific gender differences in access to and use of ICTs, these differences will probably be somewhat modified or influenced by national infrastructure and national income levels.

1.6 Aspects of 'Access'

I suggest that there are three aspects to **access**. One is the physical proximity to the technologies, or connectivity — a case of 'you cannot teach them if you cannot reach them'. Then even once women are ideally located to the technologies, they may not be able to use them because they do have the capacity. This implies that women need to be encouraged and trained to use, and to adapt, ICTs for their own purposes — or in the case of telephone and radio use they need to be able to afford to own the technology. The third aspect is about access to affect content, which suggests that women are

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7 Bojana, Boh. Interactive Educational Technologies in Higher Education, ESP Discussion Paper Series, Education and Social Policy Department, The World Bank 1994

8 Spender, Dale. Nattering on the Net - Women, Power and Cyberspace. 1995

Table 3: Information technology access

	INTERNET				Estimated P.C.s	
	Hosts:	Per 1million	Estimated users:		Total (k)	Per 100
	Total 1995	inhabitants	Total 1995	Per 1m. inhab.	1995	inhabitants
Low income countries(a)						
Ghana	6	0.35	60	3.51	20	0.12
India	788	0.85	10000	10.76	1200	0.13
Kenya	17	0.64	200	7.49	18	0.07
Sri Lanka	6	0.33	60	3.27	20	0.11
Uganda	58	3.05	600	31.54	10	0.05
Zambia	69	7.34	800	85.05	....	....
Zimbabwe	93	8.45	900	81.74	33	0.3
Lower Middle Income (b)						
Belize	1	4.63	10	46.3	6	2.78
Fiji	52	66.33	70	89.29	....	....
Jamaica	164	64.95	1600	633.66	....	....
Namibia	11	7.09	110	70.88	....	....
Senegal	6	0.72	60	7.19	60	0.72
Swaziland	1	1.06	10	10.62	....	....
Tonga	1	10.2	10	102.04	....	....
Upper Middle Income						
Antigua & Barbuda	160	2424.24	1500	22727.27	....	....
Barbados	2	7.66	20	76.63	15	5.75
Malaysia	4194	208.39	40000	1987.48	800	3.97
Mauritius	....	....	....	....	36	3.19
South Africa	48277	1164.51	460000	11095.83	1100	2.65
St Lucia	1	6.02	450	2710.84	....	....
Trinidad & Tobago	55	42.15	1960	1501.92	25	1.92
High Income						
Australia	309562	17146.45	1000000	55389.39	4979	27.58
Bahamas	276	989.25	2700	9677.42	....	....
Brunei	156	549.3	834	2936.62	8	2.87
Canada	372891	12595.07	1220000	41207.72	5700	19.25
New Zealand	53610	14923.17	180000	50105.78	800	22.27
Singapore	22769	7623.97	90000	30135.61	515	17.24
United Kingdom	439732	7512.55	1500000	25626.57	10900	18.62

Notes:

(a) No data available for Bangladesh, the Gambia, Guyana, Malawi, Mozambique, Nigeria, Sierra Leone and Togo

(b) No data available for Angola, Botswana, Grenada, PNG, Vanuatu or Western Samoa.

Source: ITU and Internet Society

not just receivers of information and knowledge but are agents of influence and can help change the content delivered by the technologies to make them more culturally or otherwise relevant.

In this report, most of the statistical evidence is only available for the first aspect of access, i.e. connectivity. There are a few anecdotal examples of how women's capacities to use or adapt the technologies are being enhanced. I was not able to find evaluations of women's access to designing course content and left this aspect out altogether.

2 Regional Profile and Growth Trends of ICTs Available for Education Delivery

There can be no question that the education sector is one of the potentially most important beneficiaries of ICTs. The whole area of application of interactive technologies to education, however, is relatively new and still at an experimental/developmental stage. As such, it is difficult to draw any distinctive conclusions or evidence on the growth trends of ICTs in distance education other then to note their growing popularity and adaptability for use in different contexts. It is also evident that where there is research on the use of ICTs in distance education, very little exists on the specific needs or interests of women. COL's initiatives in this area therefore, are timely.

The U.S National Centre for Education Statistics has just released a major survey on Distance Learning in Higher Education in the USA in which it was recorded that 57% of distance education was delivered by two-way interactive video and 52% by one-way pre-recorded video. Only about 25% of the institutions used two-way audio with one way video, and computer-based technologies other than two-way on-line interactions (e.g. the Internet). Three quarters of the institutions surveyed reported that they were planning to offer distance education courses with increased use of computer based technologies in the next three years[9]. This is of relevance to this report because even in North America, where the telecommunications infrastructure 'backbone' is well-established and extensive, ICTs are still the relatively unexplored phenomena in distance education delivery.

The Caribbean region as a whole can boast a well-developed transmission and switching infrastructure which includes a regional fibre optic network providing high bandwidth transmission capability between the islands and the rest of the world. There is also a growing facility of value-added services, which includes the Internet, in all countries. New players in the areas of Internet service provision are penetrating the market and there is a trend towards an increasing amount of public investment in telecommunications which bodes well for distance education delivery in the region through the medium provided by ICTs[10].

The University of the West Indies serves a region covering seventeen Caribbean countries, twelve of which are English speaking with a population of about 6 million, and three of which are 'campus' islands. Its first telecommunications experiment in distance learning began in 1978 with the Satellite Project. A feasibility study had stressed the need for a combined use of print, audio-visual and other media, and gave the priority to interactive rather than broadcast systems. As a result, a system was developed consisting of a telephone link-up between seven countries (including cable, microwave, and satellite transmission systems).

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9 "Distance Education in Higher Education Institutions" by the US Department of Education. 100 page PDF file. Available at: http://nces.ed.gov/pubs98/distance/index.html

10 Thom, Judith: Caribbean Trends in Internet Service Provision Information Technology in Developing Countries, Newsletter of IFIP Working Group 9.4 and Commonwealth Network for Information Technology, January 1997

Each study-centre had a teleconferencing room equipped with microphones, loudspeakers, slow-scan TV (to transmit and receive still images), a telewriter (a substitute for a traditional blackboard, consisting of a pad with a special pen for writing, a microprocessor and a video monitor), and a microcomputer for document transmission. An additional room was provided on each campus for private conversation between students and professors and for examinations. The spectrum of distance learning programs in the project period 1982-1987 included B.Sc. courses in social sciences, in-service teacher training, health and agriculture courses, and programs for the university administration.

The final assessment of the project recognised its success:

- the system reached a larger audience spread over a wider geographical area,
- the performance of distance students was comparable to regular students, and
- the cost per student was only about one-half of the cost for regular students.

Despite its success, several difficulties were identified:

- frequent and frustrating breakdowns of the telecommunication system,
- print materials sometimes arrived too late for the students to prepare in advance for the interactive sessions,
- some students had difficulty working in groups because they could not find transportation to the study centres, and
- a major difficulty cited by students was lack of time for study as travel from remote areas to study centres was very time consuming[11].

At the time of writing the University of the West Indies, supported by the Caribbean Development Bank, expects to link twenty-six university learning centres on fifteen islands, upgrading from analogue to digital, setting up a minimum of ten computers per learning centre, and linking them all into one network. The whole set up is expected to be completed this year in time for the next semester (September 1998). All fifteen islands are non-campus islands, and as well, the Lome IV has committed to a joint university project between the Caribbean, Haiti, and San Dominco to develop seven areas of masters degrees each with a distance learning component accessible over the Web[12] .

The International Council for Adult Education (ICAE) has just secured the finances to conduct a feasibility study on the need for a regional communications centre. This is part of a broader proposal to democratise access to communication (DECADE) in six Caribbean countries, four of which are Commonwealth[13]. It is just a matter of time before the distance education links that do already exist in the region are strengthened and complemented with ICTs which in the words of Allyson Leacock, serve to:

" ... force us to keep up with educational trends while opening up the arena to other students".

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11 Bojana Boh: Interactive Educational Technologies in Higher Education, Education and Social Policy Department, The World Bank ESP Discussion Paper Series, 1997

12 Conversation with Allyson Leacock, Head of Distance Education, Cave Hill, June 1998

13 Conversation with Eva Kupidura, ICAE Resource Centre Co-ordinator. The four Commonwealth Caribbean states are Guyana, Jamaica, St Lucia and St Vincent. June 1998

3 Regional Gender Differences in Access to ICTs, Reasons and Short Term Trends

Understanding the gendered nature of the social, economic, policy and technology systems which frame opportunities for women is key to assessing and promoting women's access to and use of ICTs. Their gendered roles and responsibilities often influence women's needs for information, which in turn affects their use of and response to ICTs.

In most of the English-speaking Caribbean countries there is a higher proportion of women compared to men in tertiary education. A generational transition is taking place with a trend towards a female population that is demonstrating a keener interest in education than the male population. In some instances a proportion of six women to one man have been recorded in a single year's enrolment and the number of women in the first-class honours category is dramatically high[14]. Nonetheless, there is still a tendency for women to keep to socially accepted or peer-group non-technological streams — which could have long term implications for continued gender differences in access to and use of ICTs.

In a recent survey of the Caribbean and Latin America conducted by INSTRAW [15] access to the Internet or other networks did not present difficulties to a majority of the organisations surveyed. Women's groups were even better equipped than the survey average with 62% owning Pentiums. Training is widespread among organisations with on-line access, but the proportion of the staff who received training was frequently low. Women's organisations were more democratic in their computer mediated communications (CMC) training, suggesting that any support they receive will have a greater multiplying effect. They were more than twice as likely as the other respondent organisations to say that all, or nearly all, the staff had received training, even if it came from ordinary co-workers. This may reflect a more horizontal structure among women's groups; at any rate, it suggests that training targeted at women's organisations has a better chance of promoting a multiplying effect among all staff members of the organisations involved.

When only one person was trained in an organisation, it was almost always a woman. This was true even among organisations that do not specialise in gender issues where only one-fifth of all single trainees were male. The actual numbers are too small (thirty single trainees) to draw more than a very tentative conclusion. However, based on additional data, it would appear that women, even if still a minority in cyberspace, are obtaining the training necessary to enter it in greater proportion than men, at least among the organisations surveyed in the Caribbean.

Among fully half the respondent organisations training was the responsibility of the access provider, with a formal training organisation involved in only 8% of the cases, suggesting that gender sensitive training is not widely available. In a quarter of the cases, the second most frequent trainer was the organisation's own technical personnel. While a handful of service providers, such as the APC networks, have attempted to provide gender sensitive training it is unlikely that this is the case among the other trainers.

Women are the primary users of CMC even in mixed-gender organisations. Of these, 38% said that women were the exclusive or leading users of telematics, more than the 35% who claimed equal use by both sexes, and the 17% who claimed men dominate CMC use. In fact, 31% of mixed-gender respondents said women employees are the only ones ever to log in.

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14 Conversation with Ms Allyson Leacock, Head of Distance Education Centre, Cave Hill, June 15, 1998.

15 Hermann Steffen. INSTRAW survey on women uses CMC in Latin America and the Caribbean (1998, unpublished).

In countries where the provision of tertiary education is far from adequate the establishment of distance-learning programmes would benefit female students when mobility and family situations do not allow them to attend courses as full-time students. If the new information technologies are going to be made available through established education institutions, then judging from the above findings, women students will probably use these as much as, if not more than, their male colleagues. What is not certain is whether women will be able to afford to own personal computers at home — and as it is early days yet this is not something we can draw conclusions about at this stage.

4 Barriers to Women's Use of ICTs, Strategies to Redress These

According to the 1997 APC Women's Networking Support Program survey[16] on women's experiences with electronic networking a lack of training and the cost of equipment to get connected rank highest as barriers to women getting on-line. The specific barriers women face vary regionally. Southern participants, for example, listed poor infrastructure, recurring charges for e-mail or Internet usage, and a lack of appropriate training and support systems as barriers they encounter.

Women also identify lack of time and human resources as common barriers. As one woman wrote "in some ways the Internet is a tool for those with lives of leisure." Another recurring theme relates to the issue of one computer and/or one modem per office, which means that competition for existing technology becomes a limiting factor.

In order for women to benefit most from use of ICTs and, therefore, for them to be able to use ICTs to the fullest, the following barriers to women's use of ICTs need to be addressed:

4.1 Access to the Technologies

Apart from the more obvious issue of Internet connectivity to established education institutions, alternative means for enabling women to access the existing information and communication infrastructure are being explored in other parts of the world.

Community Access Points, telecentres, or Multipurpose Information Centres are community focal points to empower historically disadvantaged communities to collect, analyse and share information related to their development needs, typically through the practice of development support. The centres are of particular importance to rural and peri-urban communities who can be empowered to begin communicating with their own environment. Relatively expensive equipment can also be made available to women and their communities through centres visited by students and mobile equipment such as computer bus classrooms[17].

To ensure that these community centres will benefit women, the following factors need to be taken into account:

- availability of women support staff and trainers to help women use the technologies; and

16 The Women's Networking Support Program of the Association for Progressive Communications (APC), 1997. Countries that participated in the survey were Cameroon, Nigeria, Senegal, Tanzania, Zimbabwe, Australia, India, Japan, Malaysia, Philippines, Croatia, Russia Federation, Ukraine, Austria, Belgium, France, Ireland, Italy, Netherlands, Switzerland, UK, Brazil, Colombia, Ecuador, Mexico, Peru, Uruguay, Jordon, Canada and the U.S.

17 UNESCO. Information and communication technologies in development: A UNESCO perspective. 1996

- establishment of information centres within or as part of community locations where women have other tasks or are taking advantage of other resources, such as health centres, libraries, women's NGOs, etc.

A Canadian initiative in Alberta North embraces the concept of 'community access points' or CAPs. Their definition of a CAP is a physical location within a community intended to function as an educational centre for all adult learners in the community. Communities are designated as CAPs through a self-nomination and qualification process, which includes a requirement for a minimum of local financial investment. Following this designation CAPs are eligible to receive a threshold level of equipment (e.g., multimedia PCs with scanners, cameras, desktop video-, audio- and audio graphics conferencing capability) along with a threshold level of telecom services. CAPs will be electronically connected to the seven NAPSIS[18] institutions and to each other so that a wide range of educational programs and services can be delivered to the community.

Plans are to designate several CAP sites each year, up to approximately 150 northern communities over the next few years. During 1996-97, 23 communities have been designated CAPs[19].

In Jamaica, nine university learning centres are based in the rural areas and the trend towards attracting students from these areas is on the rise.

4.2 Cost

Cost issues of ICT access especially affect women. They are generally lower paid than men and often do not have control over their income. Their family responsibilities, such as health and education of children, are the primary priorities for the income they do earn so that often there is little left for other less-immediate needs. Strategies to assist women include:

- training users in these areas and supporting them with equipment and installation subsidies;
- addressing the needs of those without computers through the establishment of shared community telecentres and promotion or support for wireless link alternatives where necessary, promotion of improved interfaces for the non-literate and less educated such as text to voice output, touch screens, webTV, and voice recognition; and
- improvements in existing technologies rather than entirely 'new' technologies that can best be used to meet the needs of learners. For example, the new compressions and digital transmission technologies can give new life to 'traditional' education television by permitting many more channels to be broadcast over a given bandwidth at a much lower cost per channel and, in the case of direct-broadcast satellite, over a wider geographic area.

4.3 Technical Training

Women need to be supported in learning to work with and to feel confident in their ability to use these technologies productively. Capacity building and training are important components in the promotion of information technologies amongst women. The lack of basic computer skills is the first step in discouraging women from using e-mail.

Training in ICTs for women will need to be gender-sensitive and offered by women trainers as much as possible. In addition, relevant training guides, documentation and on-line tutorial software to support trainers have been insufficiently developed.

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18 Northern Alberta Post-Secondary Institutions Society

19 W. Leigh Hill, Alberta North: Enhancing Adult Distance Learning Opportunities

To facilitate the adoption of computer communication technologies the APC survey respondents anticipated different kinds of training needs. In addition to basic training, many respondents called for customised training in information facilitation skills, building and maintaining Web sites or bulletin boards, HTML design and programming, setting up and running mailing lists, and exploring other (and new) Internet tools and resources. Technical training for trouble-shooting was also raised, particularly from women in the South.

4.4 Infrastructural Barriers

The high price of Internet services in most developing countries coupled with the absence of local dial access outside almost all of the capital cities severely limits access for the bulk of those with computers.

In some cases, because of saturated public telephone exchanges, the difficulty in obtaining large numbers of local telephone lines to maintain the desired ratio of ten to fifteen users per modem has limited the accessibility of ISPs during periods of peak demand as all the available dialling lines quickly become occupied. In the same fashion, users requiring telephone lines to access the Internet have faced problems in obtaining new telephone lines. That is why there is some argument to be made for alternatives to telephone lines. Some have suggested the equivalent of the existing community radio stations in Latin America, which are collective, independent and service-oriented. The model for the future community Internet could be based on radio more than on telephone.

5 How and Why Women are Using ICTs, with Particular Reference to Electronic Communications

5.1 What Existing Research Shows

According to the APC surveys' initial findings women are increasingly active in using electronic communications, and many tools such as e-mail have become a routine part of their day-to-day communications activity. Increasingly, women are experimenting with on-line conferences, mailing lists and web sites. At the same time, the survey showed that women continue to face barriers in using the information superhighway, such as lack of training and the high cost of equipment and, in some places, getting connected.

Networking has been recognised by female scholars as a tool for women's empowerment and women have taken to the Net to create a 'cyberspace of their own'. In many places, women writers, editors, news directors, and lobbyists are not only surfing the Net, but have become active in establishing numerous World Wide Web sites of special interest to women. Women's sites cover subjects such as gender and sexuality, feminism, women's health, women in computer science, engineering, women's studies, women in academia, and women in industry.

Research carried out for the UN Division for the Advancement of Women (DAW) found that women face two particular challenges in their use of computer networks. The first is to master access tools so they can make the best use of ICTs. The second is to use the new Internet publishing tools to develop their own publishing and media activities on the networks as paradigms of gender-sensitive media products.

5.2 Particular Advantages of ICT use for Women Distance Learners

Until the advent of telecommunications technologies, distance educators were hard-pressed to provide for two-way real time interaction. With the development of synchronous (two-way, real time interactive technologies) such as audio teleconferencing, audio graphics conferencing and video conferencing it became possible to link learners and instructors who were geographically apart.

Now the asynchronous (time-delayed) feature of computer-mediated communications (CMC) offers more advantages in that the CMC class is open 24-hours a day to accommodate the time schedules of distance learners. Any technology that offers flexibility in location and in time allocation tends to be woman-friendly.

CMC systems provide an important medium for facilitating co-operative group work among distance learners. This seems to fit in well with the ways in which women learn. As well, CMC systems arguably provide simple on-line training along with accessible and easy sources of trouble shooting. Through differentiation, specificity, and better learner and teacher control, ICTs should be able to accommodate or be adapted to meet the individual needs of most users.

5.3 Existing Data on ICTs Being Used for Distance Education

Given that distance education is expected to take off with the advent of the new ICTs, it is surprising how little data there is on the trends and future of ICT use as a medium of education delivery. Most of the available detailed information on distance education development trends is from the U.S.[20]. Even less available are statistics on how many women are accessing education programmes through ICTs.

The Satellite Telecommunications Educational Programming (STEP) network [21], a division of Educational Service District 101 in Spokane, Washington, was developed to provide equal learning opportunities for all students regardless of geographic location or educational resources. In 1990, STEP joined with state education agencies from Alaska, Idaho, Montana, Oregon, and Washington to form the Pacific Northwest Star Schools partnership to provide distance education services to the five-state region. Using federal funds, STEP enhances and expands distance learning in a region connected by culture and economy. The programme offers telecast courses on a wide range of topics including foreign languages, mathematics, and science in support of federal policy initiatives. Distance education is provided to approximately 500 schools serving some 6,000 students in middle and high school in the five states. Participating schools receive start-up equipment (e.g., satellite dishes, computers, modems, and scanners) through federal funding. A majority (90%) of the participating schools are located in rural areas. The average programme site is approximately 80 miles from the nearest university or college. A survey conducted in 1994 indicated that a predominant majority (72%) of the STEP /Star students were in high school grades, and there were slightly more female students (57%) than male students (43%).

Certainly in developing countries there needs to be more gendered needs assessment and more statistics tracking on the numbers of women learners coming through distance education programmes.

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20 As in US Department of Education 1998 survey, op. cit

21 Kim O. Yap. Distance Education in the Pacific Northwest: Program Benefits and Implementation Barriers, Northwest Regional Educational Laboratory (NWREL) 1997

6. Questions that Country Reports Need to Cover: National Issues[22]

6.1 Impact of ICTs on Distance Learning - a Gendered Status Report

- Is there any education or training provided through open/distance learning (ODL) in the country? If yes, generally at what levels and provided by which institutions? Is the ODL education/training provided by publicly or privately owned institutions?
- What are the present national priorities in ODL and the resulting implications for women in this regard? (levels of training, subject-areas, skill training, delivery modes, etc.)
- What might be the priorities with respect to the needs of women?
- Are the new ICTs being used for the delivery of, or for, supplementary purposes for ODL? If for supplementary purposes, in approximately what proportion in terms of the overall delivery? If ICTs are being used, identify which ones.
- What local institutions have access to ICTs which might be applicable to ODL? (schools, clinics, chambers of commerce, churches, etc.) To what extent are these institutions supportive of ODL?
- Is there data available that indicates how many women distance learners register and complete programmes by ODL? Is there data available showing how many learners use ICTs in ODL and what proportion of these are women?

6.2 Widening Women's Access to ICTs for Education Purposes

- Are there barriers encountered by women and girls to the access of ICTs for ODL? If yes, what are these barriers? Have there been any initiatives or strategies put in place in an attempt to overcome these barriers? If yes, what are these?
- Does the increased availability and use of the new ICTs impact on women teachers, instructors, tutors, etc.? If yes, in what ways?

Recognising that access to computers remains beyond the means of certain areas and certain marginalised people :

- What are the best practices or examples where ICTs have been found to be useful, particularly in reaching out to women and to those who have difficulty accessing education?
- With particular regard to rural women and girls, what are the implications with respect to the increased used of ICT s to deliver education and training?

As the user-profile of the new technologies continues to be dominated by men and persons with higher education and income:

- Are there particular programmes that could be developed to support training of women in the use of the new ICTs?
- Are there ways to ensure that women are not further disadvantaged or marginalised?
- In identifying the socio-cultural constraints that prevent women from accessing education programmes, note:

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22 The questions that follow are compiled from Cavanagh, C: Adult Learning, Media, Culture and New Information and Communication Technologies, CONFINTEA, Fifth International Conference on Adult Education, July 1997 and from a series of questions posed to the Global Knowledge in June 1997 by the Independent Committee on Women and Global Knowledge. They are not comprehensive but are meant to guide country report authors on the kinds of issues / information that might be relevant.

- special features of women students
- affordability and time issues
- physical location (in relation to educational institutions, etc.)
- attitudes
- skills and literacy

- Are there ways in which the increasing power, accessibility and decreasing costs of the technologies can assist women to overcome these constraints?
- If so, how can ODL programmes ensure that women's needs are being met, using the capacities of the new technologies?
- Can problems of illiteracy be overcome using these new information delivery systems? If yes, in what ways?

6.3 Training and Capacity Building

- Are there ways in which women's and girls' awareness of the potential benefits of ICTs and their confidence in their ability to use them can be increased?
- Do working women have the opportunity to enhance or upgrade their skills, knowledge and access to ICTs? If yes, in what positions, careers, professions, etc?
- Are there existing examples of initiatives to build capacity through ODL programmes, such as:
  - development of courses and programmes which use gender sensitive training methodologies, materials and language?
  - learner support that particularly encourages interaction between learners, and between learners and tutors?
- How can ICTs contribute to three chief concerns for women as defined by the Platform for Action of the Fourth UN World Conference on Women:
  - education and appropriate technical training;
  - school curricula that encourage girls to enter technology and science related areas; and
  - support of women organising and mobilising for empowerment?

6.4 Is Public Policy Working for Women?

- Is there an understanding of what national telecom policies might comprise? What are the implications of the liberalisation of the telecommunications sector?
- What are the national (telecommunication) policies in the education section? on distance education? How do these policies address the issue of technologies for ODL?
- Does public policy address gender differentials in the education sector? What are the opportunities offered by ICT policy to address gender differentials in the education sector?
- Do education and telecommunication policy makers collaborate to support women's use of ICTs? Do current policies enhance and build on each other's objectives? If not, how can this be changed?
- Are the national policy makers aware of the latest International Telecommunication Union resolutions on gender and development in the telecommunications sector?

7 Questions that Regional Meetings Need to Address: the Wider Issues

In addition to the questions covered in the national reports, regional issues should include:

7.1 Infrastructural Framework

- What is the current technological infrastructure that delivers education in the region?
- Does the current system integrate different levels of education, formal and non-formal, and different academic institutions? If not, why not?
- Which is the most Internet-connected country in the region, which is the least? What bearing, if any, does this have on access issues for women?

7.2 Regional Integration

- How are distance education projects co-ordinated at the regional level?
- What mechanisms are in place to ensure circulation of existing country studies and research to provide more detailed information for determining distance learning needs and strategies in the region?

7.3 Potential of ICTs in the Region

- What proportion of current distance education programme content is developed within the region? What proportion is developed outside the region?
- What kind of partnerships can be established between educational institutions to support the evolution of these new technologies?
- Has there been any evaluation of the successes, failures and effectiveness of general distance learning initiatives in the region? How might ICTs build on current successes through extending reach?
- What are the key differences between countries in the region, in terms of need for distance education programmes, particular needs of women, rural and urban differences, etc? How might regional distance education programmes bridge these differences?

8 Some Key Web Site References

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APPENDIX 4

Caribbean Regional Meeting
on Barriers to Information and Communications Technologies
Encountered by Women

Country Reports

4.1 A COUNTRY REPORT FROM BARBADOS

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INTRODUCTION

This report has been prepared in response to a request by The Commonwealth of Learning to gather information in the following areas, with special reference to Barbados:

(1) the impact of information and communications technologies on distance learning;
(2) widening women's access to information and communications technologies for education purposes;
(3) training and capacity building; and
(4) whether public policy is working for women.

Open and distance learning is not a new idea. Its earliest form, correspondence courses, continued in Barbados until about the 1950s when instructional radio and television became popular. Teachers, though expert in the classroom, were not necessarily the best presenters for television and radio. Another serious drawback, these technologies did not allow two-way communication between students and faculty. The 'interconnectivity' of teacher and learner is the major difference between the 'correspondence courses' of yesteryear and the 'modern technologies' of today. Learners who currently access distance education are exposed to several forms of modern technology and the interconnectivity of the faculty.

Before discussing the issues at hand an attempt will be made to define some of the key terms used. 'Information and communications technologies' (ICTs) includes a wide range of media such as television, telephone, radio, pager, and computer-based communication using the Internet and e-mail.

"Open and distance learning", according to Sherry (1996, 339), may be defined as the "volitional control of learning by the student rather than the distant instructor." Citing Keegan (1986) and Garrison and Shale (1987), Sherry observes that distance learning may be defined as "non-contiguous communication between student and teacher, mediated by print or some form of technology".

Barbados, the most easterly of the Caribbean islands, occupies a mere 432 square kilometres. However, the island boasts excellent infrastructure and relatively flat topography. In addition, the female population is larger than the male population.

IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES ON DISTANCE LEARNING

In order to address gender and technology issues in Barbados interviews were conducted with key personnel who are directly involved in distance education.

Survey respondents indicate that education and training in Barbados are provided through open and distance learning, mainly by publicly owned tertiary institutions. Programmes are offered at both the certificate and the full degree level. Local institutions include the University of the West Indies (UWI), Erdiston College, and Barbados Community College, while overseas-based universities include Herriot-Watt and Leicestershire.

The present areas of national priority for training are Human Resource Development and Education and Management. The general consensus is that the implications for women are rather positive. One respondent said, "Any educational initiative in Barbados is benefiting more women than men."

Another notes, "Distance education provides the opportunity for women to connect to a wider group of people, study at convenient times and study and move up in their profession without leaving their families and jobs."

In Barbados women are quite notably interested in furthering their education. One Information Technology tutor observes that, of the three groups registered for that programme, two have enrolled more women than men as shown in Table 1.

TABLE 1
Information Technology Programme Enrolment

	Males	Females	Total
Course 1	16	17	33
Course 2	16	18	34
Course 3	17	12	29

For women in Barbados there are no specific priorities for gender equality in access to education. In fact, one respondent noted that the level of training is the same as for men.

In distance education programmes at the University of the West Indies learners receive a package of self-instructional print materials, including readings and student guide. Local tutorial sessions and a course co-ordinator are also provided. The technology continues to evolve and is currently used for supplementary purposes with about 8% of the course material currently supplemented with new technologies, specifically computers and audio-conferencing, although efforts are being made to put video-conferencing in place.

In Barbados the women outnumber the men in the area of distance education as well as in other courses at the university, so much so that this is currently an area concern on the island. At the 1999 graduation ceremony at the Cave Hill campus of the University of the West Indies, the Chancellor noted revealing statistics: of the 286 persons presented for graduation in the Faculty of Social Science, 193 were female. In the Faculty of Natural Sciences there were 51 male and 64 female graduates.

In the eight distance education programmes being offered during the 1999-2000 academic year enrolment figures show that 841 women are registered, compared with 213 men. Even the Statistics programme, one that would previously have been considered 'male dominated', enrolled thirty-five female students and only nine male students. Therefore, more women than men are using the technologies to access distance education.

WIDENING WOMEN'S ACCESS TO INFORMATION AND COMMUNICATIONS TECHNOLOGIES FOR EDUCATION PURPOSES

One barrier for women to the access of information and communications technologies for open and distance learning is lack of equipment. In Barbados the government has embarked on an Education Enhancement Sector Programme (commonly referred to as 'EduTech 2000'), which seeks to equip all public primary and secondary schools over a seven-year period with different technologies. However, women face no policy barriers to access. Barbados operates on an 'open system' in which men and women have access to education at all levels. Surely, in Barbados, female teachers, tutors, and instructors are already using the available technologies and these will enhance the delivery of their programmes.

For purposes of this discussion, given the size of the island and its infrastructural development, Barbados cannot be deemed to have rural and urban areas which are linked to inaccessibility of education, marginalisation, or both. Consequently, education is not inaccessible because of one's place of residence. One of the special features that could affect female students is attending a late class and

living some distance away from the campus. A respondent notes, however, "that there were more shoot-outs involving men recently, than there were rapes involving women". The new information delivery systems can help to overcome problems of illiteracy, particularly when they are used with children. For example, a person can access software that meets the learner at his or her individual level and takes him or her through graduated exercises that deal with the individual's deficiencies.

TRAINING AND CAPACITY BUILDING

In Barbados working women do have the opportunity to enhance or upgrade their skills, knowledge, and access to information and communications technologies. Courses for personal and professional development are available at several centres across the island. Principals, teachers, secretaries, store clerks, and office workers all have equal access. The government currently subsidises continuing education programmes at three secondary schools across the island, which also provide access for school drop-outs and other members of the community.

Gender sensitive training methodologies, materials, and language are currently in use in the distance learning programmes. In addition, a learner support mechanism also exists between tutors and learners and learners and other learners. Information and communications technologies can contribute to education and appropriate technical training by exposing children to the technologies at an early age, helping to remove 'technophobia'.

Again, information and communications technologies also have a role to play in encouraging Barbadian girls to enter science and technology-related areas. Girls need to become more involved in these curriculum areas. With the advent of computer-assisted learning packages, girls would be afforded the opportunity to work at their own rate, engage in drill and practice, and hone their computer skills so as to improve the overall standard of their performance in these areas. Women are generally organised and mobilised for empowerment through the several women's groups operating in the society. A greater use and understanding of information and communications technologies can only serve to enhance their function.

IS PUBLIC POLICY WORKING FOR WOMEN?

Gathering data on public policy has proven to be somewhat challenging. Not as clearly articulated as some areas, the notion of open and distance learning is still evolving. What can be said in this regard, however, is that no policies in Barbados seek to discriminate against anyone on the basis of gender. Therefore, it would be reasonable to conclude that any existing or planned national telecommunications policies would seek to enhance the quality of life for all the citizens of this country.

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4.2 A COUNTRY REPORT FROM BELIZE

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INTRODUCTION

Within the past five years in Belize there has been a growing awareness of the significance of information and communications technologies (ICTs) and their potential for education and economic development. As a result, we have seen an increase in both the establishment of computer services and agencies and the number of computers and other forms of information and communications technologies used in schools. Many of the secondary and almost all of the tertiary institutions now require students to complete computer literacy courses as part of their graduation requirement.

Government and private sector agencies are also setting up management information systems to facilitate more effective and efficient systems of data management and communications. Although the potential and power of information and communications technologies in education are recognised, the development of programmes and courses to meet the new demands brought by developments in the workplace has been slow. Additionally, open and distance learning and, more specifically, the use of information and communications technologies in open and distance learning have not been fully embraced as instructional tools and as a means of reaching people at the margins of society.

DATA COLLECTION METHODOLOGY

The data for this report was collected through interviews, a survey of tertiary level institutions, and a document review. A survey of the tertiary institutions was taken to determine whether courses in information technology are offered and the extent to which information and communications technologies are used to support open and distance learning. A number of persons in key areas related to women or to information technology and open and distance learning were interviewed to determine what policies and programmes exist regarding ICTs and what opportunities are available for women. A number of documents were reviewed to glean findings from research or recently conducted surveys.

BELIZE IN CONTEXT

Location, People, and Economy

Belize is a young nation that gained Independence from Britain in 1981 and is the only English-speaking country on the Central American mainland. It is bounded on the north and northwest by Mexico, on the east by the Caribbean Sea, and on the west and southwest by Guatemala. The country is sparsely populated, with a land mass of 22,000 square kilometres, and a population that has grown from 185,970 in the 1991 census to an estimated 230,000 in 1997 (Central Statistical Office, Abstract of Statistics, 1998-1999). The growth in population can be attributed in part to the influx of Central American and other immigrants in the 1980s and 1990s. Belize also boasts a mix of many ethnic groups, with no less than five other languages or dialects spoken. Traditionally, the country's economy is based on agricultural exports, however, tourism is fast becoming the number one foreign exchange earner.

Education System

Belize's education system offers eight years of primary and four years of secondary schooling. Primary education is compulsory for children age five to fourteen years. In 1998-1999, 54,616 pupils were enrolled in 249 government or grant-aided primary schools, 172 of which were in rural areas and 125 of which were multi-grade schools. At the primary level, 2,064 teachers yield a pupil-to-teacher ratio of 26:1. Seventy percent (70%) of primary school teachers are female and 62% are professionally certified. See Appendix 1 for other enrolment data.

At the secondary level, 33 schools enrol a total of 11,720 students. There were 754 secondary school teachers, with only 241 or 31.9% having graduated with professional training. The pupil-to-teacher ratio at the secondary level is also comparatively low, at 16:1. The transition rate from primary to secondary was quoted at 81%.

Belize's expenditure on education is high compared with other countries in the region. Expenditure on education is 29% of government's recurrent budget and 21% of the total annual budget. This level of expenditure is also relatively high, at 6% of the gross domestic product, with 60% of the education budget spent on primary education, 24%, on secondary education, and 8%, on tertiary education. The government pays 100% of primary teachers' salaries and 70% of secondary teachers' salaries.

OPEN DISTANCE LEARNING POLICIES AND PRIORITIES

As far as the survey and interviews could determine, only two institutions in the country offer training through open and distance learning — the Belize Teachers' College (BTC) and the University of the West Indies (UWI) School of Continuing Studies.

Belize Primary Education Development Project

The Belize Teachers' College is fully funded by the government of Belize and offers training for primary school teachers. The college receives accreditation from the Joint Board of Teacher Education, with offices at the Mona campus of the University of the West Indies in Jamaica. The BTC currently offers a three-year Certificate with School Experience programme, which is pursued through two levels of training. The first level can be completed through full-time or part-time study using distance learning methods. The full-time programme is normally completed in two fifteen-week semesters and a four- to six-week summer of full-time intramural studies. The part-time distance education programme, which is mainly print based and was introduced in 1994 under the Belize Primary Education Development Project, is normally completed in two and a half years. The second level of training is completed mainly through full-time intramural studies.

One of the major objectives of the Belize Primary Education Development Project was to increase the percentage of professionally qualified primary school teachers in the system. At the time of its implementation only 45% of primary school teachers were professionally certified. At the completion of the project in June 1999, this number had increased to 62%. The programme continues to operate even though project funding has ended. The goal is to reach 100% professionally qualified primary teachers within the next five years through further funding negotiated from the World Bank and DFID. Since teachers at the primary school level are predominantly female , a large number of women have been able to upgrade their skills though this programme. Four groups totalling 458 teachers (of whom 70% are female) have been admitted to the first level distance education programme since 1994. Two groups have completed the training cycle, graduating 109 teachers, 64% of whom are women.

Under the Belize Primary Education Development Project, education centres were constructed in the six districts of Belize. These centres serve as the headquarters of the Ministry of Education in the districts, a resource centre for teachers, and the centre through which Belize Teachers' College's

distance education programme operates. Plans are underway to establish a network of these centres with the Ministry of Education and Sports for electronic communications and data management. At the moment, the education centres are connected through an audioconferencing unit that was donated by The Commonwealth of Learning and installed at the Belize Teachers' College about three years ago. The unit is used to support the BTC's distance education programme, mainly by providing an opportunity for guest lectures as well as communication from the centre and across the six districts in Belize. The conferencing equipment was not functioning for more than one year because of damage from a power surge. However, the unit has just been repaired and is now again being used for audioconferencing.

Metropolitan Community College from Omaha, Nebraska added a new dimension to the use of audioconferencing unit a few months ago. They have recently obtained permission from the Ministry of Education to use the audioconferencing bridges at the Belize Teachers' College to facilitate satellite transmission of courses from Metropolitan Community College. The system utilises the audioconferencing connection made possible through a local cable company in conjunction with satellite transmission from Metropolitan Community College, which is by one-way video and two-way audio connections. This audioconference connection links five tertiary level institutions in Belize City; Metropolitan Community College is currently holding discussions with the five institutions to determine their specific needs and the types of courses that can be transmitted. The audioconference connection is a potentially powerful means of course delivery, communication, and information sharing. At the moment, however, the impetus is mainly from Metropolitan Community College. The local institutions involved need to see the benefits that can be derived and maximise the use of the available technology.

University of the West Indies Distance Education Centre

The University of the West Indies School of Continuing Studies is an off-campus centre of the Mona campus of the University of the West Indies. The centre is privately managed and offers courses mainly for adult learners through face-to-face and distance learning. The UWI School of Continuing Studies recently added a new wing to house the University of the West Indies Distance Education Centre (UWIDEC), which is equipped with facilities for a computer room and a room for audioconferencing transmission. UWIDEC currently offers distance courses leading to a Certificate in Public Administration, Certificate in Business Administration, Bachelor of Science in Management Studies, and Certificate in Education (Management and Supervision, Literacy Studies, Social Studies, and Mathematics) (see Appendix 2). With thirty-five women in a class of forty-three students enrolled for 1999–2000, it can be assumed that a large percentage of the graduates are female [UWI School of Continuing Studies at Belize Annual Report (1996–1997, 1997–1998)], although the data in the reports reviewed did not clearly identify the gender of graduates.

POTENTIAL DEVELOPMENT OF OPEN AND DISTANCE LEARNING

From the interviews and discussions held there are no stated policies or priorities for open and distance learning in Belize. However, areas under development have strong potential to provide open and distance learning.

Centres for Employment Training

In fulfilment of one of its manifesto promises the government is establishing Centres for Employment Training in each of the six districts of Belize. These centres focus on the following:

- outreach to adult learners, underprivileged youth, and secondary school drop-outs;
- upgrading and training for industrial workers; and
- providing specialised courses for secondary vocational students.

The training provided in these centres is short-term and individualised, competency-based, and modularised to provide for flexibility. Two centres have already been established — one in Belize City and the other in the Cayo District. To prepare teachers for the additional soon-to-be-constructed centres the Ministry of Education is reviewing a programme for the professional development of vocational technical teachers. In Belize, stereotyping of the role of women in vocational and technical areas exists to some degree so that few women are found teaching in vocational and technical schools. Consequently, the Ministry of Education has identified a group of local professionals and made them responsible for both examining materials from a training programme that uses open and distance learning methods, successfully developed and piloted in Jamaica, and for suggesting adaptations for their use in Belize. The Belize Teachers' College facilities are being considered as the base for the transmission of this programme to the districts.

Secondary School Network

In another manifesto promise, government pledged to support the establishment of information technology programmes in every secondary school and to assist with the development of computer-based teaching and learning programmes in select primary schools. A network of secondary schools would not only strengthen the opportunities for communication, it would also provide a medium for information sharing among students, teachers, and administrators. It would also be a powerful tool for the sharing of expertise with schools in disadvantaged areas and with schools that have limited financial resources.

Literacy Programmes

The Ministry of Education launched a literacy programme in August 1999 to address the literacy and numeracy needs of adults and out-of-school youths. The programme also offered tutoring for the many recent immigrants who are learning English as a second language. A training of trainers approach was used to deliver the programme, with the primary mode of instruction being face-to-face delivery. The potential for use of open and distance learning methodologies in addressing literacy and numeracy needs is recognised; however, without training in open and distance learning methods and the establishment of policies, the full benefits of open and distance learning will not be realised for programmes like these. Some years ago radio was used as a primary means of information sharing. The potential for use of radio still exists since many of the people who are most in need of training live in rural areas. With the increase in the number of radio stations, locally and nationally, literacy programmes by radio can be re-introduced through live or taped broadcasts. The increase in the number of cable and television broadcast stations can also enhance the delivery of such programmes.

Priorities for the Development of Women and Youth

In an attempt to address the specific needs of women the Department of Women's Affairs in the Ministry of Human Development, Women and Youth identified the following priorities, which they believe can be addressed through open and distance learning:

- improving reproductive health;
- increasing economic empowerment;

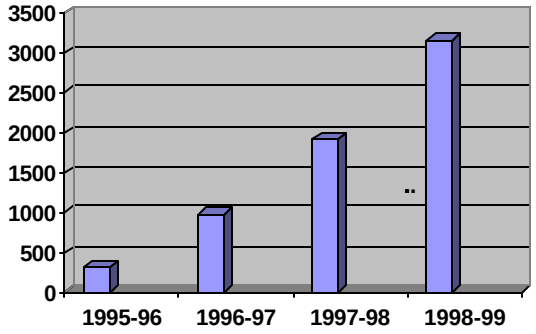
- reducing domestic violence;
- eliminating sexual harassment;
- encouraging women in decision-making positions; and
- increasing education in non-traditional areas of employment.

If collaborative use of the facilities at BTC, UWI, and the Ministry of Education Literacy Programme can be realised the opportunities for expansion of programmes and for the delivery of courses to a wide cross-section of the population through open and distance learning and ITCs can be broadened. With inter-ministerial co-operation and collaboration among institutions that have facilities for open and distance learning, along with technical assistance in course development, some of these priority areas can be addressed through open and distance learning.

ACCESS TO INFORMATION AND COMMUNICATIONS TECHNOLOGIES

Internet Access

Within the past four years growth in telecommunications services and in the use of computers has been significant in Belize. In their 1998-1999 annual report, Belize Telecommunications Limited (BTL) recorded a significant growth in the number of subscribers who have access to the Internet (see the following chart). The number of subscribers grew from 308 users in 1995-1996 to 3,157 users in 1998-1999.



Subscribers to the Belize Telecommunications Limited's Internet Link from 1995 to 1999

Belize Telecommunications Limited currently holds a monopoly on telecommunications services in the country, and they are also the sole provider of Internet service. The high cost of telecommunications services (in comparison with some neighbouring countries) has created severe limitations on both the public and private sector to the point that the high cost of Internet service has prohibited many individuals, businesses, and schools from connecting. In recognition of this, Belize Telecommunications Limited has implemented a School Assistance Programme that provides free twenty-four-hour access to the Internet for secondary and tertiary schools. Sixteen secondary and tertiary schools now benefit from the scheme.

There has also been a significant increase in telephone services and in the number of radio and cable television stations, mainly evident in the local municipalities. Appendix 3 shows the number of these

services that are currently available. The expansion in these services makes the provision of open and distance learning potentially viable.

Available Information and Communications Technologies Courses

The use of computers and other forms of information and communications technologies in the workplace and in schools has also increased significantly in Belize over the past five years. To meet the demands for training, a number of private sector firms have been providing short-term training for adults and out-of-school youths who are seeking jobs. These training programmes are usually quite expensive so access is limited to those who can afford them. Because most of these training centres are located in district towns access to those in rural villages is also limited. Opportunities for under-privileged women, rural women, and women with families are also limited given the cost, the time when courses scheduled, and child care problems. Recognising this limitation, the Department of Women's Affairs now offers computer-training classes for unemployed women, most of whom are not high school graduates. The course is offered three times per week in Belize City and is scheduled at a time that is convenient to women who have limited time to attend these courses. A small fee is charged to supplement the government subvention. The programme also offers the opportunity for job placements.

While the out-of-school youth and adults rely mainly on these training centres, the curricula of most tertiary and secondary schools now include information technology courses and all students are required to complete at least one course in that subject. As well, all but one of the tertiary level institutions surveyed offer courses in information technology and they all have access to the Internet. In fact, all but two of the institutions that responded to the survey questionnaire have computers available for student use and are connected to the Internet (see Appendix 4 for a summary of the results of the survey). Except for the Belize Teachers' College and the UWI School of Continuing Studies, however, none of the other tertiary institutions use open and distance learning as a means of instruction. Results from the survey and interviews show that information technology is seen mainly as a course to be offered and not necessarily as a tool for instruction. Even within the institutions that offer open and distance learning courses there is limited use of information and communications technologies for open and distance learning.

In all the institutions that offer information and communications technologies courses all students must take at least one compulsory course, usually an introductory course in Information Technology. Depending on their area of specialisation, students are required to pursue other compulsory courses. The University College of Belize (UCB) at Belmopan Junior College is the only institution that offers an Associates Degree in Computer Science, a programme that was implemented for the first time in September 1999. Students who opt for this programme must complete at least thirteen courses in computer science. Of the 202 students at Belize Junior College, twenty-seven are enrolled in this programme but only eight are female, supporting the view that women and girls tend to enrol in more traditional courses.

A closer examination of the enrolment data for tertiary institutions reveals that even though a higher percentage of girls are enrolled, there is still the tendency for girls to opt for non-technical programmes. For example, Belize Technical College, where mostly technical and vocational courses are offered, enrols more males than females. Meanwhile, the School of Nursing, traditionally a female-dominated occupation, enrols 94% women.

Upgrading Computer Skills for the Office

The introduction of new and modern means of communication and information management has impacted women both in the workplace and at home. Since most offices are computerised and use more modern means of information and communications technologies, secretaries are finding that

retooling for the job is critical. Since secretaries are traditionally female, these women — especially older women — now must seek ways to upgrade their skills or risk being replaced. While some private and public sector firms have on-the-job training, other employees must seek time off to upgrade their skills at their own cost. For women who may have taken time out for child rearing, re-entry to the workforce is sometimes traumatic, especially when the time out was extensive. In preparing for re-entry to the workforce, most women need to consider a number of factors — time for training, cost of training, child care facilities, distance, and belief in their ability to succeed with training.

Opportunities in Rural Areas and Villages

Despite the increase in information and communications technologies in Belize the full benefits cannot be realised in some remote rural areas because of a lack of electricity, telephone service, and transportation. Over the past few years a number of women entrepreneurs have emerged in the production of wines, cashew nuts, and crafts. These women often have difficulty maximising their profits because of a lack of business skills such as marketing, packaging, preserving, and maintaining financial records. They can learn to use the computer to enhance their products, though, through radio programmes or taped television programmes that can be distributed to the districts for asynchronous broadcast.

With the passing of the new *Village Councils' Act*, more powers have been vested in village councils. These councils now have the power and opportunity to plan programmes for the development in their areas. This is already evident in the BELRIV enterprise, which brings together groups from neighbouring villages to work together for economic advancement. Village councils can ensure that policies will protect and increase opportunities for women's groups and women entrepreneurs.

TRAINING AND CAPACITY BUILDING

Although statistics show that girls and women are taking greater advantage of formal education, evidence shows that men continue to hold the top-paying jobs. When we examine the education system and note the types of jobs in which girls and women are employed, gender discrimination is obvious.

In the public service, training sessions are scheduled annually to assist employees to upgrade their skills. In addition, the Ministry provides an incentive to those who seek upgrading privately by assisting with course tuition once it is determined to be relevant to the job for which they were employed. Most private sector employees, both male and female, are given on-the-job training once employed.

IS PUBLIC POLICY WORKING FOR WOMEN?

As far as can be determined there are no clear national telecommunications policies to address gender discrimination; neither are there any clear policies on open and distance learning and the role of information and communications technologies in open and distance learning. The development of information and communications technologies is seen as a major strategy for creating job opportunities in the services sector, however, the current high costs prohibit the expansion of the industry and the opportunities that are possible. The Prime Minister of Belize, the Honourable Said Musa, commissioned a task force to carry out a study of the services sector to determine what could be done to create job opportunities for Belizeans. The study concluded that:

> irrespective of how cleverly conceived Belize's marketing strategy is, attempts at expanding the country's IT industry will fail miserably if Belize does not grapple with the high cost of telecommunications technology and the fact that BTL's

> exclusive license precludes the country from developing new aspects of the IT industry (1999, 8).

The study continued, stating that more than 5,000 jobs could be created over four years in such areas as customer service support, data processing, and computer programming, if the market were more competitive. On women in development, the task force noted that the services sector provides equal opportunities for males and females and that companies "care less whether technicians are men or women, and more about whether people have the requisite skills" (1999, 8).

The *Education Act*, as amended in 1996, and the accompanying Draft Education Rules clearly outline the Ministry of Education's policy on gender and equity in schools. In a study to determine the incidence of gender bias in Belizean primary school classrooms, Leacock noted that "the Ministry of Education policies as expressed in the legislation on education, policy and strategy documents, and curriculum guidelines of the Ministry of Education were cognizant of gender as an issue and in general were balanced and sensitive with respect to gender" (1997, iii). Despite that fact, Leacock noted that in the Ministry of Education the higher administrative posts were filled with more men than women. She also noted that, in the primary classrooms, even though 70% of the teaching workforce are female, only 47% of female teachers are principals (see Appendices 5 and 6).

CONCLUSION AND RECOMMENDATIONS

Although the data from the survey seems to suggest that boys and men are more at risk of not continuing to higher education, there is still evidence that girls and women face discrimination. Men continue to hold top executive jobs and jobs in leadership positions in the school system. In addition, it appears that even though girls outnumber boys at tertiary institutions, they still opt to take traditional courses and they shy away from courses in mathematics, science, and technology. There is the feeling among some that technology means dealing with 'machines' and that dealing with machines is a 'man's job'; therefore, technology courses are for males. While the choices girls and women make may be based on cultural beliefs, girls and women need to be taught how to prepare themselves for top executive jobs and how to move into these jobs with confidence. This will happen only if women who have succeeded in moving into these positions demonstrate ways in which this can be done. In advertising courses and programmes girls must be portrayed equally along with boys. Information and communications technologies are a powerful tool for changing attitudes, retooling workers for the workplace, and addressing some of the challenges to education in Belize. The following recommendations suggest ways in which information and communications technologies and open and distance learning can be used:

- provide gender awareness training;
- include courses in gender studies in the training college and university programmes;
- develop programmes related to employment opportunities;
- use information and communications technologies and open and distance learning to enhance teaching and learning to prevent high repetition and drop-out rates that may be the result of poor teaching;
- develop systems that encourage community partnership where resources can be shared;
- develop parenting programmes and involve parents in the educational process;

- use the facilities available to establish national, regional, and international links (for example, use the UWI and BTTC network with the Joint Board of Teacher Education to enhance communication and information sharing among colleagues in the region); and
- maximise the use of the conferencing facilities by making them accessible to non-governmental organisations and other government agencies.

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INTERVIEWS

Ms. Anita Zetina, Ministry of Human Development, Women Affairs and Youth

Ms. Brenda Garbutt, Ministry of Human Development, Women Affairs and Youth

Mrs. Flowers, Ministry of Human Development, Women Affairs and Youth

The Honourable Mark Espat, Minister of Tourism and Broadcasting

Mr. Roy Cayetano, Permanent Secretary in the Ministry of Rural Development and Culture

Dr. Joseph Palacio, Resident Tutor from the UWI School of Continuing Studies

APPENDIX 1

Summary of Enrolment Statistics for Primary and Secondary Education in Belize

	Primary			Secondary		
	M	**F**	**Total**	**M**	**F**	**Total**
Enrolment 1998-1999	28,104	26,512	54,616	5,532	6,188	11,720
Repetition Rate 1997-1998	11.5%	9.1%	10.3%	9.4%	8.2%	8.8%
Drop-out Rate 1997-1998	1.2%	1 %	1.1%	10.6%	7.6%	9.1%
N E R 1998-1999			85%			35%
GER 1995*	124	118	121	47	52	49
Pupil-to-Teacher Ratio 1998-1999			26:1			16:1

Source: Ministry of Education Planning Unit, except for figures marked with an asterisk (*), which are World Education Indicators from UNESCO's World Education Report, 1998.

APPENDIX 2

University of the West Indies School of Continuing Studies Distance Education Programme Enrolment by Year

Programme	1997-1998		1998-1999		1999-2000	
	M	F	M	F	M	F
Certificate in Public Administration	6	9	3	15	5	23
Certificate in Business Administration	0	3	0	3	0	2
Bachelor of Science in Management Studies, Levels One and Two	2	4	0	7	0	6
Certificate in Education*	4	9				
Management and Supervision			3	2	2	1
Literacy Studies			0	4	0	2
Social Studies			0	1	0	1
Mathematics			0	1	0	0
Total	12	25	6	33	7	35

Source: UWI School of Continuing Studies

* Figures aggregated for all certificate in education programmes for 1997-1998

APPENDIX 3

Availability and Use of Telecommunications Facilities in Belize

	1995-1996	1996-1997	1997-1998	1998-1999
Estimated population of Belize	216,500	222,000	230,000	238,000
Regular telephone	28,947	30,271	31,560	33,189
Cellular telephone	1,457	2,184	2,544	3,535
Pagers	1,095	1,330	1,528	1,625
Internet users	308	985	1,916	3,157
Payphones	120	186	224	296
*On-air television broadcasting stations		13	14	
Cable television stations		23	n/a	
Radio stations		13	14	

Two radio stations in Belize have a national licence.

APPENDIX 4

Summary of Results from Survey of Tertiary Institutions

Name of institution	Computers available to students	Internet	Computer courses offered	Enrolment 1999-2000 M	F		Open and distance learning courses
Belize Teachers' College	10	Yes	2	27	56	83	✓
Belize School of Nursing	0	No	0	6	102	108	×
Corozal Community College	12	Yes	3	125	141	266	×
Belize Technical College	22	Yes	1	292	219	511	×
Belize College of Agriculture	12	Yes	1	54	14	68	×
Muffles Junior College	24	Yes	3	63	106	169	×
Stann Creek Ecumenical	14	Yes	1	54	148	202	×
Sacred Heart Junior College	37	Yes	3	64	60	124	×
St. John's College Junior College	60	Yes	5	253	386	639	×
UCB Belmopan Junior College	32	Yes	14	74	128	202	×
UCB Toledo Junior College	10	Yes	3	45	62	107	×
UWI School of Continuing Studies	10	No	1	7	35	42	✓
Total	**243**		**37**	**1,064 (42%)**	**1,457 (58%)**	**2521**	

APPENDIX 5

Statistics on Teachers at the Primary and Secondary Levels 1998-1999

	Trained		Untrained		Total		
	M	**F**	**M**	**F**	**M**	**F**	**Total**
Primary teachers	368 (18%)	938 (45%)	251 (12%)	407 (20%)	619 (30%)	1,445 (70%)	2,064
Secondary teachers	136 (18%)	105 (14%)	227 (30%)	186 (25%)	363 (48%)	394 (52%)	754
Total	504	1,043	478	593	982	1,839	2,818

APPENDIX 6

Primary School Principals by Gender and Location

District	Males	Females	Total
Belize	13	46	59
Cayo	31	20	51
Corozal	17	17	34
Orange Walk	25	8	33
Stann Creek	11	16	27
Toledo	33	12	45
Total	**130**	**119**	**249**

Source: Ministry of Education Planning Unit

4.3 A COUNTRY REPORT FROM THE COMMONWEALTH OF DOMINICA

Frances Harris
Principal
Dominica Teachers' College

We live in an exciting world! The last half century has seen significant progress in Dominica: from water carrying jars to refrigerators, from pit latrines to indoor toilets, from donkeys to airplanes, from pencil and paper calculations to the computer, and from steamer-delivered mail to immediate access by telephone and the Internet. Advances in information and communication technologies (ICTs) have impacted even the small island state of Dominica. Today, cars are purchased through the Internet and a whole new range of career possibilities have accompanied the introduction of computers: computer salespeople, 'cyberspace' operators who provide the public with access to computers and the Internet, and computer tutors, to name a few. As the need for more and varied educational programmes arises learners will be looking to information and communication technologies for the delivery of these programmes. Currently, the potential is largely unexplored in Dominica.

BACKGROUND

Dominica is a small rugged and mountainous island of 751 square kilometres in the Eastern Caribbean. The population is a mere 75,817, according to 1998 statistics. Political turmoil that both preceded and followed the 1979 hurricane, as well as the devastating effects of the hurricane itself, impelled a wave of emigration which has resulted in a decline in the population from 77,000 in 1979, to 71,000 in 1991. Although the 1998 population figure shows a slight increase in population, the emigration rate remains high.

Agriculture, particularly the production of bananas for export, is the mainstay of the economy. However, problems in the banana industry have precipitated a drive towards the development of tourism and other tertiary industries such as communication as alternative sources of income. It is clear, then, that the country must align its education system to address the requirements of these sectors. A society that is functionally literate in information and communication technologies is essential for survival in the global economy of the new millennium and should, therefore, be a priority goal of the education system.

ACCESS TO INFORMATION AND COMMUNICATION TECHNOLOGIES

The introduction of information and communications technologies in Dominica has been recent but phenomenal. One distinct advantage to Dominica's late start in the development process is that it has benefited from state-of-the-art telecommunications technology. Dominica is part of a regional fibre-optic network that provides high bandwidth transmission capabilities to other islands and the rest of the world. Radio, telephone, cable television using microwave technology, Internet, voice-mail, and facsimile services are of high quality compared with many developing countries.

Ninety percent (90%) of the island is electrified. All villages are connected by telephone and cable television is accessible to most coastal villages, with an estimated 11,500 active connections to cable television. Most homes have at least one radio and many have televisions and video-recorders as well. Schools have begun to invest in audio-recorders, televisions, and video-recorders, which are intended to enhance face-to-face delivery, but few teachers are trained in their use. Additionally, problems in the use of various technologies in the classroom include class space, storage, frequent breakdowns of the equipment, tardy repairs, and the high cost of replacement parts. These factors

make the use of these 'older' technologies marginal. Despite the fact that the major broadcasting station is government-owned and that government has a dedicated channel on the television network, the potential of radio and cable television as media for the delivery of education and training has not been explored at a formal level in Dominica.

A rapid increase in awareness and use of computer and information technologies has occurred in the last five years, particularly in the private sector. Institutions such as banks and businesses, large and small, boast facsimile machines, computers with Internet connections, and voice mail. The new interactive technologies may well prove to be the preferred mode of delivery for educational programmes in the future, although (in the short- to medium-term) the cost factor may be prohibitive.

Availability of Computers

Government has been supportive of the move towards a computer literate society. In the 1990s, the import duty on computers was reduced to 6%. In a country where revenue collection largely depends on indirect taxation and where the duty on some items can be as much as 100%, this concession is evidence indeed that government recognises the significant role that computer technology will play in the future development of the country. Computers are gradually being placed at the disposal of civil servants and training in computer skills is ongoing. Unfortunately, the computers at the Public Service Training Centre do not have the capacity for programmes such as PowerPoint presentation software or for Internet use.

The Ministry of Education is actively encouraging the use of computer technology in schools but the financial implications of equipping every school has so far been prohibitive. Newly built schools are being equipped with computer labs although not yet with computers. An attempt by the Ministry to set up a training programme for staff of all levels has been deterred by the lack of computers with which to conduct this training.

Computer labs exist in the older secondary schools largely through the generosity of donor agencies. Priority of use is given to students preparing for Caribbean Examination Council (CXC) and Cambridge Advanced Level examinations in Business, Secretarial Studies, and Information Technology.

In 1997-1998, Cable and Wireless Ltd., one of the two Internet service providers on the island, offered secondary schools and colleges with computers free access to Internet services for 100 hours per month. Consequently, the Dominica Teachers' College was able to include as part of its Associate Degree programme a course called Technology in Instruction which, among other things, includes the use of the Internet as a medium for teaching.

The Internet has become a major attraction among our youth, both female and male. It has been estimated that the island boasts about 5,000 computers and about 2,000 Internet connections with Cable and Wireless Ltd. as the primary host. With the expansion of services intended by the second host, *Telecommunications Marpin*, the number of Internet users is expected to rise.

In keeping with the trend reported in the Caribbean Survey by The Commonwealth of Learning there is evidence of a concentration of Internet users in the urban areas. Estimates are 65% in Roseau and its environs, 20% in Portsmouth, and 35% in the rest of the island. The contrast is not as great, though, as in other Caribbean countries. Four 'cybercentres' have been established by the private sector in Roseau and one in Portsmouth to provide users with Internet access for a fee.

NATIONAL TELECOMMUNICATIONS POLICY

A new telecommunications policy was adopted in 1999 to liberalise the communications sector and break the monopoly enjoyed by Cable and Wireless Ltd., making way for competition from a second provider of telephone and cable services. The policy statement reads:

> The Government of the Commonwealth of Dominica aims to ensure that the demand for existing telecommunications services is met in order to support economic growth and diversification, provide a suitable environment for tourism, informatics and financial sectors and satisfy the educational and social needs of the country. The government will endeavour to further develop the telecommunication infrastructure and services by providing a liberalised and competitive environment with open entry to stimulate the introduction of an increased range of services using state of the art technology. The government will encourage investment in the sector from all appropriate sources by developing and adopting enabling legal and regulatory framework making it possible for public and private users to obtain telecommunication services at fair prices that reflect economic cost and efficiency.

The statement expresses the government's intention to enable the expansion of services in terms of the variety of offerings, as well as in respect of access by users on geographic and socio-economic levels. Operators are also being asked to provide special services for persons with disabilities. However, there is no specific expression of intent to make provision for the use of telecommunications to deliver education and training. However, under section 22 of the policy, which deals with Bi-Lateral and Multi-Lateral Agreements, there is provision for granting licences to "embassies and non-commercial international bodies to operate private networks with international links". The document does not refer to gender issues.

GENDER AND ACCESS TO EDUCATION

Disturbing statistics from Asia, Africa, and Latin America point to the unfortunate role of women as second-class citizens who are, for the most part, deprived of the traditional forms of education and therefore restricted in prospects of self-development. The Caribbean appears to be uniquely different. In fact, the predominance of females in secondary schools and the increasing number in institutions of higher learning has concerned many educators. One prominent member of the University of the West Indies faculty, Professor Errol Miller, was sufficiently moved to write about the marginalisation of men in his book, *Men at Risk* (1991).

Statistics from Dominica bear out Professor Miller's concern that it is men who are marginalised. The matriarchal society that developed in the post emancipation Caribbean produced a core of enterprising women who, as heads of households, had to use initiative and effort in order to survive. Such women were forces to be reckoned with. There has been in Dominica, from the earliest times and at all levels of society, female entrepreneurs, financiers, and planners. Dominica is unique in being the first Caribbean country to boast a female Prime Minister. The Christian religions, which evangelised the Caribbean, helped to advance the education of women. In an effort to protect girls from early pregnancy, church schools were established for girls while boys continued to work the land. Figures from the Adult Education division for 1993 indicate a literacy rate of 75.2% for males and 86.4% among females. The figures differ for rural and urban areas but in every parish the literacy rate among females is higher than that of males.

In Appendix 1, figures for the period 1984-1994 show the predominance of females writing and passing the Common Entrance Examination and thereby gaining entry to secondary schools. In 1991, for example, of 858 males who sat the examination, 329 passed, a rate of 44%. In the same

year, 949 females wrote the examination and 415 passed, a rate of 56%. The ratio has been less dramatic in other years, but the trend persists.

Dr. Kay Polydore (UNESCO/CARNEID, 1992), following an exploratory survey in Dominica, found that at the primary level boys achieved at a significantly lower level than girls. While Dr. Polydore's investigations focused on factors such as the differences between boys and girls in study habits, attendance, and participation in games, she found that the most far reaching factor was the larger number of non-readers among boys in the common entrance class. She also found that girls generally had a better self-concept and were more inclined to persevere in their schoolwork.

Polydore suggested three possible factors in boys' under achievement:

(1) different rates of maturation for girls and boys, with girls being more mature than boys at ages ten to twelve;
(2) different socialisation patterns which encourage boys to play more and to be less serious about schoolwork; and
(3) higher absenteeism among boys who were kept at home at certain times to work on family owned farms.

Whatever the contributing factors, the matter is of grave concern since the Common Entrance Examination is the mechanism for selection to secondary schools. The predominance of female students continues at the secondary and tertiary levels as shown in the following table.

Participation in Secondary and Post-secondary Education by Gender

	Year	**Males**	**Females**
Secondary schools	1997	2,307	3,148
Post-secondary education			
'A' level college	1991	126	137
'A' level college	1999	58	125
Secretarial programme	1999	0	27
Technical studies	1999	158	32

Although more males participate in Technical Studies, entry qualifications to this division are lower than for the Academic section.

GENDER AND ACCESS TO COMPUTER TRAINING PROGRAMMES

Surveys of computer training programmes conducted in Dominica show a predominance of female participants as well. This is not surprising. In the early days of computer awareness, computers were seen as a more advanced typing machine. Secondary schools for girls were among the first to introduce typewriting to the curriculum with a view to preparing females for secretarial work. It is but a short jump from the typewriter to the computer keyboard. Secretarial programmes exist at two secondary schools for girls. The Secretarial programme at the Clifton Dupigny Community College

has only female participants. The Information Technology programme geared towards the General Certificate of Education Advanced Level also shows more female participants (see Appendix 2). Two secondary schools, the Dominica Grammar School in the capital and St Andrew's High School in the north-east, offer the Caribbean Examination Council Information Technology course. Again female representation is strong (see Appendices 3 and 4).

In 1996, the Youth Division of the Ministry of Education commenced a programme of computer training. The goal was to provide entry-level skills in computing to unemployed and under-employed high school youth so that they might access jobs in automated data processing and offshore keyboarding industry. Appendix 5 reveals that over 80% of participants were female. The chief youth development officer pointed out that very few males apply for the computer courses run by his division for two reasons. One is the perception by males that computing skills is a female preserve. The second is that the entry requirement is a pass in either English or Math. Based on these outcomes it appears, therefore, that more females seem to have the entry qualifications. Recognising the deficiency of access to training in rural areas, the Youth Division has this year commenced a computer-training programme at Dublanc, a rural village on the West Coast.

The Women's Bureau of the Ministry of Community Development, with funding from the European Union, recently offered a sixteen-week computer-training programme for women at La Plaine in the rural east. The project targeted secondary school dropouts in their early twenties, as well as adolescent mothers. Thirty-six women completed the first component and other programmes are planned for this area.

The Dominica Teachers' College has since 1973 conducted training programmes for primary school teachers, but it has only recently been able to turn its attention to training secondary teachers. In the last two years a basic course in the use of Technology for Instruction has been offered to secondary trainees. The effectiveness of the course has been reduced by the inadequate supply of computers. In fact, when the first course was attempted students had to walk to a private computer school to access the computers at off-session times. The college has only seven computers and class size is usually between thirty and thirty-five students. This ratio is therefore inadequate. (Two computer classes instead of one have both financial and time tabling constraints.) Throughout the years the ratio of female to male students has been in the region of four or five females to one male so, again, the main beneficiaries of teacher training programmes are female. The effectiveness of the training in the use of information and communications technologies is not yet noticeable. A few teachers have reported using the Internet to access lesson plans, games, and other information for teaching. The majority of teachers, however, are deterred by the unavailability of technology both at home and at the schools in which they teach.

The private sector is capitalising on the demand for computer training by setting up facilities with ten or more computers and offering training in the whole range of Microsoft programmes. There are four such facilities in Roseau and one in Portsmouth, the second town. Participants registered with the school are allowed free but limited Internet access. Others pay a fee of five EC dollars per half-hour. Information received from two of these providers indicates that women are the chief beneficiaries of these services.

INFORMATION AND COMMUNICATIONS TECHNOLOGIES AND OPEN AND DISTANCE LEARNING

The concept of open and distance learning as a means of expanding access to education has begun to take root in Dominica, but progress is slow. Traditionally, the delivery of educational programmes has been face-to-face using the expository method. However, many individuals have in the past successfully completed studies through correspondence courses particularly in the fields of Accounting and Law.

Comprehensive Teacher Training Programme

A distance learning programme for teacher training was designed and produced by the Organisation for Canadian Overseas Development using regional writers, with funding from the Canadian International Development Agency (CIDA). Distance learning courses in Language, Social Studies, Science, and Mathematics were produced with the goal of preparing untrained teachers to successfully write Caribbean Examination Council examinations and, thereby, meet entry requirements to the Teachers' Training College. The courses were print-based and designed for home study but tutor markers were provided for interaction with participants. The pilot carried out in Dominica proved the soundness of the materials produced. It also suggested that Dominicans continue to rely too heavily on teacher input when learners claimed that they accomplished more in the few hours of tutorial than they did in hours of home study. Given the low levels of reading and comprehension still evident today among secondary school students, this view is not surprising.

The programme was run for two years from the School of Continuing Studies with a 50% government subsidy. Participants were required to pay the rest and many teachers found the programme expensive. They also appeared to find it difficult to keep up with assignments. Consequently, the programme folded when the subsidy came to an end.

University of the West Indies Programmes

The initiative in the use of information and communication technologies in the delivery of educational programmes came from the University of the West Indies. Through the School of Continuing Studies distance learning is made possible in a wide range of subjects. The courses combine print material, teleconferencing, and sessions with local mentors where necessary. The technology makes use of cable, microwave, and satellite transmission systems to link up campus with non-campus territories and with the rest of the world. Appendix 6 shows the variety of courses offered. Again it is evident that women make the greater use of educational opportunities offered.

Canada Caribbean Distance Education Scholarship Programme

The Canada Caribbean Distance Education Scholarship Programme (CCDESP), although operating on a small scale, is a unique manifestation of co-operation between several partners in the delivery of an open learning programme that seeks to address a pressing need in the education system for the professional training of untrained graduate teachers. The programme combines the expertise of Memorial University of Newfoundland, the initiative, experience, and drive of The Commonwealth of Learning, the technology of the University of the West Indies Distance Teaching Enterprise (UWIDITE) system, and the facilities and commitment of the teachers to provide in-service training for graduate teachers of secondary schools.

The programme uses print as the main mode of delivery. Additionally, weekly tutorial lecture sessions are conducted via the University of the West Indies Distance Education Centre (UWIDEC) teleconferencing facility, which makes interaction possible between lecturer and participants of Dominica and St Vincent and the Grenadines. Participants will spend a semester on the Memorial campus; an internship of one semester in the Dominican school system will conclude the programme. Students use e-mail to forward assignments to Memorial; examination papers as well as scripts are sent by facsimile or express mail services. Currently, eleven students are enrolled: two male and nine females. Two other male students have dropped out of the programme. Five of the participants have a computer at home and the others access e-mail messages through their school or from friends. One participant is continuing the programme from France and another from Texas. This is indeed open learning! Recently, basic teleconferencing equipment was installed at the

Portsmouth Secondary School where four of the participants teach allowing them to participate in teleconferencing without having to travel to Roseau.

Primary Education Project

The OECS/DFID/University of the West Indies Primary Education Project has three components and targets three categories of educators: untrained teachers, trained teachers, and school administrators. The programmes are print based and combine distance learning with periodic face-to-face sessions. As the first component only began in July (1999) it is too early to comment on its effectiveness.

National Policy on Open and Distance Learning

Although the government has not stated a policy on open and distance learning, the government is committed to supporting initiatives that provide opportunity for the educational advancement of its citizens. Government continues to subsidise the participation of civil servants in UWIDITE programmes and has facilitated the participation of teachers of the CCDESP and Primary Education Project programmes.

WIDENING ACCESS TO TECHNOLOGIES FOR EDUCATIONAL PURPOSES

Priorities for Women

Priorities for the education of women are hard to define. Women are today venturing into almost every field even those traditionally considered the preserve of men. Women have for years filtered into the medical and legal professions. They have a strong presence in the civil service at the level of middle management and women dominate the teaching profession. Recent years have seen women working as plumbers, security guards, and, in one case, as a road supervisor. Thus it is hard to define specific priorities for opening opportunities for education. The thirst for education of all kinds is real among the women of Dominica, a fact that manifests in the number of female participants who attend summer courses in a wide variety of offerings, from cake decorating to automobile repair. But women must perceive the effort at study to be worthwhile. For example, a Microsoft Windows computer program package (Word plus Internet) may cost more than two hundred dollars, but teachers consider EC fifty dollars per month for fifteen months too exorbitant a price to pay for one Caribbean Exchange Council subject.

Informal research in Dominica confirms findings of The Commonwealth of Learning that, where technologies are available, women access them far more than do men. No obvious barriers to the access of information and communication technologies are peculiar to women. Two of three private institutions for computer training have reported that between 80% and 90% of their clientele are women between the ages of eighteen and twenty-five. The majority are people who require computer skills in their jobs or who have acquired computer skills but wish to obtain certification for those skills. Few men register for computer courses and, according to the managers of 'cybercentres' where anyone may use the Internet for a fee, women appear to use the Internet more than men.

Priorities for Men

Women in Dominica have shown initiative and determination in the use of new technologies and it is likely that they will continue to find ways and means of accessing new programmes as soon as they are devised. However, it is men to whom attention must be paid. If males are to continue to

contribute to the development of the country and to assist in charting its future course for economic prosperity and social well being they must become proficient in the use of modern technologies, especially the information technologies.

As a matter of urgency, research should be undertaken to determine the factors influencing male ability and desire to take part in educational opportunities. Some barriers to male participation may be longer working hours, irregular hours due to shift work, and illiteracy. They could also be subject to a cavalier attitude, which sees no need for education once the capability exists to support a family without it. Research may identify significant factors and determine the extent to which new technologies might address male educational needs. There is evidence that quite a few men own and use computers and certainly use them in their jobs. While more women make use of computer training facilities, men dominate the fields of computer programming and computer maintenance so it is possible that programme offerings might be the prohibiting factor as far as men are concerned. Perhaps education programmes that are more directly related to job requisites for traditional male occupations will attract more male participation, for example, computer-assisted design in woodwork, metalwork, and architecture. As the notion of work-from-home comes to be increasingly accepted, males are likely to increase their use of computers.

WIDENING ACCESS TO OPEN AND DISTANCE LEARNING THROUGH INFORMATION AND COMMUNICATION TECHNOLOGIES

Open and distance learning is a largely unexplored medium for increasing access to education. Today there is a distinct potential for the use of open and distance learning, especially through the use of information and communication technologies. Consider the following scenarios:

- The teacher of an 'A' level student resigns half way through the second year either to take up a more lucrative post in the private sector or in order to migrate to a more developed country. Even a part time replacement is hard to come by.
- An 'O' Level student in a rural high school wishes to be an engineer but cannot study physics because the school does not offer it due to the unavailability of a physics teacher.
- A young mother wishes to work at home.
- There are inadequate science facilities at an 'A' level college so only second-year students are able to use the existing facilities.
- A chronic shortage of trained teachers at the secondary and tertiary levels particularly in Science and Mathematics is chronic.
- In a world of rapidly changing technology, the absence of a technology component in Science curricula is noticeable.

The question comes to mind as to whether information and communication technologies and open and distance learning might provide the answer to such concerns. Might the new technologies not open the way for greater sharing at the global level?

Changes in technology and in the national economy will necessitate retraining and retooling workers, not necessarily in full-time training programmes. Additionally, with the compulsory retirement age of fifty-five years for civil servants, there will be an increasing number of retired women and men with the time to study who will want to pursue upgrading courses perhaps even to the Ph.D. level. The reduced income of such persons will not permit full-time attendance at a university. The vision of being able to study from home as well as communicate with associates, lecturers, and experts in the field of study is one of tremendous appeal. Thus the importance of open

and distance learning: the flexibility afforded this mode of learning through the use of information and communication technologies cannot be underestimated.

But there will be barriers to overcome:

- insufficient awareness of the potential of information and communication technologies in the delivery of learning;
- limited information about the educational programmes available and accessible through information and communication technologies;
- continuing high cost of equipment, which limits access;
- rapid changes in technology which makes expensive purchases obsolete in a short time;
- difficulty in developing countries of accessing replacement parts;
- inadequate maintenance service from equipment providers;
- high cost and often unavailability of related supplies, including ink;
- high cost of software, particularly subject specific software;
- insufficient knowledge of how to access specific information from the myriad of Web sites; and
- high cost in terms of human and financial resources of developing courses to meet the changing needs of the clientele. In small countries the target population is often too small to make either design or adaptation cost effective.

As one report states "It would be well to remember the technologies themselves do not present a quick fix to deeply entrenched developmental problems."

Widening access to education through open and distance learning modalities and information and communication technologies will depend on the country's ability to:

- establish regional telecentres to serve poor and rural learners;
- equip these centres with multimedia facilities including Internet access and audio-conferencing facilities. This would enable rural learners access to education courses which are currently concentrated in the capital;
- employ managers for these centres. In small countries where the wage bill in the public sector is already high, there is pressure from international donors to reduce employment in the civil service. The cost of provision of services by the private sector may to the exclusion of economically disadvantaged learners;
- provide training in the use of information and communication technologies;
- provide training in the maintenance of equipment and in trouble shooting; and
- provide guidance in the most efficient use of the Internet and in finding specific information in the shortest possible time.

Regional bodies such as the University of the West Indies and The Commonwealth of Learning should continue to assist by:

- making more accessible information on available courses;

- providing a link between course designers and institutions that wish to use them;
- serving as a clearing house to access already developed courses;
- negotiating with universities such as Memorial to enable accreditation of non-nationals; and
- facilitating the development of tele-campuses, which would enable learners to access Web-based courses up to the level of a doctoral degree.

CONCLUSION

Information and communication technologies will undoubtedly play a major role in the delivery of education programmes of the future. The potential for open and distance learning will be considerably increased as advances in technology are made and as the cost of installing and using the technology decreases. The Caribbean and indeed Dominica are well placed to benefit from new developments. Initially, the country should make use of courses and programmes already available while at the same time developing local capabilities in the design and production of indigenous materials.

As a developing nation, it is essential that Dominica explore the options available for expanding access to education and for providing the types of training that will help to accelerate economic growth and improve the quality of life of its people. Both male and female must contribute to the island's progress. Hence there is urgent need to remove or minimise the barriers that deter citizens, both male and female, from realising their full potential. It is expected that as educational opportunities are expanded through distance education and the use of information and communication technologies, the allure of new modes of delivery and of learning will serve as a catalyst to spur on and rekindle in males an interest in education.

If, as Ms. Tandon (*Distance Education in Commonwealth Countries Caribbean Islands*; 14.8.98) predicts, the provision of education will shift from the public to the private sector, administrators will have to be most vigilant in ensuring that no group is marginalised because of socio-economic standing or gender, then these are some of the many challenges to be faced and overcome in Dominica.

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TELEPHONE INTERVIEWS

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Director, Academic Division, CDCC
Principal, Dominica Grammar School
Computer Information Systems
ACT Computer Training Centre

APPENDIX 1

Common Entrance Examination Results (CXC), 1984-1994

Year	Number Sat			Number Passed		
	Male	Female	Total	Male	Female	Total
1984	1,056	1,460	2,516	180	331	511
1985	958	1,324	2,282	235	314	549
1986	873	1,198	2,071	206	320	556
1987	889	1,173	2,062	210	323	533
1988	843	1,132	1,975	200	328	528
1989	762	960	1,722	244	317	561
1990	862	950	1,812	217	343	560
1991	858	949	1,807	329	415	744
1992	987	1,024	2,011	316	427	743
1993	978	1,030	2,008	289	420	709
1994	975	1,105	2,080	310	401	711

Source: Ministry of Education

APPENDIX 2

General Certificate of Education Advanced Level Computing Results

Year	Male			Female		
	Enrolled	**Sat**	**Passed**	**Enrolled**	**Sat**	**Passed**
1995-1997	6	4	4	20	9	7
1996-1998	13	11	6	15	9	6
1997-1999	11	5	4	14	6	6

APPENDIX 3

Information Technology Programme, Dominica Grammar School Results

Year	Number of students who sat the Caribbean Examination Council (CXC) Examination		Number of students who passed
	Male	*Female*	*Total*
1997	6	3	8
1998	8	1	9
1999	3	2	5

APPENDIX 4

Enrolment in the Information Technology Programme at St Andrew's High School

Year	1993	1994	1995	1996	1997	1998	1999
Male	1	6	5	9	8	7	10
Female	5	4	10	21	21	20	22

APPENDIX 5

Youth Skills Training Programme in Basic Computing

Modules	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10** *Roseau*	**10** *Dublanc*
Male Participants	0	2	0	3	4	4	6	3	4	5	4
Female Participants	10	20	10	20	20	19	18	21	18	19	26

APPENDIX 6

Registration in University of the West Indies Programmes, 1997-1999

	Male			Female		
	1997	**1998**	**1999**	**1997**	**1998**	**1999**
Certificate in Public Administration	9	5	3	18	17	13
Certificate in Business Administration	9	10	12	51	56	61
Bachelor of Science Level I (Accounting and Economics)	1	0	1	5	4	5
Bachelor of Science Level I (Management Studies)	3	2	5	15	19	21
Bachelor of Science Level 11 (Management Studies)		0	2		7	2
Bachelor of Science in Agri Business			1			0
Bachelor of Arts in French			1			3
Bachelor of Education			3			8
External Programme in Agriculture	6	3	1	0	1	0
Certificate in Education	0	3	5	8	16	15
Certificate in Adult Education	1	0		6	1	
Diploma in Construction Management			4			4
Diploma in Youth in Development		3			11	

4.4 A COUNTRY REPORT FROM GUYANA

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INTRODUCTION

This paper examines issues surrounding women's access to information and communications technologies within the context of the demographic, educational, and structural configuration in Guyana.

This paper interprets terms in the following way:

- 'gender' means the 'socially constructed, rather than biologically defined, sex roles and attributes of females and males … that result in women's subordination and inequality in opportunity to a better life' (Leo-Rhynie, 1999, 9); and
- 'information and communications technologies' means the range of technologies, including radio, audio-cassette players, television, audioconferencing systems, and computers, which are used to transmit information in a linear manner, or facilitate two-way communication, or both.

Data for the paper was acquired through interviews with a sample of representatives from key women's organisations in Guyana and through a literature review.

CONTEXT

Demography

Guyana has the distinction of being an English-speaking Caribbean nation that is located on the South American continent. It occupies an area of 215,000 square kilometres. While approximately 10% of this area consists of a narrow coastal plain, 90% is mountainous and forested. A lower income country, Guyana has 770,000 inhabitants, 50.9% of whom are female (Human Development Report, 1996). Approximately 85% of the Guyanese people occupy the narrow coastal plain, while the remaining population is sparsely distributed in the hinterland. The country is divided into ten administrative regions.

Education

Guyana's topography, population distribution, and economic situation present a special challenge for the providers of education. The mountainous and forested hinterland region challenges communication while the small size of many hinterland communities defies efforts to provide cost-effective face-to-face education. Thus, in hinterland communities, quality secondary education is rare and tertiary education is even more rare commodity.

Also posing a challenge for the providers of education is the fact that even some coastal areas are not served by tertiary institutions. The sole university campus is located on the outskirts of Georgetown and draws 70% of its student body from Region Four, in which it is situated (at the time of writing plans are underway to establish a university campus to facilitate face-to-face study in Region Six). The lone teacher training institution, the Cyril Potter College of Education (CPCE), which occupies a campus adjacent to the University of Guyana and has centres in only three other regions of the

country – Regions Two, Six, and Ten. Three technical institutions have been established in Regions Four, Six, and Ten. In effect, six of the country's regions have no provision for face-to-face tertiary education.

THE STATUS OF WOMEN

It is appropriate to commence our discussion on the status of Guyanese women by considering their participation in education, which is still perceived as the key agent in social transformation. As Table 1 shows, although more males participate in nursery and primary education females predominate in secondary schools, the teacher training institution, and the university. Female predominance in these three areas is also reflected in the degree of success which women experience at those levels of the system for which gender disaggregated data is available. Over the two-year period examined females represented 85% and 58.7% of the graduating classes of the teacher training institution and the university, respectively. Moreover, 69.3% of the graduates of the technical vocational institutions were female. This data points to favourable opportunities for females with respect to educational access and performance.

TABLE 1

Summary of Enrolment by Gender in the Guyanese Education System

Type of Institution	Student Enrolment 1995-1996		Percentage Enrolment 1995-1996		Student Enrolment 1997-1998		Percentage Enrolment 1997-1998	
	M	F	M	F	M	F	M	F
Nursery	14,752	14,554	50.3	49.7	16,983	16,383	50.9	49.1
Primary	51,020	49,232	50.9	49.1	51,369	49,629	50.9	49.1
Secondary	30,798	32,567	48.6	51.4	30,006	31,247	48.9	51
Special education	372	166	69.1	30.9	439	146	75	25
Technical and vocational	2,079	2,217	48.4	51.6	2,237	2,045	52.2	47.8
Teacher training	114	792	13	87	190	1,045	15.4	84.6
University	1,554	1,957	44.3	55.7	1,819	2,852	38.9	61.1
Private schools	374	361	50.9	49.1	797	793	50.1	49.9

Source: Adapted from data presented by the Guyana Ministry of Education (1995-1996, 14 and 1997-1998, 16)

Women are under-represented in the field of technology, representing only 14.9% of the first year class of the Faculty of Technology and only 7.7% of the graduating class in 1995-1996. In 1997-1998, female registration in the first-year technology class fell to 12.4% and the proportion of female graduates was 12.8%. The disparity in ratio of male-to-female participation in science and

technology has been acknowledged by the Ministry of Education, which, in adumbrating its current Five-Year Development Plan for Guyana, indicated its intention 'to promote gender equity in job training and greater career opportunities for women in technological fields' (1995, 32).

Despite the Ministry's good intentions there is evidence that "in higher level training schemes men (65.5%) were the dominant recipient of government scholarships, for both local and overseas training" (Government of Guyana and UNDP, 1996).

Under-representation in science, technology, and the award of scholarships for higher-level training is not the only disadvantage females experienced in the Guyanese education system. Like males, a large percentage of females in the system are affected by a marked inequality in educational provision.

Guyana has a dual secondary school system comprising comparatively well-resourced general secondary schools and less well-resourced community high schools and tops of primary schools, which offer programmes 'of shorter duration, [which] allow graduates access only to specialised lower level post secondary programmes and do not provide credentials that are recognised by the job market' (Ministry of Education, 1995). Forty-four percent (44%) of the secondary school population are in the less well-resourced schools. This problem in the quality of educational provision is not confined to dualism in the secondary system. It extends to differences between more resourced urban and coastal areas of the country and less resourced areas, particularly hinterland communities.

Despite these shortcomings, the picture of female access within the education system is relatively positive. Unfortunately, this picture is not replicated in the job sector. The available data suggests that, in Guyana, female unemployment exceeds male unemployment countrywide by 10% and, in rural areas, by 11%.

The dichotomy in the ratio of male-to-female access to employment is also evident in the roles men and women hold. In 1992, women accounted for a mere 28.3% of administrative and managerial workers. While that figure represented a 9% increase over the position in 1980, the progress that it reflected was largely confined to jobs in the lower-status, lower-paid public sector.

TABLE 2

Unemployment by Gender and Location in Guyana in 1992

Category	Gender	
	M	**F**
All Guyana	8.4	18.1
Urban	9.0	16.2
Rural	9.2	19.3

Source: Government of Guyana and UNDP (1996, 69)

Indeed, even within the public sector, women's attainment of the highest management positions is limited. In 1999, of ten new permanent secretaries appointed in the public sector, only two were female.

It is evident that women's experiences in the employment sector are a function of the structural inequities in the sector to which the following statement alludes:

> The outcome for participants in the labour force is far too heavily dependent on age, sex, ethnicity and location. The market is biased against women and youth and women in rural areas (Government of Guyana and UNDP, 1996, 69).

Not surprisingly, therefore, women comprise the majority of the nation's poor. Further, the poorest women are Amerindians, the disabled, the elderly, and single mothers (Government of Guyana and UNDP, 1996).

Despite these obvious inequities issues of gender are not integral to development policies and programmes in Guyana, although the country passed a National Policy on Women in 1996 and established an inter-Ministerial committee within the Women's Affairs Bureau to facilitate the mainstreaming of gender in the country's developmental process. A case in point is the fact that the Ministry of Education confines its concerns about gender equity to the technical and vocational area. It has not embraced programmes to bring about the transformation necessary for equality of outcomes in the life experiences of men and women, nor has it created a situation to increase women's access to information and communications technologies.

INFORMATION AND COMMUNICATIONS TECHNOLOGIES IN GUYANA

The predominant information and communications technologies (ICTs) in Guyana are the radio, audio-cassette player, video-cassette recorder, and film — technologies that Miller describes as "transmission or presentation technologies." As he explains, their "primary value rests in providing learners with access to linear instructional messages selected and organised by faculty" (1996, 39). Newer information and communications technologies, including audioconferencing and computer technologies, are less evident.

While no empirical data is available on Guyanese access to these technologies, if they were placed on a scale from most available to least available it is clear that radio would top the list as most available, followed by the audio-cassette player, television, video-cassette recorder, computers, and audioconferencing technologies. The lower-end technology — the radio — is available throughout the country. However, the higher up the scale one proceeds the more likely one is to find that the availability of technology is linked to the rural-urban divide and disparities in economic status.

Generally, a range of organisations possess information and communications technologies. For example, a significant percentage of schools own radios. However, the more sophisticated the technology the fewer the schools that possess them. Thus, computers and access to the Internet are limited to very few schools that have benefited from assistance from alumni and corporate or foreign donors.

A number of women's groups, tertiary institutions, and corporate agencies possess audiovisual technologies and computers and can access the Internet. The majority of non-corporate groups on the Internet are beneficiaries of a joint United Nations Development Program-Guyana Telegraph and Telecommunications Company (GT&T) initiative to make Internet services available to a larger percentage of Guyanese subscribers.

Film is available at cinemas that are accessible to most communities and at a few institutions that have audiovisual centres.

Teleconferencing facilities are owned by one educational institution, the University of Guyana, which has a total of six sites in four regions and a few corporate, regional, and international agencies that utilise the facilities to conference with overseas-based partners or parent bodies.

IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES ON DISTANCE LEARNING

The Programmes

For Guyana the cost of establishing traditional institutions to meet the needs of inadequately served hinterland and coastal communities is prohibitive. Thus, in 1992, the country began using distance education methods to reach people in under-served communities who wished to upgrade their knowledge, skills, and certification.

This step ushered in an era of locally prepared, complete courses of study (which we will call 'full programmes') by distance methods. It began with a pre-university language and mathematics programme and continued with programmes for teachers, supervisors, youth workers, and food service personnel. Four of the available programmes — the Guyana In-Service Distance Education Programme (GUIDE), the Hinterland Teacher Training Programme (HTTP), Pre-University English, and Pre-University Mathematics — target foundation level studies for entry to the teachers' training college and the university. (It is necessary to note, however, that the HTTP Programme transcended its intended upgrading goal and provided a Trained Teachers' Certificate by distance methods.)

The areas and, more particularly, the levels of study encompassed by these four programmes are identified as priorities in the Ministry of Education's Five-Year Development Plan for 1995. The plan indicates the aim to use

- flexible and innovative delivery systems (such as distance learning) for intensive programmes to ensure that at least 80% of all teachers at the nursery, primary, and secondary levels are trained by the year 2000 (1995, 35); and
- distance learning modalities … (as a means) through which students can enter the University of Guyana (1995, 25) [parenthesis added].

Like the Pre-University Programmes, the Pan Commonwealth Diploma in Youth In Development may be categorised as a programme that opens up opportunities for university-level training since it is accredited for entry to the University of Guyana. However, it differs from the other upgrading programmes in the sense that it results in an exemption from the first year of the undergraduate programme and so may be considered an undergraduate programme.

Two other programmes — Basic Nutrition and Supervisory Management — provide a level of on-the-job training that attracts mainly non-graduate employees in the food service and public sectors respectively. Another programme — Globalisation and Management — is geared towards middle and senior management staff who require new information to deal with changing global trends.

Distance education in Guyana is not confined to complete courses of study but extends to enrichment programmes. Notable among these are the Broadcasts to Schools Programme, which began in 1955 and the Talking About Education Programme, which began in 1977. Broadcasts to Schools is directed at teachers and at students from Standard Two of primary schools to Form Two of secondary schools. Talking About Education targets adults seeking information on current issues and developments in the educational system, as well as students of Forms Four and Five of secondary schools.

Other enrichment programmes are the Caribbean Examination Council (CXC) English and Mathematics programmes, which are aimed at Forms Four and Five and Science by Television is aimed at secondary school students.

In effect, distance education offerings span primary to tertiary education.

The Providers

Current providers of distance education are primarily publicly owned agencies:

- the Institute of Distance and Continuing Education;
- the extramural arm of the University of Guyana;
- the Cyril Potter College of Education; and
- the National Centre for Educational Resource Development.

However, these are not the only providers. Another programme originates with private individuals, a husband and wife team. Another emanates from a Commonwealth agency, and a third from a Caribbean agency. The Institute of Distance and Continuing Education conduct the latter two programmes in collaboration with the agencies that own the programmes.

The fact that the distance programmes have had their genesis in the public sector is not surprising since, to date, the government is the main provider and or sponsor of education for most sectors of the economy.

Female Participation

The level of female involvement in all the programmes is high because the areas on which most of the programmes focus lead to low status, low paid jobs notably:

- teacher education, which attracts a higher percentage of women than men. Available data indicates that women comprised 95.5% of the first batch of students of the GUIDE programme. While data on the gender of the HTTP students is not available, it has been acknowledged that females have predominated;
- junior supervisory positions in the public sector, posts in which women are clustered. A sample of the classes of the Supervisory Management Programme, which targets this group revealed a 76.6% female participation; and
- food service, which is a socially conscribed area of female activity. The student body of the Basic Nutrition Programme, which was designed for food service workers, is 98% female.

The overall female participation rate is also influenced by the fact that these courses include the upgrading programmes in English and Mathematics which, in keeping with the trend in general studies, have a predominance of women.

Exceptions to the pattern of usage of open and distance learning programmes by gender are found in:

- Globalisation and Management which is directed at middle and upper level managers. Sixty percent (60%) of registrants for this programme were male; and
- the Pan-Commonwealth Diploma in Youth in Development which attracted 52.5% males.

In essence, while the providers have not set out to conduct programmes for female students, women are currently the main beneficiaries of distance education in Guyana. Significantly, it could be argued that the pattern of their participation mirrors the pattern of access in the education system and the pattern of stratification within the job sector.

Whatever the influence on their use of the programmes, open and distance learning is offering women opportunities to upgrade their knowledge and skills, thereby preparing themselves for upward mobility.

Nevertheless, the benefits that accrue to women in open and distance learning could be improved significantly. Improvement could be realised if this mode of delivery is used to offer programmes that address science and technology, entrepreneurship, health, self-esteem, women with special needs, and other areas significant to the empowerment of women.

Delivery Strategies

An overarching principle, which informs the open and distance learning programmes most providers offer, is equality of concern, if not equality of provision. Thus, conscious of the adult roles of participants, the limited access to information and communications technologies, the inadequate infrastructure in some areas of the country, and the strengths and weaknesses of various media the organisers of distance programmes have mainly opted for interactive self-instructional print materials. They have also made provision for student interaction with

- tutors and peers, through face-to-face tutorials held once or twice monthly and, in some cases, residential sessions held once per year;
- peers, through self-help study groups; and
- tutors, and the receipt of feedback from tutors, through the use of tutor-marked assignments which are treated as teaching tools

Moreover, they have assigned students to tutors in their districts or regions and held face-to-face sessions in as close proximity to students' homes as possible. Only in the case of the residential sessions — the centralised tutorials of the Pan-Commonwealth Diploma, which is in its pilot phase and has drawn its student body from locations which have easy access to Georgetown — are students required to travel outside their regions to get to tutorials.

In effect, the general strategy used by the providers allows students ease of access to tutorial sites and minimal disruption of their daily schedules.

Use of New Information and Communications Technologies

Five programmes employ the audioconferencing system, a new form of information and communications technology — Pre-University English, Pre-University Mathematics, Supervisory Management, the Pan-Commonwealth Diploma in Youth in Development, and Basic Nutrition. With the exception of Basic Nutrition each of these programmes uses this medium for supplementary purposes because of the constraining factors mentioned in the section on delivery strategies.

The format of the audioconferences, which account for approximately 22% of the course, is usually highly interactive. Audioconferencing for the Basic Nutrition Course differs significantly from that in the other programmes. Basic Nutrition audioconferences are held twice weekly because the course materials, with which students are provided, are neither interactive nor intended for self study. Thus the strategy can be equated to face-to-face provision in which teaching takes place in real time on scheduled days each week. The main difference between the delivery of this course and that of a face-to-face course is that the technology is used to involve an audience outside the room in which the teaching takes place. Evidently, the level of tutor-to-student contact on this course is quite high for a distance programme. This makes the course demanding for the 80% female participants, the majority of whom are employed and are parents. One may contend that, in demanding audioconferencing time, the course deprives students of one of the main benefits associated with distance education — flexibility.

Other information and communications technologies used in the full programmes are audio- and video-cassettes. Their use is not extensive and their purpose is supplementary.

The enhancement programmes — Broadcasts to Schools, Talking About Education, and the CXC Mathematics and English Programmes — use the radio for direct teaching. The science programme is the only programme that is telecast.

It is generally recognised that because of their reliance on information and communications technologies, these programmes are unable to reach the broad mass of intended users. For example, Broadcasts to Schools reaches only about 50% of the schools nationwide because radios are not available in some schools and schools in mountainous areas experience problems receiving radio signals.

WIDENING WOMEN'S ACCESS TO INFORMATION AND COMMUNCATION TECHNOLOGIES FOR EDUCATIONAL PURPOSES

Barriers to Information and Communications Technologies

Inherent in the preceding discussion are a number of barriers to women's access to information and communications technologies for educational purposes. These include

- the extent of poverty among women;
- the limited availability of information and communications technologies; and
- the fact that some information and communications technologies require synchronous situations. Frequent synchronous contact is likely to place women at a disadvantage. As Kirkup explains "adult women have many more restrictions on their time and mobility than do adult men" (1996, 154).

In view of these difficulties distance education delivery strategies are predicated on the assumption that students should be able to access information and communications technologies at central locations. People in communities that do not have this type of access are not required to use any form of information and communications technologies in their studies. Instead, they receive the print materials that are the main medium of instruction for most programmes.

It should be noted that in their search for a long-term solution to the problem of access to information and communications technologies for open and distance learning, the main providers have stated their intention to pool resources to realise the development of multimedia learning resource centres in various parts of the country.

Information and Communications Technologies and Female Presenters

Significantly, with the exception of the Mathematics and Supervisory Management Programmes, the majority of presenters accessing information and communications technologies systems are female. All of the writers and instructors attached to the Pre-University English Programme are female and so are the tutors attached to the Basic Nutrition Programme, while 53% of the tutors of the Pan Commonwealth Diploma Programme are female.

The audioconferencing system that these writers, instructors, and tutors use to communicate with students has proved to be a useful and effective tool. In a recent survey students and tutors indicated that audioconferencing sessions were very useful. They intimated that the main frustrations to presenters and students have been due to occasional unclear reception or electrical outages.

As important as the issue of access is the issue of women's capacity to use information and communications technologies. Discussions with facilitators of women's organisations revealed that most women who have access to the computer use it merely for word processing. Thus, programmes to sensitise women to the potential of information and communications technologies, motivate them to explore uses which transcend word processing and familiarise them with the use of the information dissemination features of the Internet are necessary.

However, making training programmes available is only one side of the coin. The other is making the training relevant to women's needs and preferences. Evidence suggests that the nature of women's interest in the use of information and communications technologies differs from the nature of the interest displayed by males. Thus, programmes designed to suit the habits of male users may not necessarily be most appropriate for women. Baine underscores this point when, in reporting the findings of a study conducted with several United Kingdom Open University students who were using the personal computer in an introductory technology course, she claims that:

> Women's initial interest in PCs was almost invariably related to the specific and significant events in their personal lives, principally changes at work or children's needs. The strong but unfocused desire to be involved in modern technology which men report was not described to me by any woman (1991, 158).

Also highlighting differences between the way men and women approach the use of computers are Turkle and Pappert who observe that:

> Several intellectual perspectives suggest that women would feel more comfortable with a rational, interactive and connected approach to objects, and men with a more distanced stance, planning, commanding, and imposing principles on them. Indeed we have found that many women do have a preference for attachment and relationship with computers and computational objects as a means of access to formal systems (1990, 150).

The logical solution is to specially design programmes with women's preferences in view and use participatory methodologies to involve women in designing programmes for their own benefit.

TRAINING, CAPACITY BUILDING, AND POLICY

Increasing Women's Awareness and Confidence

The responses to the section of the questionnaire on increasing women's awareness of information and communications technologies and confidence in using them were generated in consultation with key participants in the women's movement in Guyana.

The overwhelming view that the dual goals of increasing female awareness of the benefits of information and communications technologies and building their confidence in their own ability to use them can be achieved through consciousness-raising activities and appropriate training programmes.

However, it was pointed out that these goals can only be attained if:

- access to information and communications technologies increases; and
- the government commits itself to devising and implementing an appropriate information and communications technologies policy.

This view was expressed because respondents believed that, at present, opportunities to upgrade skills depend on:

- the initiative of the individual woman;

- access to and ability to pay for training in the non-formal sector; and
- the initiative of individual departmental heads.

They also believed that people who commence jobs without the requisite skills are generally not given opportunities for on-the-job training to acquire these skills.

It was quite clear that there is the perception that government intervention has been minimal or non-existent with the result that no initiatives have been made to devise programmes that use gender-sensitive training methodologies, materials, and language or that focus on interactivity.

However, despite the negative responses to survey questions on these aspects of programmes, providers have considered appropriate language and methodologies as evident in the extent of consideration given to these issues may be seen to be in the user-friendliness of the materials, the flexibility of the programmes, and the degree of interaction that is encouraged. Writers are trained to use gender sensitive language and a conversational tone and students have rated the materials very successful. Feedback has suggested that the only exception to this rule may be in the Mathematics programme.

As for flexibility the programmes are designed to facilitate choice in place and pace of study. The providers of the Pre-University Programme use a rolling enrolment strategy allowing students to write examinations in groups or individually, join optional tutorials, and advise students on how they could schedule their studies to complete their programmes over a minimum or maximum period. Nevertheless, because of the varying contexts of the programmes, they can be placed on a continuum from most flexible to least flexible with the Pre-University Programme being most flexible and the Basic Nutrition least flexible. Somewhere in the middle of the continuum would be the GUIDE programme which, despite its initial blueprint, has been modified to serve the emergent needs, strengths, and weaknesses of its students.

Interaction takes place through the medium of the tutorial. As indicated earlier tutorials are generally held once or twice monthly. However, from the perspective of tutors, the nature of the tutorial is a more accurate measure of interactivity than the fact that tutorials are held. A recent survey showed that most tutors would put their role as facilitator higher than their role as teacher. Inherent in this view is a concept of the tutor-student relationship and interaction, which is also facilitated through teleconferences and self-help study groups.

The most interactive programme is the Basic Nutrition Programme. Thus, the correlation between a high contact strategy and lack of flexibility in a synchronous setting is evident.

Despite the positive qualities of the materials and the methods used future programmes would benefit from consideration of a gender perspective at all levels of programme planning and implementation. This approach would help ascertain that there are no exceptions to the rule in terms of user friendliness and that no programmes require a level of contact that negates the benefits of open and distance learning to women.

INFORMATION AND COMMUNICATIONS TECHNOLOGIES AND THE FOURTH UNITED NATIONS WORLD CONFERENCE ON WOMEN

In the Platform for Action, drafted at the Fourth United Nations World Conference on Women, it was posited that information and communications technologies could contribute to:

- education and technical training if they are used to offer appropriate open and distance learning programmes. It was felt that using information and communications technologies in this manner would not only give women opportunities to study in areas in which they are hesitant to compete with men, but would also make it possible for them to do so in circumstances that allow them to study and maintain other responsibilities, offer them the

facility of researching and downloading information, and equalise the experiences of male and female students. The possibility of designing software to encourage women's participation was also mooted;

- school curricula that encourage girls to enter technology and science related areas if, early in their school career, girls can be introduced via the use of information and communications technologies to non-traditional areas, positive role models, and practical experiences through simulations
- the support of the process of organising and mobilising women for empowerment if information and communications technologies are used to disseminate information to women, conduct women's programmes, facilitate networking, develop advocacy skills, expose users to the strategies of women who have dealt with similar problems, and enhance social positions.

IS PUBLIC POLICY WORKING FOR WOMEN?

The consensus on public policy is that, to a large extent, it is not working for women. This perception has its root in the fact that:

- there is little or no information about relevant policies. For example telecommunications policies are neither known nor understood. The International Telecommunications Union resolutions on gender and development in the telecommunications sector are also unknown;
- in practice, public policy does not address gender differentials despite the existence of the 1996 National Policy on Women. A case in point is the education sector's apparent lack of effort to address the underlying causes for women's disadvantages within the job sector; and
- collaboration between policy makers is not a reality. It was however felt that the inter-Ministerial committee could be empowered to make collaboration a reality if its members were at policy-making levels in their ministries or could influence policies in their ministries. Unfortunately, current members cannot influence policy. As a result the committee is seen as a token gesture to appease public pressure.

Respondents also expressed the view that the telecommunications sector is not liberalised in terms of ownership or access. However, while admitting that the Guyana Telegraph and Telecommunications Company is a monopoly the marketing manager highlighted its focus on development. Examples of practical steps taken in this direction were the provision of telephone services to two hinterland regions, the provision of free Internet services to allow indigenous women in one of these regions to sell their products on the Internet and consequently generate previously unheard of levels of income, and the joint GT&T-UNDP initiative to make Internet services available to a larger percentage of Guyanese subscribers.

CONCLUSION

Steps to ensure women's access to information and communications technologies have been peripheral to policy making and developmental activities in Guyana. To date, the pattern of access is closely linked to women's status in the society. Thus, of necessity, attempts to address the issue of access to information and communications technologies must be undertaken as part of the general drive to mainstream gender. A piecemeal effort that continues to rely mainly on the goodwill and initiative of private individuals and agencies may contribute to some degree of improvement in the situation. However, it is hardly likely to be comprehensive in its impact. What is needed is the articulation of government policy that addresses the issue of women's access to information and communications technologies. Such a policy could act as the pivot for public and private sector

initiatives to achieve specific targets for this issue and lay the foundation for addressing the barriers to women's access to information and communications technologies.

Drafting a policy is, however, only one part of the process. Involving all stakeholders in its development and ensuring that people are informed about the policy are equally important parts of the process.

A knowledgeable populace is likely to mobilise against the type of tokenism that seems to have affected the inter-Ministerial committee.

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4.5 A COUNTRY REPORT FROM JAMAICA

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INTRODUCTION

The new information and communications technologies (ICTs) are defined as including:

> The developing technologies of telecommunications, computing and microelectronics and their convergence which has created a range of new possibilities for information collection, manipulation, transmission, storage and presentation and through these possibilities have created a whole new industry in service of education and training (The Commonwealth of Learning, 1998, 1).

Over a decade and a half earlier, Lalor (1982, 5) identified the potential of the converging technologies of telecommunications and computing for the Caribbean:

> [C]ommunications and information are no less important to the LDCs [less developed countries] than to the developed world. Here is one new technology [satellite-based telecommunications] which is transforming society in which there needs to be no time lag in its full implementation.

However, his hope of "no time lag" in the full implementation of the new technologies remains unfulfilled today, as will be highlighted in this report on the impact of information and communications technologies on distance learning in Jamaica, with an emphasis on the use of computers and the Internet.

Methodology

A limited review of documents and literature was carried out and interviews were held with administrators of distance education programmes offered in Jamaica that use information and communications technologies. Information collected was then analysed and conclusions were made.

BACKGROUND TO JAMAICA

With a total area of some 11,420 square kilometres, divided into fourteen parishes, Jamaica is the third largest island in the Greater Antilles. Of an estimated population of 2,576,270 in 1998, the vast majority (707,400) resided in the amalgamated parishes of Kingston and St Andrew (Planning Institute of Jamaica, 1999, 17.8). (See map). Table 1 gives a breakdown of the population in 1998 by age and gender and shows a largely young population with a fairly even distribution between genders.

TABLE 1

Population of Jamaica by Age and Gender, 1998

Age Group	Males		Females	
	No.	%	No.	%
Birth to 4	147,870	5.7	144,700	5.6
5 to 9	131,400	5.1	130,680	5.1
10 to 14	127,590	5.0	129,290	5.0
15 to 19	120,650	4.7	124,600	4.8
20 to 24	115,620	4.5	118,440	4.6
25 to 29	114,070	4.4	116,600	4.5
30 to 34	107,760	4.2	103,350	4.0
35 to 39	94,540	3.7	89,790	3.5
40to 44	71,450	2.8	71,200	2.8
45 to 49	53,560	2.1	52,600	2.0
50 to 54	46,140	1.8	42,460	1.6
55 to 59	38,210	1.5	35,130	1.4
60 to 64	33,420	1.3	30,640	1.2
65 to 69	30,070	1.2	29,340	1.1
70 to 74	21,090	1.0	25,090	1.0
75 and older	30,870	1.2	48,050	1.7
Total	1,284,310	49.9	1,291,960	50.1
Total population	2,576,270			

Source: Adapted from Planning Institute of Jamaica (1999, 17.7)

The formal education system in Jamaica ranges from pre-primary to the tertiary level. There are three universities: the University of the West Indies (UWI) — a regional institution supported by fifteen English-speaking Caribbean countries with campuses in Jamaica, Barbados, and Trinidad and Tobago — and the University of Technology, both based in Kingston, and the Northern Caribbean University, located in the parish of Manchester. A number of teachers' colleges and community colleges are also spread throughout the island.

The participation rate of females in the education system outstrips that of males. Of 299,222 students enrolled in public primary schools in 1998, 51% were male. However, average daily attendance records show a higher attendance rate for girls, with 81.7% of girls attending regularly, as against 76% of boys in 1996, despite equal distribution of both genders in the six to eleven age group of the population (Planning Institute of Jamaica, 1999, 19.9). Approximately 51.8% of total secondary school enrolment was female, reflecting the higher percentage (50.8%) of girls in the twelve to eighteen age group (Planning Institute of Jamaica, 1999, 19.11). The 1998 percentage enrolment and output of the three universities is given in Table 2.

TABLE 2

Percentage Enrolment and Output by Gender of Three Universities for 1998

Institution	Male		Female	
	Enrolment	**Output**	**Enrolment**	**Output**
UWI (Jamaican students on three campuses)	31%	28.3%	69%	71.7 %
University of Technology	43.6%	39.4%	56.4%	60.6%
Northern Caribbean University	34.7%	37.4%	65.3%	62.6%

Similar statistics present for most other tertiary education institutions. The Centre for Gender and Development Studies at the University of the West Indies has been commissioned to investigate the implications of the widening gender gap. For those interested in delving more into this phenomenon, the works of Miller (1994) and Chevannes (1999) are recommended.

Telecommunications in Jamaica

Until September 30, 1999, Cable and Wireless Jamaica Ltd. held a monopoly licence for the provision of all telephone services in Jamaica. Cable and Wireless estimates a wired telephone penetration rate at some 19% in August 1999[1]. The new agreement between the government and Cable and Wireless, which came into effect six months after signing, seeks to encourage competition on a phased basis. As part of the agreement, in return for the waiver of licence and spectrum fees during the transition period, Cable and Wireless is, among other things, to greatly expand the number of lines (excluding cellular) within three years of the new telecommunications legislation and to install, within eighteen months, sixty Internet terminals at post offices to allow public access. Further, Cable and Wireless will provide scholarships for the Caribbean Institute of Technology to the value of sixteen million Jamaican dollars per annum for the first three years after the coming into effect of the new legislation[2].

In July 1999, the Liguanea Cybercentre was established at the post office in that area of Kingston with nine networked computers, public access to the Internet, general computer use, and training "for the lowest possible prices" (100 to 150 Jamaican dollars per hour) in order to facilitate affordable access to information technology by "the widest cross-section of the general public". Established as a partnership involving the Jamaica Sustainable Development Networking Programme, the United Nations Development Programme, and the Post and Telecommunications Department, with technical assistance provided by the Mona Information Systems Unit of the University of the West Indies and Cable and Wireless Jamaica Ltd., there are three other focal points (smaller centres) throughout Jamaica established in a library, a community centre, and a marine park

[1] Telephone conversation with Mr. E. Edwards, Public Relations Department, Cable and Wireless Jamaica Ltd. November 23, 1999

[2] Agreement between the Government of Jamaica and Cable and Wireless Jamaica Ltd. http://209.114.65.142/news2.htm

with plans to set up another three in the next three months (Jamaica Sustainable Development Networking Programme brochure).

The number of Internet service providers is growing steadily (from one in 1994) and is expected to increase with the new agreement. At the end of 1998 the Planning Institute of Jamaica reports twelve providers with an estimated 55,000 customers and two companies providing "Internet café" services (Planning Institute of Jamaica, 1999, 12–12.2).

DISTANCE EDUCATION IN JAMAICA

Watson and Marrett (1999) describe distance education provision from within the Caribbean. In Jamaica distance education activities occur mainly at the tertiary level and are primarily print-based, although other technologies are used. Distance education activities that involve or plan to involve technologies other than print are described below.

The University of the West Indies

The University of the West Indies through its Distance Education Centre (UWIDEC) is the largest provider of distance education in Jamaica and, indeed, the region. A range of programmes (Social Sciences, Education, Agriculture, and Engineering) are offered by the various faculties of the university, from the undergraduate certificate level to post-graduate master's programmes. The primary medium of instruction is print supported in varying degrees by interactive audioconferences and face-to-face tuition. Ten UWIDEC centres are located throughout Jamaica and each centre is provided with a computer lab of some ten computers each.

Initially, in the 1980s, the main delivery medium for distance education at the University of the West Indies was the audio-graphic teleconference supported by print. This medium had been decided on when a three-year feasibility study (Lalor, 1982) indicated that potential users wanted to be able to communicate in real time. However, in the 1990s, the change was made to print as the main medium as time on the real-time audioconference network constrained the number of courses that could be run in the academic year and space in the auidoconference centres was also limited.

The University of the West Indies has been in the process of upgrading its audioconference network with loan and grant funding from the Caribbean Development Bank, under an agreement signed in April 1993. The upgrade is being undertaken in two phases. The first phase involves the following:

(1) establishing audioconference rooms in those contributing countries that were not previously included in the network and second audioconference rooms at most sites to allow for simultaneous audioconferences;

(2) replacing analogue lines with digital sixty-four kilobits per second lines;

(3) providing a new telewriter system; and

(4) establishing linked computer labs to be used for computer-assisted learning including, via the World Wide Web, system-wide electronic mail, and electronic file transfer.

It is anticipated that the first phase will finally be completed in early 2000. The second phase will involve the establishment of a 384-kilobits-per-second compressed video capability using very small aperture terminals (VSAT), with transmit capability from any one of the three campuses to all sites.

In addition to the programmes mounted through UWIDEC, the School of Education is currently offering two of its master's level courses on the Web to teacher educators in teachers' colleges

throughout Jamaica. Four of the six remaining courses that comprise the Master in Education are scheduled to be offered on-line by September 2000. It is anticipated that all eight courses will eventually be offered on the Web, thus enabling teacher educators in the teachers' colleges throughout the island to have access to the master's programme on-line. Students visit campus for the first week of the course (three hours per week per course) when orientation to computer skills, as well as to the course, is provided. They also visit campus during the last week of the course prior to examinations[3].

Another distance education initiative at the University of the West Indies falls under the Caribbean University Level Programmes (CULP) funded by the European Development Fund. This project is intended to develop collaboration among the three largest language groups in the Caribbean – English, Spanish, and French – through the implementation of master's levels programmes by UWI, three universities in the Dominican Republic, and one in Haiti. The development of distance education components of some of the programmes forms an integral part of this project. It is intended that Web-based delivery will be an integral part of the distance component and a number of training activities for the university faculty have been and will be conducted[4].

University of Technology

The Jamaican University of Technology serves students not only from Jamaica but also throughout the Caribbean and is developing its capacity to implement open and distance learning. Currently it has a franchise arrangement with five community colleges throughout the island. There are plans to allow one of these colleges to have access to its Intranet on a pilot basis to support courses offered on franchise. In preparation for the launch of its distance education activities, five people from each of five faculties are being trained in the adaptation of courses for distance and computerised delivery[5].

The Jamal Foundation Ltd.

The Jamal Foundation's mission is to improve literacy, numeracy, and life skills of adults through non-formal educational programmes. Formerly known as the 'Jamaica Movement for the Advancement of Literacy' and once utilising radio, television, and print to supplement face-to-face classes island-wide, budgetary constraints have curtailed the use of the broadcast media. However, Jamal currently operates a computer-assisted learning programme in literacy at eight of its adult education centres that is meant to enhance the delivery of basic literacy (Annual Report, 1997-1998**)**.

Distance Education Programmes Offered by External Providers

It is almost impossible to conduct a survey of distance education programmes from external providers undertaken by Jamaicans. The information and communications technologies themselves now make it possible for an individual to quite independently select the institution of his or her choice, pay the fees, and pursue the programme. The University Council of Jamaica (UCJ) which "functions essentially as an accreditation and awards body for degree and other programmes proposed and implemented at associated tertiary institutions" and ensures that certain minimum standards are met, is in fact "looking into the possibility of putting in the mechanism to allow UCJ to

[3] Conversation with Dr. Hyacinth Evans, Senior Lecturer, Institute of Education, October 29, 1999
[4] Conversation with Ms. Darral Brown, Web Designer/Trainer, CULP, October 22, 1999
[5] Conversation with Dr. Nancy George, Director, Curriculum Development and Evaluation, UTech, October 12, 1999

assess distance education programmes" (1997)[6]. The researcher therefore sought information on only some of these externally provided programmes, especially those that had links with local organisations or otherwise had high visibility in Jamaica.

University of New Orleans

The University of New Orleans, in the United States, now has an office in Kingston and, since 1997, offers an executive Master in Business Administration to students in Jamaica. Lecturers from the University of New Orleans fly into the island and hold face-to-face sessions with students. The tuition, in addition to textbooks and required materials, includes the cost of a laptop computer and electronic mail access. The computer is loaded with software needed to allow students with a password access to the University of New Orleans on-line services, such as library, databases, and course-related Web pages. Most of the materials are Web-based and can be either downloaded or e-mailed to students. Through e-mail, students can correspond with their lecturers and each other. Assignments are e-mailed to lecturers[7].

Nova Southeastern University

Nova Southeastern University in the United States offers a number of programmes at the bachelor's, master's, and doctoral level in Jamaica. Classes are held mainly once every two weeks on weekends when faculty from Nova meet with the students. Textbooks and selected materials are provided. Computer access seems to be optional except for the master's and doctoral programme in Instructional Technology and Distance Education (ITDE) which is run in collaboration with the Mico Teachers' College in Kingston. Students are required to have access to an on-line computer, either privately or through the computer lab at Mico. The entire programme is on-line and, even when the faculty from Nova visit, classes are held in the lab. Some sessions incorporate interactive audioconferences[8].

Athabasca University

Under a Canadian and Caribbean distance education scholarship initiative Jamaican students, largely teachers of information technology in schools, have been pursuing a Bachelor of Science in Computer Technology from Athabasca University in Canada since September 1998. Scheduled to run until 2002, each module is taught by a tutor in Athabasca using print, e-mail, Web, or computer disc delivery and audioconferences on the UWIDEC network. Students are expected to provide their own access to an on-line computer either by using their own computer or computers that are available through the schools, the workplace, or a private provider[9].

Mount Saint Vincent University

Through the Jamaican Council for Adult Education the Master of Arts in Adult Education from Mount Saint Vincent University in Canada has been offered since 1998. Delivery is primarily through print and audioconferences, although students can choose to use e-mail and also access the

[6] Conversation with Ms. Olivene Burke, Acting Accreditation Officer, UCJ, October 13, 1999
[7] Conversation with Ms. Pat Marson, Programme Coordinator, UNO, October 13, 1999
[8] Conversation with Mrs. Elizabeth McKenzie, Principal's Assistant for Special Projects, MICO, October 13, 1999
[9] Conversation with Mrs. Elaine Foster-Allen, Ministry of Education, November 3, 1999

on-line services of Mount Saint Vincent University with the password they are provided on registration[10].

Planning Institute of Jamaica

In addition to these programmes, the Planning Institute of Jamaica Economic and Social Survey Jamaica for 1998 (1999, 19.20) identifies the following programmes offered by off-shore educational institutions:

- Barry University — Executive Master in Business Administration;
- Jamaica Institute of Bankers and University of Wales — Master of Business Administration;
- Sam Sharpe Teachers' College; and
- Central Connecticut State University — Bachelor of Science in Mathematics and Computer Sciences, Master of Education in Educational Leadership.

GENDER ISSUES IN THE DELIVERY OF DISTANCE EDUCATION USING INFORMATION AND COMMUNICATIONS TECHNOLOGIES IN JAMAICA

Registration in distance education programmes in Jamaica reflects the trend in gender participation in education in general, with women largely outnumbering men, as shown in Table 3. One exception not shown in the table is that of participation in the adult literacy programmes run by the Jamal Foundation Ltd., a consequence of the lower participation rate of boys in the formal school system. However, more women than men tend to make use of the computer-based literacy programmes[11].

[10] Conversation with Mr. Seymour Riley, Director, Field Operations Department, Jamal Foundation Ltd., October 13, 1999

[11] Conversation with Mr. Seymour Riley, Director, Field Operations Department, Jamal Foundation Ltd., October 13, 1999

TABLE 3

Registration by gender in distance education programmes

Programme	Total no. of students	No. of female students (% of total*)	No. of male Students (% of total*)
UNO 1999	39	Approx.** 60%	Approx.** 40%
Nova Instructional Technology and Distance Education	21	17 (81%)	4 (19%)
University of the West Indies Master of Education 1998/99 course, Inside Classrooms	22	18 (82%)	4 (18%)
University of the West Indies Master of Education 1998/99 course, Theory and Practice	16	14 (88%)	2 (12%)
Athabasca University	30	15 (50%)	15 (50%)
UWI Caribbean University Level Programmes training	**	Approx. **80%	Approx. **20%
UWIDEC (1998/99 Jamaican registrations)	750	553 (74%)	197 (26%)
Mount Saint Vincent University 1998/1999	24	19 (79%)	5 (21%)
Mount Saint Vincent University 1999/2000	45	35 (78%)	10 (22%)

Source: Various programme administrators

* Rounded to nearest whole number

** Actual totals not available

In conversations with the various programme administrators their views were sought on the differences, if any, in access to or use of the computers by male and female participants. The responses tended to be one of perception and ranged from "initially equally incompetent", as students had little prior exposure to computers (University of the West Indies Master of Education) to "equally skilled" for a programme in which all the students worked with computers (Athabasca University). Interestingly, of the seventeen female students in the Nova Instructional Technology and Distance Education programme only four came into the programme with a "good degree of computer literacy", while three of the four men in the programme were computer literate. The Caribbean University Level Programmes Web designer and trainer noted that the women who attended the training programmes were less computer literate than the men but eager to learn. She felt that the women found it harder to grasp Internet skills without basic computer exposure. All

programmes provided orientation for students who were not computer literate but it was noted that initial progress was hampered if students were not computer literate.

Regarding differences in approach one person commented that

> men will sit and fiddle with the computer while women will just use it to do what they have to do. Unless the women are in the field of computing, they won't really pay much attention to programmes they don't use on a daily basis.

Another said that the women tended to be more organised and better time managers, handing in assignments on time although they generally had more domestic responsibilities than the male students. The men were described as 'very supportive' and facilitated the student group meetings that were encouraged.

In the Mount Saint Vincent University 1998-1999 group of twenty-four students, five of eight students who used the on-line facilities were women.

Ownership of computers ranged from all students owning laptop computers (University of New Orleans), to 60% ownership with some trying to acquire their own (Nova ITDE), to an estimated one-third to one-half of students accessing from home (University of the West Indies Master of Education 1999-2000 group, up from one-quarter to one-half in the previous year), to some owning computers but not having access to telephone lines (Athabasca University). In the latter two programmes, that targeted teachers, discussions about soft loans for the purchase of computers were being held with the Jamaica Teachers' Association. Two students in the Athabasca University programme were known to be making arrangements to purchase computers with funding from a credit union.

For students who did not own their own computers and relied on using computers at the workplace (especially at schools or colleges), access was sometimes problematic as there were competing demands on the facilities; specifically, other students were using the equipment. One problem that seemed to be common among the programmes was the variable quality of the on-line service provided.

ANALYSIS

Gender is therefore not an issue for women in the use of the new information and communications technologies in distance education programmes. Rather it would seem more to be a matter of institutional preparedness to use the technology for the delivery of educational programmes. Here the term 'institutional preparedness' is being used to encompass the macro-national level and the micro-institutional level.

Policy

In 1998 the Ministry of Education formulated a draft policy on the use of information and communications technologies in the education system which is currently being debated. The ultimate purpose of the policy, as stated in its preamble, is "for more effective creation and delivery of educational products for improved teaching and learning in Jamaica." However, the policy "recognises the risk of increasing the knowledge gap, and so … pays special attention to the issues of access and equity as we expand the opportunities for lifelong learning for all our citizens, anytime and anywhere" (Ministry of Education and Culture, 1998).

Specific objectives stated in the draft policy include ensuring that all school-leavers are computer literate to enhance employment and further training prospects; the creation of "a teaching force in which all practitioners possess the critical requisite skills and competencies required to use ICTs as a tool in enhancing the teaching/learning process and a cadre of ICTs teacher specialists", and the exploitation of the interactive potential of technology "in the provision of life long learning, anytime, anywhere via distance education programmes."

The document restates government's commitment "to provide every school with an Internet connection where the telephone facility exists and to supply others with the relevant software to expand their access to relevant material, relevant concepts and learning approaches."

A review of the Caribbean Examination Council (CXC) entrants to the Information Technology examination for 1998 shows that of a total of 1,876 students sitting either the general proficiency paper (covering theory, productivity tools, information processing, and programming) or the technical proficiency paper (involving theory, word-processing, spreadsheets, and database management), 812 (approximately 43%) were male while 1,064 (approximately 57%) were female. These statistics are in keeping with the higher participation rate of females in the secondary school system.

In order to accomplish the goal of integration of information and communications technologies in the school system a number of initiatives have been undertaken, two major ones being the Jamaica 2000 project to equip secondary schools, community colleges, and teachers' colleges and the Ed Tech 20/20 Technology in Education project to benefit primary schools. The first is a collaborative project among the Jamaica Computer Society Education Foundation (JCSEF), Business Partners for Education, the Ministry of Education and Culture, the Human Employment and Resource Training Trust/National Training Agency (HEART/NTA), and other partners in the private sector to establish computer labs in the schools and colleges and provide in-service training for teachers.

The second also involves the JCSEF and public and private sector entities, with support from the Inter-American Development Bank, and established a pilot project in four primary school clusters in four parishes: Malvern, St. Elizabeth; Oracabessa, St. Mary; Above Rocks, St. Catherine, and Frankfield, Clarendon.

In addition to these formal initiatives individual schools have implemented their own projects to build the information and communications technologies infrastructure.

Whereas in 1996 only an estimated 3% of graduates of teachers' colleges had training in the use of information technology in schools (Peart, 1996), today at least one of the teachers' colleges is requiring students to enter with a minimum of basic computer competence while others make courses in Information Technology compulsory.

The educational institutions themselves, such as the University of Technology and UWI, are also in the process of developing their information technology policies.

It is the implementation of the policies that presents challenges, however. Many of the programme co-ordinators complained of the variable quality of service provided. My own experience of accessing the Web is that it is often very slow to the point of frustration. Primus (1998) states that while all the countries of the Association of Caribbean States[12]

[12] The Association of Caribbean States includes Antigua and Barbuda, Bahamas, Barbados, Belize, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, and Venezuela.

> have connectivity and offer a full range of Internet services, the main communication pipes serving the region have inadequate capacity and bandwidth, traffic routing is inefficient and the network architecture is not optimized. As a result the service is of low quality and expensive.

She further states that the intra-regional infrastructure within the Caribbean is "very weak", with more than 50% of the telephone and Internet traffic among countries being routed through the United States of America leading to congestion.

Primus identifies as other challenges the limited skills and tools available for placing existing information on the Internet and the need for orientation and training for people in government offices, businesses, and non-governmental organisations to the opportunities offered by the technology, including cost savings. For example, she points out, it is cheaper to use e-mail than to send a fax or make a telephone call.

The case of the computerisation of the Mona campus of the University of the West Indies aptly demonstrates the very challenges Primus highlighted. Since 1991 the university has been involved in the process, which to date is still not complete, as many departments are not yet connected to the fibre distributed data interface campus-wide backbone.

Beginning with an initiative of the Organisation of American States (OAS) called the Caribbean Universities Network (CUNet), the Mona campus of the University of the West Indies in Jamaica achieved dial-up electronic mail access to the Internet via Puerto Rico in 1991. This meant that messages from and for persons in Jamaica were sent and received only at particular times of the day when contact was established with Puerto Rico.

With the increase in traffic resulting in the swamped dial-up access link, in 1993 the OAS and the National Science Foundation (NSF) in the United States agreed to support the establishment of a Jamaican computer network (JAMNET) with direct links to the Internet. However, it was not until July 1994 that the telecommunications carrier provided the lines and connection to the Internet was made on August 15 of that year. With signals routed by satellite and fibre optic cable to the NSF network in Maryland, the initial 64 kilobits per second circuit at a cost of 6,500 United States dollars per month was upgraded to 256 kilobits per second at a cost of 7,500 United States dollars per month as of January 1, 1998. With the new agreement between Cable and Wireless Jamaica Ltd. and the government it is anticipated that the provision of direct link by V-Sat will be facilitated.

The development of programmes is also proving a challenge as faculty who are involved in delivering their programmes using traditional methods find it difficult to devote the time required to learning the new methodologies and developing the programmes for delivery involving the new information and communications technologies.

Further, the financial requirement for maintaining and upgrading the computers and software is substantial. To date, this has largely been met through partnerships and project funding.

CONCLUSION

The importance of the incorporation of the information and communications technologies is increasingly appreciated by policy makers in government and the educational institutions. Although progressing at a slower rate than may be desired the physical infrastructure is being, or is to be, provided, although the all-important access to telephones is unevenly distributed between rural and urban areas and is likely to be a problem for some time to come. The collaborative approach among institutions is to be encouraged.

The major challenge is in the training of providers in the development and implementation of the programmes incorporating the information and communications technologies.

The gender consideration seems not so much to be the participation of women and their access to the information and communications technologies but rather that of men in the educational system in general.

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Ms. Olivene Burke, Acting Accreditation Officer, UCJ, October 13, 1999

Mr. E. Edwards, Public Relations Department, Cable and Wireless Jamaica Ltd. November 23, 1999

Dr. Hyacinth Evans, Senior Lecturer, Institute of Education, October 29, 1999

Mrs. Elaine Foster-Allen, Ministry of Education, November 3, 1999

Dr. Nancy George, Director, Curriculum Development and Evaluation, University of Technology, October 12, 1999

Ms. Pat Marson, Programme Coordinator, University of New Orleans, October 13, 1999

Mrs. Elizabeth McKenzie, Principal's Assistant for Special Projects, MICO, October 13, 1999

Mr. Seymour Riley, Director, Field Operations Department, Jamal Foundation Ltd., October 13, 1999

4.6 A REPORT FROM ST. KITTS AND NEVIS

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In St. Kitts and Nevis, as in most Caribbean countries, women dominate the education system. The majority of teachers are women and females have overtaken the males in academic achievement at both the local and regional levels. Women also dominate church and political activities, although only two women have run for elections so far.

In the field of information and communication technologies women dominate the classes held in computer literacy but males so far have dominated the 'technician' level of the industry.

EXISTING OPEN AND DISTANCE LEARNING PROGRAMMES

The University of the West Indies School of Continuing Education has been the main provider of education through open and distance learning. Its programmes mainly serve students doing pre-university courses and first-year university courses, although a few short-term open and distance learning courses have been added including Drug Abuse Prevention and Management courses for senior nurses.

Very little use is made of radio and television for educational purposes, although a few students are taking advantage of the cable channel – Knowledge Channel – formerly known as 'Mind Extension University'.

Before the introduction of information technology quite a few students in St. Kitts and Nevis registered in correspondence courses with educational institutions in Britain and they continue to do so.

INTRODUCING INFORMATION AND COMMUNICATION TECHNOLOGIES

It is now government's policy to dramatically promote the introduction of ICTs at all levels of the education system — primary, secondary, and tertiary. Secondary and tertiary institutions now have computer labs and labs are being developed in primary schools. There is, however a great need for teacher training in the following areas:

- computer literacy, including keyboarding;
- the use of the computer as a research tool (Internet); and
- the use of the computer to assist learning.

Within the school system competency levels in Mathematics and English subjects have greatly deteriorated. Integrated learning systems could assist in consolidating and improving the achievement levels of slow achievers.

During the tenure of the previous government a women's training centre was built. At this centre classes were held for women to improve their status as under employed or unemployed. Classes also provided instruction in making homeowners (50 to 60% headed by women) more independent with classes in subjects including Agriculture, Ham Curing, Wine Making, Carpentry, and Home Maintenance such as Electricity, Plumbing, Dressmaking, and Basic Entrepreneurial Skills.

Unfortunately, the women's training centre is now mainly used for overflow classes from the neighbouring government primary school.

Apart from some in-service training courses for staff very little is being done by private firms or chambers of commerce. Some small private computer enterprises have begun to offer classes in computer literacy and one or two service hold summer courses for students at the community level.

ACCESS, TRAINING AND CAPACITY FOR WOMEN

At present, the community in general needs to be made aware of the opportunities that can become available to them through ICTs. Education technology is still avoided by the middle aged and those who do not usually have access to it, who see it as something beyond their scope and capability.

National and community libraries are probably the best places to develop awareness of and access to ICTs at a community level. In much the same way as libraries historically brought access to books and knowledge to a large percentage of the population who could otherwise not afford them, libraries can again play a dynamic role in increasing the availability of knowledge through access to the Internet.

The Non-Formal Youth Skills Project is also in a good position to make use of ICTs and open and distance learning courses. The project is a government–run institution that delivers both adult literacy classes and short (six- to twelve- week) courses to provide and upgrade job skills. The project is flexible in its approach and, with some necessary re-structuring, it could be a good access for further education.

The local tertiary college, The Clarence Fitzroy Bryant College, has a Division of Continuing Studies and as this college has a computer lab it can also be used to promote increase access to ICTs and open and distance learning.

The University of the West Indies' School of Continuing Studies is extending its capacity to increase distance learning offerings but only from the University of the West Indies' main campus.

POLICY DIRECTIONS

So far, there has been no policy on technology that singles out women as beneficiaries for, as mentioned, women are taking advantage of education far more than males. So much so that in gender-related policies at this time there is a move to see the male as the marginalised underachiever and there is a great worry that attention should now be paid to them instead of to the females.

National efforts in ICTs and open and distance learning and the islands are still groping for the correct approach in the use of education technology.

The OECS (Organisation of Eastern Caribbean States) Education Reform Unit (OERU) has been asked by Ministries of Education by member-states to produce an IT policy for the region that can be adopted and/or adapted for local use.

The first draft guidelines have already been submitted and approved and work is now being done on a more comprehensive document.

4.7 A COUNTRY REPORT FROM ST. LUCIA

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In St. Lucia, the application of information and communications technologies (ICTs) in education is uncommon. At the primary level only two of our eighty-four schools are equipped with computer labs. A few primary schools, through their own initiatives, have been able to acquire both new and used computers but they are used primarily for administrative purposes. Less than five schools are able to provide students with some form of computer education.

At the secondary level, computer labs have been installed in six of our eighteen public secondary schools. For the most part, computer instruction is geared towards preparing students for the Caribbean Examination Council (CXC) Information Technology examination. Information technology is generally not incorporated in the teaching of other subjects.

Sir Arthur Lewis Community College, the main tertiary institution in St. Lucia, is equipped with six computer labs — four at the Castries Campus in the north of St. Lucia and two at the Vieux-Fort Campus at the extreme southern end of the island, about sixty-four kilometres away. At the Castries Campus the general student population have access to three of the labs and the fourth is designated as a development and testing environment for students following the Computer Maintenance Programme. All students use the labs at the Vieux-Fort Campus.

Other tertiary institutions such as the Cable and Wireless Caribbean College and, to a lesser extent, the University of West Indies (UWI) School of Continuing Studies and Distance Education Centre utilise computer technology in the programmes that they offer.

At all levels of the education system in St. Lucia, there has been no gender bias with respect to access to information technology. In fact, until recently, the girls who registered for the CXC Information Technology examination far outnumbered the boys (see Appendix 1 for supporting statistics), primarily because the first school to offer the CXC Information Technology programme is an all-girls school.

IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES ON DISTANCE LEARNING

Training through open and distance learning is available only at the tertiary level in the education system in St. Lucia. The key institutions that are involved in open and distance learning are set out in the following table.

TABLE 1

Open and Distance Learning Institutions in St Lucia

Name of Institution	Private or Public	Open and Distance Learning Programmes Offered
Sir Arthur Lewis Community College (Southern Extension Centre)	Public	• Certificate in Secretarial Studies and Business Studies
UWI School of Continuing Studies and Distance Education Centre	Public	• Bachelor of Science in Management Studies • Bachelor of Science in Agriculture Management • Certificate in Business Administration • Certificate in Public Administration Certificate in Education Administration
Cable and Wireless College of the Caribbean	Private	• Geographical Information Systems
Chamber of Commerce	Private (non-profit)	• Executive Master of Business Administration in collaboration with University of the West Indies
Intramacs	Private	• Certificate in Information Technology in collaboration with the United Kingdom Association of Computer Professionals
University of Sheffield	Private	• Master of Education
University of Lester	Private	• Master of Education
Mount St. Vincent University	Public	• Bachelor of Tourism and Hospitality Management

Generally, these institutions do not use new information and communications technologies for the delivery of open and distance learning programmes. Courses are administered primarily using print material, e-mail, and video-tapes. CD-ROMs are utilised in the Cable and Wireless College's Geographical Information Systems programme, whereas in Mount St. Vincent University's bachelors degree programme tutorials are conducted using teleconferencing facilities. The UWI School of Continuing Studies and Distance Education Centre utilises a two-way audio mode of delivery. Although some of these institutions have information and communications technologies facilities, generally students use them only in preparing their assignments.

Open and distance learning programmes are not limited to the institutions mentioned. There is no restriction on individuals wishing to register in any programme offered internationally through open and distance learning. Realising the dangers of not regulating education through open and distance learning the Ministry is pursuing, as a national priority, the establishment of an accreditation committee responsible for verifying the credibility of institutions offering open and distance learning programmes, the integrity of such programmes, and the quality and validity of assessment.

The government's main focus in open and distance learning is at the tertiary level and in adult and continuing education. Special consideration is being given to banana farmers who are seeking other means of earning an income with the decline of the banana industry.

There are no gender-specific priorities. In fact, in St. Lucia, participation in open and distance learning programmes is greater among women than among men. Appendix 2 shows registration by gender in the programmes offered by the UWI School of Continuing Studies and Distance Education, St. Lucia. The ratio of male to female is not much different than for other institutions that offer open and distance learning programmes in St. Lucia.

One of the objectives of the government's long-term education plan is to rescue boys who tend to lag behind the girls in academic performance and to attract more men to continuing education programmes.

WIDENING WOMEN'S ACCESS TO INFORMATION AND COMMUNICATIONS TECHNOLOGIES FOR EDUCATIONAL PURPOSES

Even if educational institutions with existing information and communications technologies facilities were to use them for open and distance learning purposes then, irrespective of gender, access to these facilities would be constrained by cost and, to some extent, availability, particularly in rural areas.

The Ministry of Education is embarking on a number of projects aimed at increasing the availability of information and communications technologies for educational purposes throughout the island of St. Lucia.

Technical and Vocational Education and Training Project

The overall objective of the Technical and Vocational Education and Training (TVET) project is to support the creation of a workforce who have a sound educational background by providing students with appropriate skills and instilling in them desirable attitudes that will enable an effective transition to the world of work. A key component of this project is the development of expertise in the field of information technology.

Millennium Project

The primary objective of the Millennium Project is to incorporate information technology into the school curricula at all levels. One component of this project is to establish an island-wide network of all schools and educational institutions with a gateway to the Internet. This network will enable access to the myriad open and distance learning programmes that are available through the Internet.

Restructuring of the Adult Education Programme

The main thrust of the Restructuring of the Adult Education Programme is to expand the Adult Education Programme from one that provides adult literacy classes to one that will provide opportunities for acquiring income generating and employable skills, as well as life enrichment education. One of the proposed strategies for delivery of instruction is distance teaching. The use of information and communications technologies for this mode of delivery will be possible when the adult education centres (mainly primary schools) are adequately equipped — a goal of the Millennium Project.

It is important to note that the needs of both sexes are given equal consideration in all three projects.

RECOMMENDATIONS FOR TRAINING AND CAPACITY BUILDING

Teacher Training

The availability and use of information and communications technologies will be increased with the implementation of these projects and this will no doubt have a significant impact on all teachers. Retraining and re-orienting teachers will be necessary in order to assist them in adapting to the new educational environment. Teachers will need to build their confidence and competence with new technology, as many may shy away from using these technologies, particularly in the presence of students who are more familiar with them. Teachers will need to develop their capability in using information technology for planning purposes, course preparation, and student evaluation and assessment. Further, teachers will need a clear understanding of the ways in which students learn with information technology and its implications for the art of teaching.

Communal Resource Centres

If the introduction of technology in schools is not done properly it may have a negative impact on rural girls and women and, generally, on students who may not have access to a computer at home. Educators must ensure that the use of the computers in the classroom is not dominated by students who use them at home and that students of lower socio-economic status are not further disadvantaged by the introduction of computers in the classroom.

One possible solution to increasing computer access to people of limited means is to establish communal resource centres (or 'telecentres' as they are known in Africa and Europe). Telecentres are work or training locations equipped with high quality, modern computer and communications technologies that are shared by members of a community. People who are unable to afford such technologies on their own contribute to their acquisition and maintenance and, in turn, use them for profitable means.

Confidence Building

There is no substitute for education and training in increasing women's and girls' awareness of the potential benefits of information and communications technologies and building their confidence in their ability to use them. However, the learning methods and the educational material used must be gender sensitive in its language, images, and examples; for example , an information technology expert should not always be portrayed as a male figure in a top management position.

The opportunities available to working women to enhance or upgrade their skills, knowledge, and access to information and communications technologies depend on the organisation with which they are employed and the function that they perform within that organisation. In the public service, for example, there are opportunities for improving the capabilities of ICTs. Generally, women in areas such as Accounting, Secretarial, Project Management, and Planning are presented with more opportunities because computers are applied extensively in these areas.

NATIONAL TELECOMMUNICATIONS POLICY

Cable and Wireless Ltd. has been permitted by law to monopolise telecommunications from its introduction to St. Lucia. Until recently policy makers appeared to have accepted this monopoly. However, in the last two years, the focus has been on terminating this monopoly and developing national telecommunications policies.

One of the main outcomes of the liberalisation of the telecommunications sector is a reduction in rates and, by extension, greater access because more people will be able to afford telecommunications products and services.

The Ministry of Communications, Works and Transport recently developed a national telecommunications policy which Cabinet passed and adopted. In developing this policy, the Ministry sought input from various government sectors, including the Ministry of Education. However, from the public's perception, the consultation conducted in the development of this policy was drawn from only a narrow base. Even after Cabinet adopted the policy very little has been done to make the public aware of the content of this policy.

Neither gender issues nor telecommunications policies in the education sector are specifically articulated in the national telecommunications policy. The Ministry of Communication has indicated, however, that they are aware of the latest International Telecommunications Union resolutions on gender and development in the telecommunications sector. These resolutions were communicated to them through the Caribbean Telecommunications Union, which collaborates closely with the Ministry.

The Organisation of East Caribbean States Education Reform Unit (OERU) is in the process of drafting an information and communications technologies policy for education in the Organisation of East Caribbean States. Hopefully, this policy will address some of the issues that are not clearly specified in the national telecommunications policy.

APPENDIX 1

Results of Caribbean Examination Council Information Technology Programme by Gender, 1995 - 1999

Year	Male			Female		
	No. Sat	*No. Pass*	*% Pass*	*No. Sat*	*No. Pass*	*% Pass*
1995	4	3	75	84	33	39.3
1996	19	6	31.6	86	38	44.2
1997	40	23	57.5	88	61	69.3
1998	44	36	81.8	117	91	77.7
1999	104	74	71.1	111	76	68.5

APPENDIX 2

UWI School of Continuing Studies and Distance Education Centre at St. Lucia
Registration by Programme, 1997-1998

Programme	Male			Female		
	New	*Continuing*	*Total*	*New*	*Continuing*	*Total*
Bachelor of Science	2	10	12	7	16	23
Bachelor of Science in Management Studies	7	0	7	26	0	26
Certificate of Business Administration	3	10	13	11	44	55
Certificate of Public Administration	7	5	12	8	20	28
Certificate of Education	4	0	4	22	28	50
Bachelor of Science in Agribusiness Management	0	0	0	1	0	1

1998-1999

Programme	Male			Female		
	New	*Continuing*	*Total*	*New*	*Continuing*	*Total*
Bachelor of Science	2	3	5	0	7	7
Bachelor of Science in Management Studies	7	6	13	25	23	48
Certificate of Business Administration	3	3	6	10	30	40
Certificate of Public Administration	4	8	12	5	18	23
Certificate of Education	2	3	5	23	22	45
Bachelor of Science in Agribusiness Management	0	0	0	1	1	2

4.8 A COUNTRY REPORT FROM TRINIDAD AND TOBAGO

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This report departs somewhat from the parameters of the pre-conference workshop on gender and technology at *TEL-isphere 99: The Caribbean and Technology Enhanced Learning*. Simply put, it is less of a report on gender and the status of the information and communication technologies (ICTs) in distance education than was requested for two reasons. First, open and distance learning has only recently become a part of the national education system of Trinidad and Tobago. Consequently, there is need at this time to look more at the societal issues involved in the change from a traditional education system to open and distance learning. Second, if we look at access to education from the perspective of enrolment numbers, women are well represented in higher education in Trinidad and Tobago. Thus, while the issue of women's participation at higher levels is addressed in this paper, the matter is subsumed within a broader discussion of the development of open and distance learning in Trinidad and Tobago.

The report makes the following three recommendations:

- the current thrust to establish wide area networks (WANs) must materialise and the goal to link the University of the West Indies (UWI) with the Tele-learning Institutes (TLIs) should be pursued;
- educational institutions introducing open and distance learning should emphasise internal restructuring even as they move towards merging with other institutions; and
- policymakers should be sensitive to the difference between information technology and information and communication technologies, and should therefore move towards a broader perspective of the role of computers in education.

HISTORICAL BACKGROUND

The indigenous organisation and implementation of open and distance learning in Trinidad and Tobago is relatively new. For several decades this country, like others in the Caribbean and beyond, received correspondence courses from foreign providers, in particular from the United Kingdom, during the 1950s and 1960s. With Independence in 1962 came a heightened awareness of the role of educational development in effecting social mobility and overall national development. Consequently, the Independence government placed considerable emphasis on the expansion of educational provision, both quantitatively and qualitatively. Not only was there an increase in the number of places provided but there was also a definite thrust to extend the level and range of provision to a wider cross-section of the population. This expansion in education was reflected in several ways:

- broadening the secondary school curriculum to include studies in the technical and vocational subjects, business, and agriculture;
- establishing tertiary level institutions focusing on technical and vocational studies;
- setting up residential youth camps and community-based trade learning centres to serve the low-income sector of the population;

- substantially increasing the provision of primary teacher education; and
- establishing the St. Augustine campus of the University of the West Indies, as a result of which came the following:
    - the extra-mural department (now the School of Continuing Studies) of the university which provided a range of special interest, skills-based, and para-professional courses;
    - the introduction of university-based professional training for secondary school teachers; and
    - the opportunity for mature lower-income professionals, including primary school teachers and public servants, to pursue higher education leading towards university degrees.

These changes all contributed to a decline in the popularity of correspondence courses among the nationals of Trinidad and Tobago.

During the 1960s and 1970s, when larger developing countries were establishing the infrastructure to implement distance education, Trinidad and Tobago was setting up structures to provide contiguous education at all levels of the education system and in all sectors of society. For example, the Schools Broadcasting Unit and the Educational Television Unit were introduced early to complement face-to-face classroom teaching in the primary and secondary sectors respectively and, therefore, are not regarded as open and distance education facilities.

Towards the latter part of the 1980s the capacity of this expanded three-decade old education system to satisfy a new wave of demand was challenged in three ways:

(1) At the international level new telecommunications and computer-networked technologies were gaining prominence within the education sector and effectively breaking down institutional walls. The space for teaching and learning was gradually redefined and Trinidad and Tobago, like most other countries, would feel the effect of this technological development.

(2) The increased reach into the education sector that the advent of the new technologies made possible coincided with and facilitated the internationalisation of educational provision. Indeed, whether as a result of new technologies or not, the 1980s witnessed a renewed thrust among institutions in the developed countries of the North to target the populations of other countries with their course offerings.

(3) At the national level the demands of the workplace and a growing awareness of the need for continuous professional upgrading has given rise to increasing demands for education and training in new areas. Unfortunately, there is the perception that Trinidad and Tobago's national institutions cannot adequately meet these demands.

It is against this background that recent initiatives aimed at expanding educational provision began to emerge in Trinidad and Tobago.

ALTERNATIVE ARRANGEMENTS

Tertiary level institutions in Trinidad and Tobago are now very much aware of the growing demand to provide distance education to key sectors of the country's population. They are also aware of the growing competition from external providers. However, currently the demand far exceeds the country's capacity to supply in the short run. A key factor contributing to this situation is the difficulty involved in restructuring the relevant institutions, which have focused exclusively on face-

to-face delivery in their original design, and now do not have the level of flexibility that could allow for ready conversion to or accommodation of the delivery of open and distance learning.

The interaction of this domestic situation with the growing internationalisation of education provision has resulted in the proliferation of alternative delivery systems based on arrangements worked out between foreign providers and a growing number of locally based private organisations. Through these arrangements the local institution serves as an intermediary between the student and the foreign provider. While there may be exceptions the general pattern is that the local institution advertises the foreign provider's offerings, registers successful applicants and, in most cases, provides tuition based on the curriculum and materials the foreign provider supplies. Tuition may take the form of classroom lectures, small group tutorials, or a combination of both, or it may include audio- or video-taped lectures sent from the foreign institution. The local institution is responsible for administering the provider's examinations and the provider's issuing certificates.

While this is fast becoming the dominant mode through which the foreign provider enters the local educational environment, in some instances there is no intermediary organisation. Pre-packaged print materials are mailed directly to the student who is responsible for maintaining contact, through whatever means agreed to, for the exchange of information and the submission of assignments. The student, the provider, or sometimes both, must arrange to have a bona fide local institution administer an examination.

Foreign providers target mature audiences and can be divided into two broad categories. One type of provision is aimed at giving a second chance to people who may not have acquired their secondary school qualifications at an earlier age. As this service is also provided nationally, primarily through evening classes at senior comprehensive schools from which many of these now mature students would have graduated, we need to investigate how the entry of the foreign provider impacts on what is offered locally.

The second type of foreign provision is targeted at lower- and middle-income professionals, some of whom already have first degrees, in most cases, from the University of the West Indies. These professionals are not simply interested in doing postgraduate work, though in fact the programme of study they opt to pursue may lead to a master's degree. Rather, they are interested in accessing programmes that are tailored to meet the requirements of the work environment in order to make themselves more marketable. Further, they choose courses from foreign providers because they perceive that the postgraduate offerings of the University of the West Indies do not satisfy this marketability criterion. Appendix 1 lists a selection of foreign providers, local support institutions where appropriate and the programmes or courses they offer.

Two factors are worth noting about the provision of foreign postgraduate courses.[1] First, the service provided through the foreign provider's arrangement with a local institution cannot really be described as distance education even though distance is involved in the overseas dimension to what is being offered nationally. What is being offered is largely contiguous in nature, though based on curricula materials and assessment procedures originating abroad. Second, while the Internet and in particular e-mail may comprise one component of the delivery mode this usage is limited. Overall, the technology used cannot really be classified as information and communication technologies, given the central place that computer-networked systems occupy in the concept of using information and communication technologies in education.

[1] The observations that follow do not apply to the bachelor of education programme offered by the University of New Brunswick (ROYTEC), which is also listed in Appendix 1. A large proportion of that programme is delivered on-line.

THE UNIVERSITY OF THE WEST INDIES DISTANCE EDUCATION CENTRE

To date the University of the West Indies is the only indigenous institution engaged in the development of distance education programmes in Trinidad and Tobago. The University of the West Indies' involvement in distance education dates back to 1983 when it initiated a small distance learning project through audioconferencing. That project, known as the University of the West Indies Distance Teaching Enterprise (UWIDITE), had its headquarters on the Jamaica campus of the university at Mona. UWIDITE's main operation was the delivery of professional development programmes at the undergraduate level primarily intended for students in non-campus countries. The Faculties of Education and Social Sciences were the main providers of these certificate programmes, although a limited number of first year courses in Law were delivered to students who would ultimately seek entry to one of the campuses to complete their degrees.

In 1992 the university decided to expand on this limited operation and develop distance education as an integral part of its teaching programme, thereby transforming the institution from a single-mode to a dual-mode institution. A study commissioned by The Commonwealth of Learning (COL) to investigate the feasibility of this venture supported the idea and set out a series of proposals for effecting the transformation. One major proposal was that the distance education offerings should be based on pre-packaged self-instructional materials and that academic staff from the various faculties should, with appropriate support, have the primary responsibility for the design and development of these materials (Renwick, Shale, and Rao, 1992).

As a result of this decision UWIDITE gave way to the University of the West Indies Distance Education Centre (UWIDEC) in 1996 and, in September 1997, the new department began to deliver an expanded distance education programme throughout the Caribbean. In its upgraded delivery format, distance education at the University of the West Indies has, at its core, pre-packaged self-instructional print materials. A typical package comprises the following:

- the *course text*, which contains the main teaching material and learning activities;
- the *course guide*, which provides a broad overview of the course, general information related to the study of the course, and feedback on the learning activities; and
- a compilation of *readings*, when appropriate.

Normally, a course is designed to last one thirteen-week semester. Approximately five face-to-face tutorials and about three audioconferences support a learner's study of the self-instructional print materials.

UWIDEC comprises three campus offices (Mona, Jamaica; Cave Hill, Barbados; and St. Augustine, Trinidad and Tobago), with headquarters on the Cave Hill campus. These campus offices are themselves part of a wider network that includes twenty-six sites spread across the fourteen countries. Each site is equipped with one or two audioconference rooms and a ten-station computer laboratory. Internet access is now available at all sites and a wide area network (WAN) is soon to be established. UWIDEC's organisational structure comprises the following operation units:

- student support services;
- course materials development and distribution; and
- telecommunications.

A research and evaluation unit is soon to be introduced.

In the 1998-1999 academic year UWIDEC had an enrolment of some 2,000 students throughout the Caribbean, with 239 students in Trinidad and Tobago. Appendix 2 lists the sites and programmes currently offered.

UWIDEC's mode of distance delivery can be characterised as industrialised distance education, using Peters' (1967) definition of the concept. If one were to apply Nipper's classification of distance education systems based on the media used, then UWIDEC may be regarded as emerging out of the second generation system of open and distance learning, but still leaning in that direction (Nipper, 1989). Print, which Nipper and others regard as a one-way medium, remains the dominant delivery mode. UWIDEC possesses the elements that allow it to evolve beyond the classic second generation mode and position itself somewhere in between the second and third generations. Indeed, it is likely that distance education at the University of the West Indies would, of necessity, be permanently characterised by this state of intermediacy. Given the need to cater to a geographically dispersed student population its policy on open and distance learning must of necessity consider the needs of the 'isolated' learner while at the same time take advantage of the new technologies to facilitate links across the region for meaningful learning.

The fact that UWIDEC possesses both synchronous and asynchronous technologies presents the organisation with at least two challenges. In the first place, should both technologies be used in a complementary fashion or should they function independently of each other? Second, what are the most appropriate teaching and learning strategies for each type of technology? The second issue is particularly pertinent for UWIDEC given the persistence of the use of the audioconference in remote-classroom delivery in the earlier period and the apparent demand by students to be lectured to. It is also pertinent in relation to the computer-networked system, given the widespread under-use of the capabilities of this facility in the wider educational technology environment.

THE POTENTIAL FOR FURTHER EXPANSION OF OPEN AND DISTANCE LEARNING

The University of the West Indies distance education programme is discussed here because, as a regional institution, it has a presence in each of the fourteen countries that support it. In that sense, it is one of the public sector tertiary level institutions in Trinidad and Tobago. However, the University of the West Indies is the only one of all these institutions capable of developing and delivering open and distance education. No other public sector tertiary level institutions in Trinidad and Tobago offers distance education at this time, although it should be noted that most of these institutions operate an evening schedule to serve the needs of the high proportion of working people who access their services. Nevertheless, learning in these institutions is very much bound by time and place. Two recent initiatives attempt to address this situation.

College of Science, Technology and Applied Arts of Trinidad and Tobago

One initiative is the proposed establishment of the College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT) which is due to be launched as a fully functioning entity by September 2000. When fully established, it will bring together seven existing tertiary level institutions under a single umbrella organisation. COSTAATT's objectives are listed as follows:

- to offer relevant, state-of-the-art, internationally recognised tertiary level education and training, producing graduates who are ready for the world of work;
- to broaden access to higher education to previously under-served groups and communities throughout Trinidad and Tobago;
- to increase the participation rate in tertiary education to 15% by the year 2005, as recommended by CARICOM (the Caribbean Community); and

- to contribute to the reduction of unemployment, the creation of opportunities for youth, and supporting national development.

COSTAATT states further, that along with certificates and diplomas, it will be offering associate degrees. Of special significance is the announcement of its plans to establish a wide area network linking the seven campuses and thereby developing distance learning capabilities (*Daily Express*, October 30, 1999, p. 63). Appendix 3 lists the member institutions and the programmes they will offer.

Distance Learning Secretariat

The second initiative falls directly under government control through the Ministry of Training and Distance Learning. The Ministry has set up a Distance Learning Secretariat responsible for sourcing educational and training programmes, delivered at a distance from various local, regional, and international institutions and setting up structures to make these programmes available to citizens of Trinidad and Tobago. The intention is that the Secretariat would not itself be a provider but would serve as a conduit through which citizens can access programmes from a range of providers. It is also the intention that the Secretariat, as a government-supported entity, would be able to negotiate the best possible conditions from the respective bodies for potential students of this country. It is not envisaged that the Secretariat will be directly involved in tuition in the same way as the private sector support organisations described above.

A key component of this initiative is to set up community-based distance learning centres, described as "locations in the community where residents can access teaching for courses of their choice via television, radio, audio or video cassettes as well as the Internet" (Ministry brochure, n.d.). To date, three such centres function in the country: two in rural districts and one in a low- to middle-income community on the outskirts of a town centre. The centres have been equipped with computers and Internet access will soon be available. Each centre will also receive a television set as well as audio-cassette and video-cassette recorders.

Until the community-based distance learning centres are functional though, the sites are being used to provide members of the community with training in basic computer applications (word-processing and the creation of databases and spreadsheets). In the rural village of Toco, for example, this computer training is being provided at the Victoria Pritchard Resource Centre which has been established in premises owned by the Toco Foundation, a community-based non-governmental organisation. The centre, which has eight computers, has been in operation since July 1999.

The computer course facilitators, two young women in their late teens to early twenties, are graduates of the Toco Composite School (the secondary school in the district) and were themselves trained in a programme conducted by the Secretariat. Thirty-six people, ranging from children of primary school age to adults, have completed the course at the centre thus far. Adults include housewives as well as teachers and other public servants. There is an ongoing outreach programme, particularly in the primary schools of the surrounding districts, to publicise the course and attract new trainees.

The Secretariat regards training in these applications as preparation for the proposed distance education programme when students will be accessing courses on the World Wide Web. It is unlikely that the participants share this goal. In the opinion of the facilitators the younger participants in particular see the training as a means of getting certification to facilitate their entry into the job market.

Changes Needed to Achieve the Potential of these Initiatives

The potential of both these initiatives should not be underestimated. However, at this early stage of their development, certain issues deserve attention.

Given the competitive environment in which individual tertiary level institutions must now survive the formation of COSTAATT is both necessary and timely. In addition, the idea of linking the separate units with a wide area network opens up the possibilities for offering students the choice of several combinations of teaching and learning arrangements not restricted to the institution in which they are registered.

No doubt those involved in the planning have already noted that in order to reap the benefits of the new technology the internal structures of the individual organisations must change significantly, in their respective curricula as well as in their teaching-learning methodologies. Staff functions also need to be rethought, probably with some functions de-emphasised and new ones introduced. Overall, given the history of these institutions, it is likely that there will be need for fundamental changes to arrive at the level of flexibility required to attain the objectives that COSTAATT has set itself.

The plans outlined by the Ministry of Training and Distance Learning for its Secretariat also deserve attention. The establishment of a network of community-based learning centres is a very appropriate and necessary measure. However, the objectives that the Secretariat has set for these centres suggest that there may be the need to rationalise technology use with some clear indication about which will be the primary vehicles and which will be secondary. Certainly, given the reality of limited financial resources in a developing economy, the Secretariat may not be able to provide adequate sustained support for the dissemination of educational material through all the listed technologies.

It should be acknowledged though that other factors may make the rationalisation process a difficult one. As occurs in every society the decision to introduce an innovation is, more often that not, only partially determined by need. In many instances those responsible for initiating the innovation may also see it as a means of justifying some seemingly related event. It is likely that the decision of the government of Trinidad and Tobago to develop a national organisation for the delivery of distance education could have been motivated, in part, by the necessity to make use of a television broadcast facility that the government had recently acquired. As stated earlier, the current thrust at the community-based learning centres is training in the use of computer applications. The issue of rationalisation is, indeed, very pertinent.

THE ROLE OF COMPUTERS IN EDUCATION

While the focus of this report is the use of information and communication technologies for the delivery of distance education, the position that these technologies occupy within the education sector as a whole cannot be ignored, for there is the strong likelihood that one use may impact on another.

In Trinidad and Tobago, while the establishment of wide area networks is only just getting off the ground in some educational organisations, the educational use of computers for developing skills in the various applications is widespread. In tertiary level institutions instruction in the basic applications of word-processing and the creation of databases and spreadsheets is extremely popular. Over the years the credibility of certain institutions has grown considerably and, locally, their certificates are highly recognised in business and industry. In addition, there is a growing consciousness that one should be computer literate. Consequently, participation in this basic type of course is increasing steadily at all levels of the society.

Basic computer literacy courses are not the only ones in high demand. As computer use in the work environment becomes more sophisticated, there is a growing demand for higher levels of training in a wider range of applications. Appendix 4 lists some of the computer-related courses offered at tertiary level institutions.

This heightened awareness about the use of computers in education is also evident in the primary and secondary sectors of the education system. In 1995 the Ministry of Education outlined a development plan for its newly formed Management Information System Unit. One of the objectives of this unit was the expansion of computerisation in primary schools at a cost of three million dollars (TT). This expansion was based on the Ministry's policy on computers in primary education, which stated in part,

> While it is technically feasible to target cognitive educational objectives for an IT programme at the primary level, the cost to the Ministry of Education to provide the critical mass necessary is not available at this time. In addition, it would not be prudent to add to an already overloaded primary school curriculum. Consequently computer science/information technology should not be taught as a separate subject in the primary school's curriculum … The goals of the computer education programme at primary school are to:
>
> - target attitudinal changes rather than cognitive objectives, that is, students should be able to accept the computer as a tool and feel comfortable in an environment where the computer is used;
> - provide an opportunity for students to develop skills to understand and follow simple instructions;
> - assist learning in other curricular areas;
> - facilitate the teacher to increase productivity and manage the teaching/learning process.
>
> (Ministry of Education, 1995)

In that same year the Ministry presented the Information Technology Syllabus for the first three years of secondary education as part of the proposed National Certificate of Secondary Education (NCSE). The NCSE, which is still to be implemented, is intended to run alongside the existing Caribbean Examinations Council examinations in the secondary school system of Trinidad and Tobago. However, even though it is yet to be implemented, the outlook on information technology that it embodies is similar to that which currently informs the study of the subject in the secondary school system.

In the preamble to the Information and Technology Syllabus, the Ministry makes the following statement:

> The education system now has the challenge and the responsibility to produce a society and a workforce equipped with the knowledge and skills to utilise information technology in both contemporary and innovative ways. Specifically, the education system must provide necessary training to ensure that
>
> - all members of our society must be aware of information technology and its impact on their lives,
> - all members of the workforce must be aware of the use of information technology in the workplace and they must be able to incorporate the technology in their day-to-day activities,

- all supervisors must seek new ways to use information technology to improve product quality and efficiency, and
- all entrepreneurs and professionals must aspire to develop innovative products and services using information technology.
  (Ministry of Education, 1995).

While the Ministry does not have any direct official control over the curriculum of the National Institute of Higher Education (Research, Science and Technology) there is clear evidence in the Ministry's statements that the tertiary level institution and the Ministry share perspectives on the role of information technology in education.

Against the background of the policies enunciated above, the Ministry, in 1997, entered into an agreement with a consortium of companies in the energy sector to equip secondary schools with computers. As a result, twenty-eight schools were supplied with ten computers each and five schools were supplied with fifteen computers each. Another sixty-eight schools were to be equipped subsequently. There were also proposals to train 1,000 secondary school teachers.

The following year, 350 primary schools were provided with at least one computer each through the World Bank Primary Education Project. Plans were also made to train 1,000 primary school teachers. Primary and secondary teachers in all eight educational districts of the country were to be targeted for this training.

As well, in 1997, the Ministry entered into an arrangement with a local banking company to initiate a pilot project through which selected secondary schools in Trinidad and Tobago would link with Canadian schools through a Canadian-based Intranet known as *SchoolNet.* The selected schools were supplied with computers and free Internet service for an indefinite period. The project was officially launched and teachers from the selected schools began discussions with representatives of the banking company. To date, however, it does not seem that much progress has been made. In at least one of the selected schools the computers are currently being used for teaching the CXC and General Certificate of Education information technology courses and for surfing the Internet.

It is beyond the scope of this report to review the varying perspectives that have informed policy on the role of computers in education over the years. In the context of Trinidad and Tobago it would seem that, despite the brief involvement with *SchoolNet*, policy and practice are more oriented towards the promotion of information technology with a strong emphasis on that aspect of the term that connotes the development of skills and attitudes required by business and industry. Although there is also widespread consciousness that students must be exposed to the vast array of information available on the Internet there is little evidence of an orientation towards information and communication technologies with its focus on networking, connectivity, and collaborative learning.

WOMEN IN FURTHER EDUCATION

To the extent that tertiary level education is available to the population of Trinidad and Tobago, there is no doubt that women form a substantial proportion of those who are able to access what is provided. This pattern is also evident within the emerging sector of open and distance learning in the forms in which it is developing in this country. Consequently, while fundamental socio-economic conditions result in substantial sectors being disadvantaged and, by extension, being debarred from participation in the learning process, there is no doubt that women are adequately represented numerically as a proportion of total enrolment at the tertiary level. In addition, on face value, it would appear that all socio-economic levels are represented among the female student population. In fact, while my own investigation was very cursory, it is likely that the largest proportion of these students may fall within the lower- to middle-income levels. It is also likely that

initiatives taken by the Church and government during the early Independence period in the 1960s could have contributed to this favourable numerical situation.

One notes, for example, that the two facilitators at the rural-based Victoria Pritchard Resource Centre are graduates of the Toco Composite School, a school established in the 1970s as the first such institution in that part of the country. One tutor, in commenting on the male-female ratio, noted that the attrition rate among women in the programme with which he was associated was smaller than that for men. He credited this to a higher level of discipline among women. Another tutor felt that overall the number of males accessing further education was on the decline and that men have a tendency to be bored more quickly than women. He claimed that men tend to view the curriculum as irrelevant and therefore are more likely to drop out. One likely reason for the high enrolment and motivation level of women generally is the perception that the areas where the job market appears to be expanding seem to be more attractive to women than to men. Put another way, there are those who would argue that employers are deliberately targeting and promoting women rather than men for certain sectors of the workforce. Consequently, women are more motivated to seek opportunities for continuing education than are men.

While recognising the employment benefits to be derived for women, others contend that the flip side to this coin may not be completely to the advantage of women. That perspective holds that women are being trained to occupy positions in organisations that give them a high degree of visibility but not necessarily an equally high level of authority. Further the view is that men continue to hold the positions of authority in the workplace despite the steady increase in women accessing increasingly higher levels of education and training.

In terms of the impact of information and communication technologies on tertiary level education as a whole, the current situation is that these new technologies have not yet been substantially integrated into educational provision in Trinidad and Tobago. Consequently, at the institutional level women are no more disadvantaged than men. At the same time there is the perception that there is a marked increase in the acquisition of hardware and software for home use. However, a cursory survey of students enrolled in a limited number of institutions did not support this perception. It would appear, therefore, that the onus is still on the institution to provide the technological infrastructure to facilitate adult learners' participation in the forms of teaching and learning that the new technologies are capable of supporting.

In light of the above, there are two issues of concern about women's participation in further and higher education in Trinidad and Tobago. First, the perception of the positions that women fill in the job market, may give rise to questions about the nature and purpose of the education and training they receive, to qualify them for those positions.

Second, despite a substantial rise in the demand for computers, the idea of a computer in every home is not going to be a reality in the average household of Trinidad and Tobago in the foreseeable future. Consequently, the underdeveloped nature of the technological infrastructure of educational institutions constitutes a major barrier to the meaningful participation of women in further and higher education.

RECOMMENDATIONS

Establishment of a UWI-TLI Network

Earlier I observed that little emphasis is being placed on information and communication technologies in the educational sector at this time. A likely reaction to that view may be that this position does not take into account the increased awareness and use of the Internet and the World Wide Web. A growing number of citizens are using e-mail and are accessing information from a wide range of sites on the Web. While these activities are indeed a positive sign of the overall social

well-being of the population increased access to the Internet, by itself, does not necessarily imply educational development. Steps must be taken within the educational system to harness the capabilities of the technology for the benefit of all students and, by extension, all of society.

Consequently, not only must the initiatives of UWI and COSTAATT to establish wide area networks materialise, but those institutions also need to look further towards a University of the West Indies link with the Tele-learning Institutes. The following comment from an earlier work is pertinent in this regard.

> In the long term, it would be to the advantage of both the university and the …TLIs to be part of a single network. … One sees the benefits to be derived in terms of the interaction among academics … Given the projected size of the total UWI-TLI academic community, one could envisage the formation of discussion groups in particular areas of academic and/or professional interest. In addition, one can envisage the setting up of on-line databases of the accumulated knowledge of the various facets of the Caribbean experience to be accessed by academics and students alike … The environment would also provide scope for the institutions to collaborate in experimenting with on-line teaching and learning and in the process to continue to enhance the region's collective knowledge about teaching and learning at a distance. (Kuboni, 1997, pp. 22-23)

Internal Restructuring

Institutions that were designed to provide lock-step face-to-face instruction cannot be expected to support open and distance learning modes of teaching and learning. Changes will need to be made in such areas as approaches to time tabling, procedures for staff assessment and promotion, conditions of employment, and teaching methodologies. In short, fundamental systemic changes would be required. As stated earlier, internal restructuring is a direct off-shoot of the COSTAATT idea. It is also a requirement for the University of the West Indies given the institution's stated intention to transform itself into a dual-mode institution.

Information and Communication Technologies Rather Than Information Technology

The brief investigation conducted to prepare this report revealed that there is a strong orientation towards information technology in education as preparation for the world of work. This orientation is evident at the level of student enrolment in courses, as well as at the level of policy making. Institutions are finding that there is a growing demand for a wide range of computer-related courses and that students keep returning for higher qualifications to enhance their marketability. If the concepts of networking and on-line teaching and learning are to develop in a manner that enhances the educational experience of learners, policy makers need to revise and expand their perspective on the role of computers in education. If information technology continues to occupy such a dominant position, the *SchoolNet* experience will be repeated many times over.

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APPENDIX 1

A Selection of Foreign Providers, Local Support Institutions, and Programmes and Courses Offered

Foreign Provider	Local Support Institution	Programme and Courses
Institute of Administrative Management	School of Continuing Studies, University of the West Indies	• Certificate Course for Administrative (Professional) Secretaries • Administrative Corporate Secretaryship
London Chamber of Commerce and Industry	School of Continuing Studies, University of the West Indies	• Diploma in Public Relations, Advertising, and Marketing • Diploma in Principles of Management
Association of Business Executives	School of Continuing Studies, University of the West Indies	Certificate, Diploma, and Advanced Diploma in Business Administration
Association of Business Executives	School of Business and Computer Studies	Certificate, Diploma, and Advanced Diploma in Business Administration
Association of Computer Professionals, United Kingdom	School of Continuing Studies, University of the West Indies	• Certificate in Computer Programming • Diploma and Advanced Diploma in Computer System Design
Association of Computer Professionals, United Kingdom	School of Business and Computer Studies	• Certificate in Computer Programming • Diploma in Computer System Design
Institute for the Management of Information Systems University of Greenwich, United Kingdom	School of Business and Computer Studies	Bachelor of Science Computing and Information Systems
Heriot-Watt University, United Kingdom	School of Business and Computer Studies	Master's of Business Administration
University of London, External Programme	School of Business and Computer Studies	• Bachelor of Science • Computing and Information Systems • Miscellaneous programmes and courses
University of Warwick	None	Master's of Business Administration
American Management Association Extension Institute	ROYTEC	Certificate in Management Information Systems
University of New Brunswick	ROYTEC	Bachelor of Education

APPENDIX 2

University of the West Indies Sites and Programmes Offered

Sites

University Centre, Anguilla, West Indies

University Centre, Antigua, West Indies

University Centre, Bahamas

Cave Hill Campus, Barbados, West Indies

University Centre, Belize

University Centre, British Virgin Islands

University Centre, Dominica

University Centre, Grand Cayman Islands

University Centre, Grenada, West Indies

Mona Campus, Jamaica, West Indies

University Centre, Brown's Town, Jamaica, West Indies

University Centre, Denbigh, Jamaica, West Indies

University Centre, Mandeville, Jamaica, West Indies

University Centre, Montego Bay, Jamaica, West Indies

University Centre, Port Antonio, Jamaica, West Indies

University Centre, Savanna-La-Mar, Jamaica, West Indies

University Centre, Vere, Jamaica, West Indies

University Centre, Morant Bay, Jamaica, West Indies

University Centre, Ocho Rios, Jamaica, West Indies

University Centre, Montserrat

University Centre, St. Kitts, West Indies

University Centre, St. Lucia, West Indies

University Centre, St. Vincent and the Grenadines, West Indies

St. Augustine Campus, Trinidad and Tobago, West Indies

University Centre, San Fernando, Trinidad and Tobago, West Indies

University Centre, Sangre Grande, Trinidad and Tobago, West Indies

University Centre, Tobago, West Indies

University Centre, Turks and Caicos Islands

Programmes Currently Offered

Bachelor of Science in Management Studies

Bachelor of Science in Agribusiness Management

Bachelor of Education in Educational Administration

Advanced Diploma in Construction Management

Certificate in Business Administration

Certificate in Public Administration

Certificate in Adult Education

Certificate in Education

APPENDIX 3

Institutions and Programmes Participating in the College of Science, Technology and Applied Arts of Trinidad and Tobago

Member Institutions

Eastern Caribbean Institute of Agriculture and Forestry

John S. Donaldson Technical Institute

Joint Services Staff College

Metal Industries Company

Government Vocational Centre

San Fernando Technical Institute

National Institute of Higher Education (Research, Science, and Technology) Colleges

- College of Nursing
- College of Health Sciences
- Information Technology and Business Management School
- School of Languages
- General Education Division

Member Programmes

Agriculture and Forestry

Agricultural Teacher Education

Graphic Arts

Applied Foreign Languages

Building and Construction

Business Studies

Criminal Justice

Engineering Technology

Food Service

Allied Health Services

Information Technology

Nursing

Technical and Vocation Teacher Education

Office Administration

APPENDIX 4

A Selection of Computer Programmes and Courses Offered at Tertiary Level Institutions[2]

Institution	Programme and Courses
School of Continuing Studies, University of the West Indies[3]	• Maintaining Your Office PC (15 contact hours) • Computer Maintenance (30 contact hours) • Introduction to Computers in Education (24 contact hours) • Information Technology (36 contact hours) • Office Computer Applications (24 contact hours) • Introduction to Database Systems (36 contact hours) • Computer Literacy • Computer Law
National Institute of Higher Education (Research, Science, and Technology) [4]	• Associate Degree in Information Technology • Miscellaneous Literacy Programmes
Faculty of Social Sciences, University of the West Indies	• Introduction to Computing • Management Information Systems • Introduction to Microsoft Office 97 • Managing Microsoft Office 97 • PC Repairs and Upgrade • Using Front Page 98 • Personalised Computer Concepts • Graphic Design Using PageMaker and CorelDraw • Document Management for Administrative Professionals
Faculty of Social Sciences (Summer Programme), University of the West Indies	Certificate in Management Information Systems (three-year programme)
Zenith Educational Institute	Mainly basic applications
Upper Level Educational Institute	Basic applications
The Computer Training Centre	Miscellaneous programmes, including computer repairs and maintenance, accounting packages, basic applications
Central Technology Centre Limited	Basic applications, accounting packages, AutoCAD

[2] See also Appendix 1.

[3] The School of Continuing Studies runs courses and programmes at locations throughout the country.

[4] NIHERST runs these programmes at three locations.