



THE COMMONWEALTH *of* LEARNING

Barriers to Information and Communication Technologies Encountered by Women

Sponsored by The Commonwealth of Learning and
the British Council

November 26 – 28, 1998

New Delhi, INDIA

Country Presentations



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Organised by: ***Commonwealth Educational Media Centre for Asia
The British Council, New Delhi
The Commonwealth of Learning***

Supported by: ***The British Council, New Delhi
The Commonwealth of Learning (Canada)***

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Foreword

Education and training opportunities provided through distance and open learning are one of the few educational areas in which women in the developing world are well represented. Open and distance learning helps to overcome some of the challenges that women and girls face when the only other opportunities for education are provided through conventional means. However with the increased use of the new information and communications technologies (ICTs) to deliver open and distance learning, it is feared that this trend may be reversed and women may become marginalised due to issues relating to the access to, and their confidence and ability to use these new technologies.

Further, the influx of the new technologies may have an impact on the staff employed to work in distance teaching environments. If women are disadvantaged in accessing and using the new technologies, and therefore do not have the experience and confidence needed, they may be restricted in the types of positions for which they are employed. In order to further explore these concerns, The Commonwealth of Learning (COL) commissioned a consultant to carry out an environmental scan on the research and information available on issues pertaining to women and the access to information and communications technologies, with particular regard to open and distance learning. The consultant found little research in this area, although some sources acknowledged that women may face barriers when accessing ICTs, especially in parts of the developing world.

In view of this, COL decided to support activities that would provide information and research data to assist and inform institutions delivering education and training through distance modes; organisations and agencies concerned with women's access to ICTs; government agencies; and others working in the field, in order to help ensure equal access regardless of the gender of the potential learners and users.

Preface

In November 1998, The Commonwealth of Learning, in collaboration with the British Council and the Commonwealth Educational Media Centre for Asia (CEMCA), organised a regional expert group meeting for distance education providers in Commonwealth Asian countries. The meeting was the first in a series of regional meetings that were planned to focus on the new information and communication technologies and the opportunities and challenges they create for women in distance education. Participants from Pakistan, Sri Lanka, Malaysia, Bangladesh and India were invited to a meeting in Delhi at the Indira Gandhi National Open University to discuss various issues relating to the use and access to ICTs by women.

The meeting was supported in part by the regional British Council office in Delhi, as well as by local British Council offices in Malaysia and Bangladesh, and was hosted by CEMCA and the Indira Gandhi National Open University.

The meeting proposed to draw upon the experience and knowledge of participants who were involved in distance education provision, or in the use of ICTs by women, or both. Apart from enabling participants to develop concrete strategies and project proposals to address the needs of women in distance education using ICTs, the meeting provided a valuable forum for distance education workers to consult with each other, to share their experiences and expertise, to understand the policy implications of the liberalisation of the telecommunications sector and to build their own awareness 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.

This publication contains the country papers that were presented at the meeting in Delhi. The views and opinions expressed therein are those of the authors and do not necessarily reflect official policies or positions of The Commonwealth of Learning. A second publication, the report of the meeting, is available from The Commonwealth of Learning and is also available on COL's Web site.

Acknowledgements

The Commonwealth of Learning is grateful for the assistance and support provided by a number of individuals and organisations without which this meeting would not have been the successful and worthwhile activity that it was. Specifically, COL would like to acknowledge and express its gratitude to:

- The regional British Council office in Delhi, as well as local British Council offices in Malaysia and Bangladesh, for providing funding to support the meeting.
- The Vice Chancellor and Staff at the Indira Gandhi National Open University (IGNOU) for the support provided during the initial conception stages of the meeting as well as during the actual meeting time, and for the use of the Electronic Media Production Centre as the meeting venue.
- Staff at the Commonwealth Educational Media Centre for Asia (CEMCA) for their help in organising and providing administrative support for the meeting.
- The meeting participants - thanks to all who gave their time to attend and provide insightful and interesting contributions to the proceedings.
- Ms. Nidhi Tandon, the consultant who completed the environmental scan, assisted in the facilitation of the meeting, and drafted the final report of the proceedings.

The British Council's aim is to create enduring partnerships between British and other cultures and they do this by creating opportunities with the latest skills, ideas and experience from the UK. (Web site: www.britishcouncil.org)

The Commonwealth of Learning is an intergovernmental organisation established by Commonwealth governments in September 1988, following the Heads of Government Meeting held in Vancouver in 1987. It encourages the development and sharing of open learning and distance education knowledge, resources and technologies. COL is headquartered in Vancouver and is the only Commonwealth intergovernmental organisation located outside of Britain. (Web site: www.col.org)

Bangladesh

By: Nazneen Sultana

Grameen Communications, Grameen Bank

1. Introduction

To prepare a gender status report on the impact of information and communication technologies (ICTs) on distance learning in Bangladesh, we must first cast an eye on the country's education system, its socio-economic status, its communication and information infrastructure and the status of women's education. Bangladesh is a poor and underdeveloped country. Low per capita income, rate of gross domestic products and adult literacy rate are the criteria against which we measure socio-economic status. In these circumstances, women are the poorest of the poor and, naturally, their literacy rate is much lower than men's.

Women bear the brunt of poverty and ignorance much more than their male counterparts in the traditional culture of Bangladesh. The problems affecting the economic and social status of women in Bangladesh are vast and complex. Poverty and the lack of education, training and job opportunities have forced them into a state of complete dependency. Education systems are based on outdated concepts inherited from a colonial past, with no relevance to the needs of the majority of citizens. The disadvantaged, the poorest of the poor, are often left out of the educational process either because of limited capacity or the inability to meet the urgent needs of the disadvantaged.

Generally, there are no shortcuts in the development process, but at this time of dramatic changes in human history with the revolution in communication technology and methods, it becomes an urgent challenge to explore radically new ways of providing relevant information and education to people at an affordable price.

Distance education using ICTs is in its primary stage in Bangladesh. The Government of Bangladesh and Grameen Bank Enterprises have undertaken ICTs as a new way of providing information and education to people. The following covers women's education, the country's education system, distance education, communication and information infrastructure, government initiatives and Grameen initiatives, are illustrative of the barriers that women face in Bangladesh using ICTs in distance learning.

2. Bangladesh: Overview

Bangladesh is a small and densely populated country, located in South Asia, bordered by India and Myanmar. More than 85% of the population is Muslim and 80% lives in villages. Bangla is the national language. It is a flood plain and riverine country. Bangladesh is a poor country and primarily a rural economy that is under enormous pressure from a rising population. Gender disparity is common.

2.1 *Profile of Bangladesh*

Area	143,998 sq km
Population	115,594,000
Primary Religion	Islam
Income Per Capita	US\$ 250
Population Growth Rate	2.7 %
Rural Population	86.4 %
Adult Literacy Rate	37 %
Gross Primary Enrolment	70 %

In spite of so many constraints, Bangladesh is distinct from similar countries by its linguistic, ethnic and cultural homogeneity and political stability.

2.2 *Education*

2.2.1 *Women's Education*

The total population, as of 1993, has 115 million and, of this, 55 million are women, of whom nearly 86% live in rural areas. Although the vast majority of the rural population is underprivileged, poor and illiterate, women are the poorest and have a much lower literacy rate than men.

Some details of the girls' and women's suffering, discrimination and denial of opportunities is apparent in the figures below:

Total population in millions, 1993	115
Women's population in millions	55
As % of men	94
Adult literacy rate	
1970	24
1993	37
1996	47
Adult women's literacy rate	
1970	9
1993	25
Adult women's literacy rate as % men	
1970	35
1993	52
Women's primary school enrolment as % men	
1970	48
1993	82
Women 1st, 2nd and 3rd level gross enrolment ratio as % of men	
1993	76

Mean year of schooling 1992

Men	3.1
Women	0.9
Total	2.0

The targets of the fifth year plan, which covers the period from 1998 to 2002, are:

- Adult literacy rate of 80%
- Primary net enrolment rate of 95%
- Completion rate of 75%
- Women's literacy rate enhancement at every level
- Establishment of 20,000 satellite schools, 5,000 community-based primary schools
- Introduction of two-shift classes in many schools.

The present state of women's education in Bangladesh is a good indicator of the low development of the country and relatively lower status of women. Lack of education is one of the main factors that deters women from equal participation in socio-economic activities and helps to perpetuate inequality between the sexes.

2.2.2 Formal Education System

Formal education consists of five years of primary, then seven years of secondary education, followed by two to four years of higher education. The Government of Bangladesh is committed to education for all and has introduced compulsory primary education and free education for rural girls until class eight. This has been implemented since 1993.

2.2.3 Non-Formal Education

Since a large number of children are not enrolled or are dropouts, some non-government organisations (NGOs) have pioneered systems of non-formal primary education, designed to reach those children who are outside the government school system. BRAC has introduced non-formal primary education in rural areas. According to their sources, 95% of their students join formal primary schools in grades four and five. The government has formulated a non-formal education programme that will offer greater opportunity.

2.2.4 Distance Education

Today it is widely recognised that the most effective development strategy is development of people. Serious constraints in the education system and acute shortage of human and financial resources will make distance learning an attractive alternative.

The government controls open/distance learning (ODL) in Bangladesh mainly through the Open University of Bangladesh. The objective of the Open University is to transform the country's vast human resources into an educated and trained workforce by extending to them a wide range of academic programmes, both formal and non-formal. These programmes are aimed at everyone, particularly working people and women and those socially disadvantaged groups who cannot enrol in traditional universities. ODL is provided by the Open University at the following levels:

- Bachelor of Education (B.Ed.) Teacher's Training
- Certificate in English Language Proficiency (CELP)
- Secondary School Certificate (SSC)
- Higher Secondary
- Certificate in Management (CIM)
- Diploma in Management (DIM)
- Certificate In Arabic Language Proficiency (CALP)
- Bachelor of Agricultural Education (B.Ag.Ed)
- Bachelor in English Language Teaching (BELT)
- Diploma in Computer Application

Over 80,000 students have already been enrolled in these programmes. Some more formal programmes will be launched soon: B.Sc. in Nursing, Higher Secondary School Certificate (HSC), Certificate in Education (C.Ed.), Master of Education (M.Ed.), Master of Business Administration (M.B.A.), Diploma in Women's Studies (DIWS) and a number of certificate programmes in the School of Agriculture and Rural Development.

ODL is gaining popularity even among the old. This year a 62-year-old woman successfully passed the secondary examination with distinction.

The Open University has 19 formal education and 200 non-formal education programmes. The non-formal education programmes, addressing issues such as mother and child care, vegetable plantation and self-employment, are broadcast on national television. These programmes are becoming more and more popular. The Open University relies on print material and electronic media like radio, television and audio/video cassettes. The use of audiovisual materials to enhance the learning process, however, is limited mainly because of the lack of appropriate equipment at the grassroots level and infrastructure needed for widespread dissemination.

2.3 *Communication and Information Infrastructure*

Most of the existing telecommunications infrastructure in Bangladesh belongs to the Bangladesh Telephone and Telegraph Board (BTTB). Bangladesh Railway Communication Systems and the newly arrived GSM operators offer relatively small capacity. In rural areas the communication infrastructure is very weak. There is, on average, one telephone per 240 people nationally, but in rural areas, the ratio is more like one telephone for every 2,000 people.

Radio broadcasting services are available in the MW band that most people are able to receive. Television broadcasting is available to approximately 92% of the population from the single terrestrial VHF channel.

VHF-FM radio broadcasting is available on one low-powered transmitter that carries only BBC World Service in Dhaka. Domestic satellites are not available. GSM mobile telephone services are currently being implemented in Dhaka but are not available elsewhere.

2.3.1 *Educational Television and Radio*

BTV currently telecasts a 40-minute educational programme from the Open University (six days a week), as well as a community service (health, nutrition, AIDS, etc.) programme from a NGO. Bangladesh Radio currently broadcasts a three-hour education programme each day from NGOs,

the Open University and other sources. The radio programming provided by the NGOs is well supported with print materials, though their distribution is problematic. Production of the TV programme by the Open University is severely limited by the minimal resources available in the “temporary” studio, while the transmission schedule is inadequate, in view of the number of courses offered.

However, broadcasting via both radio and television is recognised as being the key to bringing education to the people, both in urban and rural areas, offering learning and information without literacy as a prerequisite. In fact, recognising the important role media can play in informing and educating people, it appears that it is high time Bangladesh considers ways to make best use of electronic media in its urgent task of educating all.

3. Women's Empowerment

3.1 Education

It is well recognised that women's education is treated as a tool for their empowerment. It has been considered their main strategic asset, which enables them to change their social and economic position. Education can increase women's capabilities to act as effective partners with increased confidence. Education will enable them to form their own opinions, and will build self-confidence and provide knowledge to allow effective participation in decision-making in the family, community and nation.

3.2 Government Initiatives

The Government of Bangladesh has undertaken compulsory primary education and free education until class eight for rural girls and has also established vocational training and polytechnic institutes for girls.

In the local government structure, seats are reserved for women. In Parliament 30 seats are reserved for women and in government, semi-government and autonomous organizations, 10% of the quota is reserved for women. The Constitution of Bangladesh does not allow any gender discrimination and advocates equal rights. Bangladesh also ratified the charter with reservation on Articles 2, 13(a), 16(a) and (h) adopted in the convention on the elimination of all forms of discrimination against women held in the UN General Assembly in 1979.

3.3 Grameen Initiatives

The Grameen Bank has more than 2.5 million members. Ninety-five percent of its members are women and a large number of them are illiterate. Grameen members are involved in different income-generating activities such as poultry raising, dairy development, cow fattening, gardening, weaving and dying, etc.

The Grameen Bank has always encouraged its members and their children to participate in its own and other educational activities that are carried out by the government or NGOs. In some villages, the Grameen operates centre-based schools for preschool and school-age children. Bangladesh has a formal education system that has had limited success in providing basic education to its growing population. However, most bank members have not benefited from any of the adult education programmes offered by the government or NGOs, primarily because the programme does not seem to meet the needs of the specific target group. In addition, most adult education programmes are basically functional literacy programmes. The materials and

approaches used to address “life skills” are built on previously developed literacy skills. To develop strategies that meet the requirements for education and information of Grameen Bank members, Grameen Education (an enterprise of Grameen Bank, with the co-operation of UNESCO and with technical support from Ahsania Mission) launched the life-oriented education programme. This year-long pilot programme aims towards sustainable education and promotion of social integration in order to improve the quality of life of its learners.

3.3.1 Using GSM: Grameen Telecom

Grameen Telecom, an enterprise of Grameen Bank, began selling mobile phones to Grameen borrowers. Its vision: one mobile phone in each village of Bangladesh. This is the first initiative in providing all kinds of benefits of the information revolution virtually at the doorsteps of villagers. Although there is a significant communication gap between cities and villages, villages are the source of many small and micro enterprises. A modern telecommunication network can accelerate the speed of all kinds of development activities.

It is not possible for each rural household to own a telephone, but it is important that each has telephone access. A phone in a village is more than “just a phone,” for it can have a significant impact on the social lives of rural women. One Grameen borrower, Mahmuda Begum bought a mobile phone on credit from the bank. She has to pay back Tk 220 every week. After two years she will have repaid the loan and will become the owner. Her monthly earnings from the mobile phone are between Tk 2400 to Tk 2800. Another woman, Laily Begum, an ideal member of the Grameen who had not seen a telephone in her life, made a call to the Prime Minister of Bangladesh! There are other impacts to having access to a telephone:

- The phone lady earns a net average income of around Tk 2000. This is a substantial amount when compared with the earnings from other rural occupations. So the telephone is being used as a weapon against poverty.
- During floods the phone acts as an information centre.
- The phone operator keeps the numbers of the local MP, hospital and police station, so villagers can make necessary calls in times of emergency.
- Women gain experience by operating a private telephone service.
- The phone encourages the use of technology for income-generating activities.

3.3.2 Using The Internet: Grameen Communications

Grameen Communications (GC) is a new member of the growing Grameen family of independent enterprises. Communication has played a key role in promoting socio-economic development. Empowerment of disadvantaged individuals and groups can be accelerated through access to information. The role of information is undergoing rapid transformation, with technological developments, especially in the field of electronic communications, as the main catalyst. GC pursues the broad objective of promoting the establishment of an accessible, stable, consistent and sustainable information and communication infrastructure all over Bangladesh. The specific objectives of GC are as follows:

- Promote development of communication and ancillary services for freer flow of information and knowledge to accelerate social and economic development
- Establish a cost-effective Internet access point that will be available to a broad range of educational and research institutions, social organizations and government agencies

- Undertake research and participate in the development and setting up of new communication infrastructure, utilising the existing assets and resources in the country
- Establish and support research centres, training institutes, schools, laboratories and other institutions
- Develop a network that will meet the communication needs of educational institutions, centres of higher learning, research institutions, non-government and government offices
- Provide such communication services that promote and support research, educators, planners, students, designers, new media, social activists and entrepreneurs, for improving their access to national and global information
- Initiate the integration of Grameen Bank's office system which is dispersed all over rural Bangladesh, with Internet facilities between the Head Office, Zonal Offices and Branch Offices
- Devise information systems which will enable the poor and women to have access to an effective communication network throughout the country, as well as internationally, and obtain knowledge and information about products, processes, services, markets, supplies, prices and opportunities
- Provide communication services, including cellular telephones, ISDN, fibre optics, Internet, Intranet, data network, fax and advanced information technology services in rural Bangladesh
- Promote awareness of the Internet and computer networking in Bangladesh
- Support, conduct and arrange training programmes, seminars, workshops and meetings for promoting interaction among non-government, semi-government and government organisations, voluntary agencies and societies, local government bodies, institutions and individuals for attaining the objectives of the GC

Grameen Communications aims to empower the rural people, especially women, by introducing new technology. The following facilities are to be provided for this purpose:

- **E-mail Facilities**

There is a large and growing Bangladesh expatriate population in Southeast Asia, the Middle East, Europe and North America. At present, it is difficult for village residents to contact their relatives and friends who work and stay abroad, by telephone or regular mail, because of the high costs and long delays associated with international correspondence. Therefore, village residents could use e-mail facilities to connect with friends and relatives instantly and at low cost.

- **Education**

Interactive educational programmes and documentary videos will be transmitted via Internet. The operators will be trained to facilitate such education programmes.

- **Computer Classes**

Grameen Communications will initially offer computer classes at modest enrolment fees and will train Grameen Bank borrowers in providing computer training and services to village users.

- **Computer Games**

Future programmers could be nurtured by familiarising village children with computers. For instance, there could be gaming hours when children could play computer games.

- **World Processing Services**

Users (i.e., Grameen borrowers) will use workstations in GC's cyber booths to write letters, resumes and college applications and to make documents like newsletters, advertisements and announcements.

- **Printing Services**

Printing services afford many uses. For instance, Bengali fonts, which are now widely available, could be used by artisans to print out advertisements and by families to print wedding announcements and letters.

- **Publishing Services**

Complex word processing work like designing small newspapers and magazines could be done with technical help from the Grameen Communications staff. With Bengali fonts, local newspapers and magazines could be run from cyber kiosks.

- **Internet Phone Usage**

Village residents could call their relatives who work and live abroad through the Internet phone, thus avoiding high international call rates and long mail delays.

- **Online Information Services**

Grameen Communications will maintain online news sites, computer literacy tools, job search information, national and international job databases and networking services for friends and family abroad and will host online newspapers.

- **Voice Mail Information Line/Bulletin Board System**

Grameen Communications staff will download current market information on prices for goods and services and record it on voice mail. Village residents can call in and hear pre-recorded messages clarifying market conditions.

- **Village Database**

Grameen Communications staff will collect data on fisheries, livestock, health, education, etc. and enter them into a village database. This information could be sold to the government, NGOs and research organisations at low cost.

- **Web Shopping Mall**

Grameen Communications will provide assistance in advertising and selling products made by village artisans over the Internet.

4. ICT Access to Women: Bangladesh Context

4.1 Access to computers

A couple of years back, the computer was a tool for only a few users and institutions. Recently the Government of Bangladesh curtailed the tax on computer products. This decision was a great boon for mass users in urban areas. As women lag behind men in every respect, it can naturally be concluded that they are far behind in the use of computers as well. In fact, women computer users are mainly operators. Computer professionals are mostly men. A survey of women professionals reveals that about 60% have had no exposure at all to computers, and in the case of the remaining 40%, their computer knowledge is mostly limited to word processing. They possess little or no information on computer basics, such as what an operating system is.

Recently, computer courses have been introduced at the school and higher secondary levels. Most schools cannot afford to purchase adequate numbers of computers. The government has

undertaken a programme to provide computers to colleges, but because of a lack of trained teachers and funds for maintenance, computer use is not optimised.

Last year, two Indian computer training institutes, NIIT and Aptech set up in Dhaka and Chittagong. Both the establishment of such organisations and private initiatives will help build up computer personnel in Bangladesh.

4.2 Barriers

- Language is one of the major barriers in using ICTs, as the most widely spoken language is Bangla and the use of computers and Internet mainly depends on English.
- Insufficient education and skills are also barriers to communication. Due to the legally and socially unequal status of women, education/ and the use of ICTs is not considered important for them. However, education is a prerequisite and higher education is generally required for using ICTs.

To erase these barriers, an easy and understandable curriculum/programme should be designed for adults who are outside the reach of any sort of education. To reach this goal, the following steps should be taken:

- A separate TV channel for education should be established.
- Community-based TV broadcasting should be introduced.
- Dedicated radio broadcasting should be introduced.
- The use of new technology should be emphasised to create awareness.
- New ICTs should be made easily available to the masses.
- Internet connectivity should be available at an affordable rate.
- Video-conferencing should be available.
- Special need-based training should be introduced for women. Such training programmes should gradually be extended to districts where facilities are available.
- All types of training should be available and accessible to women at all levels.
- Compulsory education in computer studies at school and college-level should be introduced.
- Compulsory education skills should be a mandatory subject at school and college-level.
- Basic computer skills as a compulsory subject for educated women professionals should be introduced.
- Computer training schools should be established at village-level so that educated youth of the village can learn simple work such as data entry. In this way job opportunities can be created.
- Interactive educational programmes and documentary videos should be transmitted via Internet.

5. Conclusion

Introduction of information and communication systems will significantly change the life of rural women and, in general, of village artisans. Proper information flow forms the backbone of any business. The possibilities of the use of ICTs in education, science and commerce in this age of globalisation are unlimited. To harness and optimise the resources, a country like Bangladesh must use the gift of ICTs with appropriate speed and earnestness. Like Grameen Bank, the premier organization of the Grameen family, the creative search for new opportunities should be part of our existence so we can live our lives with the promise of hope and dignity.

India

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Introduction

Information is power. The less informed are those who have poor access to information and are, therefore, powerless. Women fall into this category as their information on many matters is restricted for cultural, social, economic and geographic reasons. The primary reason for women's poor access to information is illiteracy and lack of education. A great deal of information available through print media and books is lost to women and men who cannot read. Over 60% of women in India are illiterate, and this illiteracy is a barrier to the acquisition of knowledge on various matters relating to their lives.

After much research, several surveys and the cumulative experience of implementing a variety of social development programmes in recent times, two realisations have emerged strongly. The first is that, in many ways, the current system of education is irrelevant and, therefore, there is no great incentive to send girls to school. The second—and this should be stressed—is that women's most urgent need is awareness through dissemination of information, irrespective of whether they are literate or not.

Where life skills are concerned, schooling is both necessary and desirable because it enhances knowledge, but it is not essential. Take for instance, the example of infant care. Today, the major cause of high infant mortality and malnutrition has more to do with lack of knowledge about feeding than insufficient food because of poverty. Misinformation on infant nutrition is rife, and it begins with the pregnant woman's diet. The distortion of traditional customs has led to practices that harm both young infants and pregnant women. One such belief is that pregnant women should eat less to avoid gaining weight and to have an easy labour. Other poor practices affect the nutrition of infants. In many parts of the country, solid foods are given long after malnutrition sets in. The answer to the problem would be to start infants on solids from the fourth month, to promote better growth and effectively raise their nutritional status.

Thus, it is equally crucial to inform and involve not only women, but also the whole family and community, if we are to bring about a change in the nutritional and health status of women. Inadequate information has led to the establishment of misguided traditions. Surely education is an urgent requirement in affected areas.

Many more examples of this kind can be cited to impress upon us the urgency for dissemination of information through better systems of communication that can bring about a change in socio-cultural practices and improve the quality of life.

Women and Technology

The inevitable course of action is to convene a gender perspective on technology. "Any technology that is not appropriate for women is not truly appropriate technology." The concern raised in this expression is applicable to all walks of life where technology is an eminent and powerful tool that can bring about a change. The gender and technology concept comprises many dimensions:

- Technology to facilitate women's productivity
- Technology to reduce women's drudgery
- Technology to empower women
- Technology to remove hurdles to women's growth
- Role of women in technological fields
- Familiarity of women in handling technology
- Decision-making capacity of women in technology-related issues
- Exposure of women to technological scenarios at national and international levels
- Gender sensitivity in technological aspects

Any nation that wants to progress cannot afford to ignore capacity-building and empowerment of women. Gender sensitivity is the prerequisite that must prevail and be strengthened at all levels. Women's development is now inextricably linked with technology. Thus, technological intervention assumes a greater and more vital role, especially when viewed globally. Its potential to sweep across political, geographical, economic and social barriers is just the leverage that women need to build for themselves a new identity and a more honourable place in society.

As has been experienced the world over, women have limited access to technologies in India. However, there are now enough experiences to show that when women are trained, they show remarkable understanding and control in using technologies effectively. In India, women comprise a large portion of the rural population and play a substantial role in the rural sector. Their involvement in a number of productive activities is generally overlooked. The time has come for them to become equal partners in development.

The experience of women in the field of animal husbandry—particularly dairying—is a case in point. Women have expressed their helplessness in looking after cows, diagnosing various ailments and providing immediate care. The reasons cited were their ignorance of modern veterinarian care, on the one hand, and the lapse of traditional methods of care on the other. A study of the situation in different parts of the country resulted in the proliferation of a whole range of manuals for animal husbandry workers. But technical information was presented in such complicated terms that it mystified even technical workers. Thanks to support from the United Nations Fund for Women's Development (UNIFEM), an expert team of veterinarians worked on simplifying the manuals and drawing up pictorial charts. The manuals and charts listed the do's and don'ts for practitioners in the field. Large groups of women in the dairy industry welcomed this information as it empowered them with relevant knowledge, bypassing the otherwise prerequisite need for schooling and literacy.

In Himachal Pradesh, women mid-school dropouts repair water pumps and manage computer data for the maintenance of the pumps. The rural women of SEWA/DDS use audio and video equipment to communicate effectively.

It is pertinent to point out that women in India have a thirst for knowledge and access to the new technologies. Flower vendors in Tamil Nadu, though illiterate, were aware of technological advances in many fields. Their question was whether they could be informed of methods by which they could keep flowers fresh for a longer period of time. Of course, there were scientific methods that they needed to learn. In another case, a group of women who saw videotapes in their village asked for worthwhile technology transfer through programmes that could teach them and help upgrade their skills. While they knew nothing of the teach-yourself series, what they demanded wasn't any different.

Role of Communication Technology

Information technology—more specifically, communication technology—is the contemporary buzzword both nationally and internationally. It is the common denominator that links people, irrespective of caste, class, sex, religion, race or political alignments. This is why it becomes even more important to evaluate and assess the role of communication technology in empowering women, particularly from the point of view of access and utilisation. Gender equality presupposes elimination of all kinds of bias against women, and communication technology intervention can accelerate the pace of equality through gender sensitisation. Communication technology can be used to impart information, and that in turn will lead to motivation, mobilisation and action.

Communication technology can encompass different approaches—welfare, participatory and catalyst approaches with women as change agents. Information, reinforced with success stories, can motivate women to adopt healthy lifestyles. For instance, information on immunisation, child mortality, maternal mortality, sanitation, nutritional awareness and causes, prevention and treatment of disease can be disseminated far and wide via communication technology.

Although computers and the Internet are altering the way we work, communicate, learn and play, the possibility of installing personal computers (PCs) in our villages is still fairly remote. Most villages are still without roads usable by cars, nor do they have a stable electricity supply. In the absence of basic infrastructure, the best we can hope for in the immediate future is the installation of PCs in educational institutions in all district headquarters.

Communication Technology and Education for Women

In the last 30 years, communication technologies have been used in a number of educational and developmental applications. While many of the projects have been promising, in the long run they have been uneven in performance and impact. Despite the vast range of experiences, there is little conviction in the education sector that communication technologies can be designed to effectively address the problems of education. The former Secretary for Human Resource Development was pleasantly surprised when teachers demanded the extensive use of video for training.

The national policy on education, 1986, observed that modern communication technologies have the potential to bypass several stages and sequences in the process of development, encountered in earlier decades. Both the constraints of time and distance become manageable at once. Further, in the policy document there are directives to encourage the enrolment of girls. Consequent to experiences gained during SITE, the Ministry of Human Resource Development put in considerable effort to utilise education technologies in the primary school sector. These education technology schemes envisaged distribution of audio cassette players and television sets in primary schools. In addition, there were special schemes to provide primary teachers' training through video and television. In the last few years there have been special schemes and campaigns to encourage girls to attend school and, thus, elevate their status in the family. However, no special policy or schemes have been formulated to encourage women in tertiary education, particularly in the areas of science, information and communication technologies.

Information networks spanning the length and breadth of the country provide wide coverage. (All India Radio has over 200 radio stations and 300 transmitters and Doordarshan has 600 transmitters.) With this service provision at national, regional, and local levels, there should be no delay in harnessing networks for better education. In fact, both All India Radio and

Doordarshan are powerful tools with which to disseminate information in a country the size of India. They are being used for this purpose, particularly by the University Grants Commission (UGC), but in a limited manner. Plans are in the works to use these services more extensively. They need to be carefully yet urgently worked out and implemented.

Women and Technical Education

Distance education has come to stay in this country. It holds great promise for the future with emphasis on quick training and communication of information. The Department of Women and Child Development has made a modest start with small experiments in educating people at the grassroots level on procedures for obtaining loans from the Rashtriya Mahila Yojana (RMK) for micro-enterprises. The distance mode has also been used for nutrition education and organisation of women's groups under the Indira Mahila Yojana (IMY) on an experimental basis.

The question is, What is the status of women in distance learning (DL)? According to the UGC Annual Report (1990-91), the enrolment of women for DL was 37.06%. In 1998, the enrolment of women in Indira Gandhi National Open University (IGNOU) was 28.4%. The enrolment of women in IGNOU is considerably lower than the national average, and a quick analysis shows that women continue to enrol in courses which fall in the domain of women's work and extending home skills.

Year 1998	Course	Total	Male	%	Female	%
	DECE	500	79	15.8	421	84.2
	CNCC	108	14	12.9	94	87
	BSc (N)	407	62	15.2	345	84.7
	MLISc	477	232	48.6	245	51.3
	PGDHE	379	208	54.8	171	45.1
	BA	12,813	9,354	73	3,459	26.9
	BSc	2,727	2,345	85.9	382	14.0
	B Com	4,256	3,484	81.8	772	18.1
	PGSMC	1,040	798	76.7	242	23.2
	CIC	12,462	14,572	62.1	8,890	37.8
	DCO	7,721	4,748	61.4	2,975	38.5
	BCA	14,709	12,378	84.1	2,331	15.8
	MP	16,442	13,483	82	2,959	17.9
	MBA	3,206	N/A	N/A	N/A	N/A
	MCA	1,367	N/A	N/A	N/A	N/A

Legend:

DECE: Diploma in Early Child Care and Education
 CNCC: Certificate in Nutrition and Child Care
 BSc (N): Bachelor of Science in Nursing
 MLISc: Master of Library and Information Science
 PGDHE: Post Graduate Diploma in Higher Education
 BA: Bachelor of Arts
 BSc: Bachelor of Science
 B Com: Bachelor of Commerce

PGJMC: Post Graduate Diploma in Journalism and Mass Communication
 CIC: Certificate in Computing
 DCO: Diploma in Office Management
 BCA: Bachelor of Computer Application
 MP (PR): Management Programme Registration
 MBA: Master of Computer Applications
 MCA: Master of Business Management

The perceived relationship between technology and masculinity is so entrenched that women are excluded from technical education and, hence, from technical jobs. The fault lies in gender stereotyping and is further compounded by the fact that technology is not included in school curricula. Since it is a subject exclusive to higher education, it is projected as abstract and complex.

It is important that girls aspire to a technical education. Granstam (1988) suggests building interest early on, from about the age of five. This he says can be done through work and play. He stresses new teaching methods—hands-on methods, camps, out-of-school activities and societal learning. If girls start from concrete rather than abstract experiences, they are likely to overcome their initial diffidence. Media and technological centres can present science and technology in a positive and gender-neutral light.

Strategy No.	Action Point	Examples & Pointers
1	Practical technology for girls at school level	Bridge construction with paper, glue, and tape (different types & designs) Building simple working and static models Making toys with simple and readily available materials Explorations with simple machines Use of hand tools
2	Role-play	Visiting technological sites and role-playing functions of workers Creating awareness of technology at home and role-playing for repair of household gadgets
3	Theme courses for teachers	Organising special theme-based teacher training courses suitable for girls Gender sensitisation courses for teachers
4	Female technologists as role-models	Producing case-study booklets on successful female technologists Face-to-face interaction with successful female technologists
5	Interactive technology park	Interactive models of technological marvels, to make technology interesting and less daunting Organising popular lectures on science and technology

The present under-representation of women in science and technology requires a larger awareness that encompasses parents and other authority figures and educates them on the debilitating effects of gender bias within the family, society and nation at large.

To analyse in greater depth, there is need for more data as to why women are not enrolling for science, technology and vocational courses, such as the B.Sc., B.A., M.C.A. and M.B.A. offered by distance learning. The enrolment of women in these courses is below 30%. There is also not enough data to profile women who join distance education courses and the constraints they face in being distance learners.

There are a few studies that focus on aspects of gender in distance learning. In one, “Problems of Women Students in Distance Education,” Rathore, Singh and Dubey list many problems that, though they are common to male students too, become more acute in the case of women. The most severe of these are irregular and unsystematic tutorial help, supply of reading material and lack of study centres. They conclude that women “re-elect the concern about their learning and academic achievements.”

It is evident that there is a need to commission gender-specific research on women distance learners and to analyse the barriers to learning and develop media campaigns to address these problems. An interesting area for follow-up research is the use of Internet and online services in IGNOU’s computer courses and their impact on gender. Jamia Millia Islamia has encouraged women to join communication courses, and the visibility of women graduates has been one of the most positive impacts on women. India will need multiple approaches to reach the student, but that should not deter course designers from integrating media with a well-designed learning package.

Other Modes of Imparting Education

It has been found that the best way of eliminating the barrier to girls’ education and bringing down the high dropout rate is to innovate and extend outreach education and information through other modes. One such innovation is non-formal education (NFE) that attempts to educate children outside the reach of formal education, for whatever socio-economic reasons. NFE provides flexible timings that are invaluable to children with inevitable family responsibilities. This is particularly important to girls who are expected to perform household chores and care for siblings. It has also helped working children in economically deprived sections of society.

The Mahila Samakhya Project—literally, women’s equality through education—is another such innovative approach. It attempts to empower women by bringing about a change in perception, both of themselves and of the society they live in, in the context of women’s traditional roles. It endeavours to create an environment for women to seek knowledge and information in order to make informed choices and to learn at their own pace and rhythm.

The latest effort has been to organise women in groups under the Indira Mahila Yojana and various other allied programmes like DWACRA, micro-credit, health, etc., so that there is greater strength within the organisation and faster transmission of information. Emphasis is on convergence of a number of benefits and facilities for women through group formation and creation of demand for a variety of services. The baseline for the success of all these ventures is a strong system of information dissemination through networking. Women’s groups have started demanding information.

The newly elected women members of the *Panchayat* have started demanding proper training for capacity-building in order to understand the functioning of *panchayats*, budget operation and the method of executing works. They are very aware of their inadequacies resulting from lack of literacy and exposure. Nevertheless, they are determined to overcome these stumbling blocks and believe that with training and exposure they will be further enabled. Women can no longer be denied access to information technology. All the social, economic and cultural barriers that have deprived them for centuries must be destroyed.

Systems of training are given priority in all departments dealing with social development. These schemes have to be intensified both for technology transfer in improving lifestyles and for upgrading skills to achieve greater productivity. More than anything, training is essential in capacity-building and empowerment of women so that they can improve their status in society. Investment in this human resource development is now a critical factor in any strategy of national development. Adequate allocation of funds should be made for this purpose.

The army of workers, which includes *Anganwadi* workers and extension workers in various departments, is often ineffective because of poor training. This has a direct impact on the quality of implementation of programmes for which huge allocations of funds are made in central and state budgets. Building skills and capacities in delivery agents and improving their knowledge base is an urgent national need. This must be recognised in order to make workers more effective in the community. This area calls for a great deal of planning and attention, but sadly, it has been neglected so far.

Women, who are considered agents of change, can perform this role adequately only if they are empowered with the skills and knowledge to bring about change. The transformation has to originate with the training of catalysts—the army of workers responsible for implementing a variety of programmes. Only then will it become possible to pass on information and create the necessary awareness of change. New technologies have to come to the rescue of vast numbers who have been deprived for so long.

Conclusion

The national policy for empowerment of women emphatically mentions that policies, programmes and systems be established to ensure mainstreaming of women's perspectives in all developmental processes, both as agents and beneficiaries. It states that media will be used to portray girls and women in a positive light. It will not depict demeaning, degrading, negative, conventional, stereotypical images of women or violence against women. Communication has to project women's needs, views, opinions, problems, aspirations, etc. Technology, particularly communication technology, should be geared towards the most deprived, underprivileged and unexposed section of society—that is, women.

The solutions to problems associated with gender, science and technology are an integral part of a much larger agenda—one that seeks to promote new, more ecologically sustainable and socially just approaches to development. Society at large, government, educational institutions, premier technological institutions, voluntary agencies, policy matters and women themselves can all be partners in women's equality and empowerment through technology.

Malaysia

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1. Background Information

In Malaysia, open/distance learning (ODL) is generally provided at the post-secondary or tertiary level. All nine public universities in Malaysia have embarked on ODL programmes, Universiti Sains Malaysia (USM) being the first in such an endeavour, having started its programmes more than 10 years ago. Because all ODL programmes in Malaysia are offered by public universities, they are—at least in part—publicly funded. However, in most cases, ODL students pay much higher tuition fees than on-campus students, perhaps indicating that there is lower government subsidy for the former.

Presently, national priorities in ODL seem to be focused on helping working adults to upgrade their professional skills. For example, the government is encouraging college-trained teachers to pursue university degrees through distance learning to upgrade their content and professional skills. The Institute for Distance Education (IDEAL) at Universiti Putra Malaysia (UPM), which was established in 1995, has a total of 4,645 students to date, out of which 4,049 are enrolled in the Bachelor of Education programmes. Of these 4,094 students, 1,994, or 47%, are female.

With the advent of the Information Technology era and the Malaysian government's effort to spur the Multimedia Super Corridor project, institutions of higher learning are encouraged to offer more technology courses to meet the nation's manpower demands. IDEAL is the first to offer a technology degree course, Bachelor of Computer Science, via distance learning. This is the first programme in the country to be delivered entirely via the Internet. In this programme, 37%, or 122 out of a total of 333 students are female.

The breakdown of student enrolment by programme and gender (IDEAL, UPM) is as follows:

Programmes	Male	Female
MS (Human Resource Development)	155	63
Bachelor of Computer Science	211	122
Bachelor of Education (Guidance & Counselling)	774	539
Bachelor of Education (Teaching of Malay)	1021	649
Bachelor of Education	355	756
Total	2516	2129

One of the priorities to meet women's needs would be to make information and communication technology (ICT) facilities more accessible so that women have the opportunities to acquire ICT literacy. With this added skill, women will be empowered to reap the full benefits of ODL programmes that use ICTs for course delivery and instruction. In addition, women can also use

ICTs, such as the Internet, to further pursue their interests, for either self or professional development. Last but not least, they will also have an efficient means of networking with other women around the world, who can provide encouragement and support in all facets of their lives

Currently, ICTs such as the Internet are being used for the delivery of the Bachelor of Computer Science distance learning programme at IDEAL, UPM. Universiti Tun Abdul Razak (UNITAR), Malaysia's first and newly established private virtual university, has started its diploma programmes on the Internet. The latest endeavour in the country is the establishment of University of the Air (UOA), which will offer ODL programmes via television broadcast. This university, a collaboration between a subsidiary of UNITAR and a private TV network, is expected to begin operation early next year to make ODL more accessible to Malaysians, including those in the rural areas.

In traditional print-based ODL programmes, which do not use ICTs for course delivery, there has been a steady increase in the use of e-mail for student interaction with course lecturers/instructors and among students themselves. Telephones and facsimile machines are also commonly used in such communications. In addition, both audio and video cassettes are used extensively to support instruction in most ODL programmes. Other applications of new ICTs in ODL include the use of audiographics in the training of medical personnel in remote/district hospitals by the Medical Faculty of Universiti Kebangsaan Malaysia (UKM), and the use of videoconferencing in selected ODL programmes at a few universities. (See Appendix for more information.)

As well, some secondary schools, especially those in and around Kuala Lumpur and the Klang Valley, have been sufficiently wired to have the potential to deliver ODL via the Internet. Some associations of entrepreneurs also have the resources and means to start ODL, although they have not done so.

Some data on how many women distance learners register and complete their programmes would be available from USM, where ODL was started more than 10 years ago. Other institutions, including IDEAL/UPM, are relatively new in the field of ODL to have such data, as no distance learners have graduated yet.

No data is yet available to indicate how many learners use ICTs in ODL and what proportion of these are women. However, two sources of information may indicate how the Internet is being used. Firstly, according to the estimate of the two Internet service providers (ISPs) in Malaysia, about 70% of Internet subscribers are male and 30% are female. The implication is that fewer women have access to this form of ICT for ODL. Secondly, data from IDEAL's Bachelor of Computer Science programme, which uses the Internet for course delivery and instruction, further supports this notion as only 36.7% of the 333 students enrolled are female.

2. Widening women's access to ICTs for education purposes

Barriers encountered by women and girls are generally rooted in lack of access to ICTs, especially the Internet. Although the Internet is growing by leaps and bounds in Malaysia, the expanding user base does not include an equal proportion of men and women, as indicated by the estimate of subscribers provided by the two ISPs in the country. This is not surprising, given that women are still under-represented in almost every aspect of computer culture in Malaysia, from programming to product design to everyday use.

Access to the Internet or computer networking for women is contingent upon access to both hardware and software that support communications. Professional women, who are in academia

or in the corporate mainstream, where networking costs are basically “invisible,” can take advantage of the Internet. Financially advantaged women are also in a position to use online services. However, for those women who can’t afford networking costs and don’t work in the computer industries—or who don’t own a computer and modem—there is obviously a barrier to the access of ICTs for ODL. To a large degree, economics determine women’s online participation. On average, women’s salaries are still lower than men’s in Malaysia, thus leaving women with less disposable income for computers, modems, software, online services and any additional phone charges.

In Malaysia, while electronic mail is fast becoming common in the workplace, it is still predominantly used by those in technical fields, whether in educational institutions or in business, or by those with technical facility or training. In general, more men than women work in academic, management or technical positions that offer free access as one of the prerequisites or even fringe benefits of their jobs. This means that, in general, fewer women than men have both the technical training and subsidised access to participate online, much less the freedom to use the facility for ODL.

There is an additional barrier to online participation of women in Malaysia, which may be attributed to their traditional role in society. Even though more women are now in the workplace, they often remain the primary caretakers of their children. In a majority of households, most career women still bear the brunt of household chores. In middle-class homes where computers and Internet connections are available, women may find that they have free time to learn or to navigate online systems. But some women still suffer from technophobia and prefer to have their husbands or even sons get for them whatever information they need from the Internet.

So far, no clear-cut initiative or strategy has been put in place to overcome the aforementioned barriers. It is, however, generally acknowledged that there is an urgent need to demystify new ICTs, especially computer technology and the Internet. Women must be made to understand more fully the implications of new information technologies and the impact they have on their lives through simple, clear-cut answers to typical questions such as:

- Why should I learn to use the Internet?
- Why should I use e-mail?
- How is it different from fax?
- I don’t have time to learn to use the computer; can I still use e-mail?

To overcome any reservations and apprehension that women might have about investing time and money in learning and using new ICTs, it is important that they be educated about the usefulness of the technology and that they be shown concrete benefits. Internet users often describe the virtual community as a benefit of being online; professionals and activists find they gather, access and disseminate information and viewpoints not readily available from other mass media. Such benefits must be explained and demonstrated to the women users. Someone once used this interesting analogy: the automobile is expensive, it’s mechanical, and millions of women own cars and drive them every day.

Why? Because they find cars useful and even necessary to their lifestyles. But most women don't feel this way about computers or going online. An understanding of these practical benefits is exactly where education for women on new ICTs should begin.

The impact of the increased availability and use of new ICTs on women teachers, instructors and tutors is not really perceivable. Perhaps a study can be conducted in the near future to look into this. Most women in these lines of work, especially those in academia—by virtue of their higher education and the nature of their work—seem to have adopted new ICTs as a matter of course and are able to reap as much benefit from the technology as their male counterparts.

2.1 Useful ICTs: Practices and Examples

By and large, access to computers remains beyond the means of inhabitants of remote areas and certain marginalised people, including the poor and women. In comparison, other ICTs such as television and radio are more accessible. As mentioned earlier, UOA (University of the Air) in Malaysia has been established to use television broadcasting to bring education to more people, especially those in rural areas. Currently, the Malaysian government is also processing applications that propose to broadcast educational programmes on private radio channels to benefit rural villages, which do not even have electricity! The people involved in this project hope to emulate China's experience, where over a million students are enrolled in the two main ODL institutions using communications satellites, the China TV Normal College (for teacher education) and the China Radio and TV University (for all other subjects).

The use of more sophisticated and trendy ICTs, such as the computer and the Internet, may further marginalise rural women simply because of their lack of access to such technologies. Even if community centres and libraries can be equipped and mobilised to provide access, such access is limited and not convenient or even feasible, especially for women who are homebound because of family commitments and responsibilities. Other ICTs, such as TV and radio, which are more readily accessible from home and cheaper, may be better alternatives for making ODL more accessible, at least for now.

2.2 Programmes to Support Training In New ICTs

Women's organisations in Malaysia with training programmes already in place and facilities for new ICTs have the capacity to take on the additional roles of support and training for women. These organisations include HAWA (the Department of Women's Affairs in the Ministry of National Unity and Social Development), Women's Institute of Management (WIM) and the newly established FemiNet Malaysia. FemiNet Malaysia is a part of FemiNet Asia, established in early 1998 as an information technology resource centre. It aims to serve Malaysians in general, and Malaysian women in particular, through the Internet, to educate and encourage them to join the burgeoning information age.

Steps must be taken, before it is too late, to ensure that women are not further disadvantaged or marginalised by the advent of new ICTs in the information age. For starters, there must be community-based programmes to provide support for women who are interested in bettering their lives through ODL, whether by using new ICTs or more traditional modes of learning. Support could be in the form of short training programmes at community centres, local public libraries, public schools or even places of worship such as mosques, churches or temples. Support should

also include free or subsidised childcare as well as counselling services to inform women about education and training opportunities available to them.

2.3 Overcoming Constraints

There are various ways in which ICTs can be used to overcome constraints that prevent women from accessing education programmes. For now, however, the highest priority should be intensifying literacy programmes for women, with or without the use of ICTs. Many rural women in Malaysia are still deprived and illiterate. Without basic literacy, there is no access to more and higher education, much less to ICTs. For women who are already literate and who seek higher education, subsidies or hire-purchase schemes should be put in place to enable them to acquire the necessary basic hardware and software to delve into new ICTs. These should be coupled with training for women in ICT literacy, so that they can take advantage of ODL programmes that use new ICTs. The concept of “anytime, anywhere” ODL programmes will become more of a reality with the application of new ICTs that should be made available at affordable prices. Flexible programme structure should be a prime consideration in planning to allow women to study at their own pace within the constraints of their family commitment. There should also be social support groups to provide guidance and counselling for women engaged in ODL, and for their spouses if they are to play a supportive role.

But, can problems of literacy be overcome using these new ICTs as delivery systems? Maybe not. As mentioned earlier, basic literacy in the “3 Rs” is actually the prerequisite for the use of new ICTs, so the challenge of illiteracy must be overcome before women can benefit from ICTs.

3. Training and capacity-building

To prevent their further marginalisation in the information age, women and girls must be made aware of the potential benefits of ICTs and they must increase confidence in their ability to use them. To start with, teachers in schools must actively encourage girls to take greater interest in learning about and using computers by, for example, helping to build and maintain school home pages and running computer classes for younger students. Community-based programmes and women’s organisations should provide special training for women to help them become comfortable in using such technologies.

Working women are more fortunate than homebound housewives as they have better opportunities to enhance and upgrade their skills, knowledge and access to ICTs. This is especially the case for women who work in offices. More women—whether in managerial or clerical capacities—now have access to computers. Very often, because the nature of their work requires their computing skills to be upgraded, they get to enjoy benefits of staff training and development schemes. However, full Internet access may not be readily available to all clerical staff members, although most have local network facilities for communication purposes. Generally, professional women who are in the academic or corporate mainstream are more likely to enjoy all the benefits of full Internet access as costs are basically invisible. Other women who enjoy the benefits of subsidised Internet access are likely to be those in management or technical positions. Women who work as reporters, journalists or librarians are likely to have more and better access too. With access to ICTs in their workplace, women in these positions and careers have more opportunity to enhance or upgrade their skills and knowledge in ICTs, which means they have increased access to ODL programmes delivered via new ICTs, especially the Internet.

In Malaysia, there is, as yet, no initiative to build women's capacity through ODL through the development of courses and programmes that use gender-sensitive training, methodologies, materials and language. This is largely because ODL is a relatively new endeavour among most institutions whose current preoccupation is how to expand access to education for the general public. In the foreseeable future, studies will be conducted at institutions that offer ODL to look into these aspects.

Despite constraints and barriers imposed by either culture or gender, ICTs can contribute to the three chief concerns for women as defined by the Platform for Action of the Fourth UN World Conference on Women. For education and appropriate technical training, ICTs (including the radio, television and Internet) can be used to deliver flexible ODL programmes, which provide "anytime, anywhere" study/training to meet the specific needs of housebound women. For school curricula, Web sites could be designed and set up to disseminate and share new ideas, curricular materials, and teaching/learning approaches specially designed to encourage girls to enter technology and science-related studies. To support women organising and mobilising for empowerment, Web sites should again be set up by women's organisations to provide a forum for women to share and exchange information and to network effectively for mutual support and empowerment. FemiNet Malaysia, has already made a start in this direction.

4. Is Public Policy Working for Women?

Malaysia's development policies are and have been gender-neutral. There is, nevertheless, a consciousness on the part of the government of the role of women in development (i.e., in all aspects of work and life and in the processes of nation-building). This consciousness is manifested in the National Policy on Women, which recognises that women "constitute an important potential resource, not yet fully recognised." (The National Policy on Women takes into consideration The Resolution of the United Nation's End of Decade for Women Conference (1985), The Declaration by the Commonwealth Secretariat on Women and Development (1985), The Commonwealth Plan of Action on Women and Development (1987), Resolutions made at the Conference of Ministers in charges of Women's Affairs (1987) and Basic Working Paper prepared by the National Advisory Council for the Integration of Women in Development (NACIWD)).

The National Policy on Women provides guidelines in the planning and implementation of the nation's development programmes, so that the interest and participation of women, both as targets of development as well as agents in the development process, are not overlooked or neglected.

As a follow-up to the Policy, the Action Plan for Women's Development has been formulated to further integrate the participation of women in the national development process. This Action Plan is meant to make operational the government's pledges on gender issues made at the international level (e.g., Beijing Declaration, the ASEAN Women's Development Declaration, Convention on the Elimination of all Forms of Discrimination against Women and so on). In the Action Plan, categories have been identified for action, one of which is "Women and Education and Training."

The Department of Women's Affairs (HAWA) within the Ministry of National Unity and Social Development serves as the government's primary machinery for ensuring the integration of women in national development. Other entities that augment and support HAWA's work are the

National Council of Women's Organisations (NCWO) and the National Advisory Council for the Integration of Women in Development (NACIWID).

4.1 Is There An Understanding of What National Telecom Policies Might Comprise?

For both men and women, there are those who understand what national telecommunications policies might comprise and there are those who do not. The Deputy President of the National Council of Women's Organisation believes that, in general, women in Malaysia have not given serious thought to the implications or the details of a telecommunications policy.

The advent of the information age has brought about a high degree of complexity in almost all areas of life. Policy-makers around the world are currently grappling with the many issues engendered by convergence at two levels:

- Convergence of three industries (computing, telecommunications and broadcasting) into one
- Convergence of content, connectivity and computing

Issues of convergence cut across almost all sectors and are affecting the way people live, learn and work, either directly or indirectly. Given the degree of complexity and the rapid structural changes taking place in meeting the challenges of the information age, telecommunications policies are no longer standalone factors in determining equitable access to telecommunications infrastructure.

The existing National Telecommunications Policy in Malaysia serves to ensure that the growth of telecommunications services and its use of technology support national development and are in line with national aspirations. National aspirations here refer to the realisation of:

- Vision 2020—the vision of attaining developed nation status by the year 2020
- National Information Technology Agenda (NITA)—the evolution of a *Masyarakat Madani* or a knowledge and values-based civil society through ICT by the year 2020.

In Malaysia today, strategic ICT policies embedded in the National IT Agenda (NITA) provide the integrating framework for dealing with issues of convergence and for harnessing the power of ICT to enable the nation to evolve into the desired knowledge society and economy. The NITA focuses on the development of three elements: people, “infostructure” (i.e., both hard and soft infrastructure) and applications or content. The key success factors of the NITA are equitable access, value-creation and qualitative transformation of society. NITA's rationale is this: people, with equitable access to infostructure will be able to create economic and societal growth through the development of content/applications and values, which in turn will enhance the quality of life and work of all Malaysians and lead to the qualitative transformation of society.

4.2 What Are The Implications of The Liberalisation of The Telecommunications Sector?

The liberalisation of the telecommunications sector should presumably lead to more competition, lower costs and more choices. Because telecommunications companies that obtain licences to operate are obligated under the policy of universal access to extend a portion of their services to rural areas, there should be an expansion of access to both urban and rural areas. The recent

liberalisation of the telecommunications sector in Malaysia did not lead to lowering of costs until the government intervened to make telecommunications companies “open up” to share their infrastructure.

4.3 What Are The National Telecommunications Policies on ODL: How Do These Policies Address The Issue of ICT for ODL?

There are no national telecommunications policies on ODL. The NITA, however, does address the issue of ICT for ODL, both directly and indirectly through its designated programmes under people, infostructure and applications development. Selected programme examples include the following:

Element	Strategies	Programme Examples
People	Education	Smart learning for all schools connected to the Internet Basic computer literacy programme for all Electronic distance education for all
Infostructure	Appliances	Intelligent, quality and affordable access applications Culture compatible user interface
Applications Development	Infotainment, Edutainment, Infocommunication	On-demand educational services Focus on infotainment and edutainment content in media

4.4 Does Public Policy Address Gender Differences in The Education Sector?

Public policy in all sectors tends to be gender-neutral and, thus, does not address gender differences.

4.5 What Are The Opportunities Offered By ICT Policy To Address Gender Differentials in The Education Sector?

Malaysia’s development imperative expressed via the NITA and the Multimedia Super Corridor (MSC) initiative requires:

- Adequate supply of skilled, creative and talented individuals capable of breathing life into Malaysia’s multimedia industry
- ICT-literate society able to generate demand for and add value to ICT development and applications

Malaysian training and education institutions are given the task to produce the first element and nurture the second. Realistically, without the involvement of women in the entire endeavour, national targets will not be achieved. Moreover, the NITA states that to realise Vision 2020 and a *Masyarakat Madani*, all Malaysians will need to have access to information and learning through infrastructure for personal, organisational and national advancement. “All” here is taken to mean everyone, male and female, young and old.

4.6 Do Education and Telecommunications Policy-Makers Collaborate To Support Women’s Use of ICT?

Under the broad framework of the NITA, education and telecommunications policy-makers have to collaborate to support the use of ICT for all Malaysians, regardless of gender, age, race or creed. If women are found to be lagging behind in the adoption and use of ICTs, it is likely that policies to remedy the situation will be recommended and put in place out of sheer development needs.

Cross-sector collaboration, including collaboration among public, private and community-interest sectors, is crucial to the work of the National IT Council. Policy-makers from all sectors tend to collaborate in addressing the various issues of ICT as there is a perceived need for collective wisdom and action.

4.7 Do Current Policies Enhance and Build on Each Other’s Objectives? If Not, How Can This Be Changed?

Representatives from the government, women’s groups and educators concur that current policies do enhance and build on each other’s objectives. That the end goal is clear and that there is wide public acceptance of national-level vision, helps in obtaining a coherent and aligned set of policies from various sectors. All formulated cross-sector policies serve to align efforts as well as allocate resources towards achievement of the national vision. Moreover, a macro-policy framework exists to enable better co-ordination of policies at three levels: strategic (national), tactical (sectoral) and operational (organisational).

4.8 Are National Policy-Makers Aware of The Latest International Telecommunications Union Resolutions on Gender and Development in Telecommunications

Malaysia’s Secretary-General of the Ministry of Energy, Telecommunications and Post (the highest-ranking career civil servant in the Ministry) is a woman. She responded to this question in the affirmative. She believes that national policy-makers are aware of the latest ITU resolutions on gender and development in the telecommunications sector.

If ODL policies are to be formulated in the future, the ministry’s views or input will most likely be requested given its expertise in ICTs. One can also expect the ministry to inform other parties of the ITU resolutions if gender issues arise.

5. Acknowledgements

The authors would like to acknowledge the following for their contributions to this report: Dato’ Nurazah Abdul Hamid, Datin Dr. Sharifah Hapsah Shahabudin, Professor Tan Sri Dr. Syed

Jalaludin Syed Salim, Professor Chin Gek Liew, JARING, tmnet, Dr. Ahmad Haji Mohammad, and Dr. Normaziah Abdul Aziz.

Appendix: ODL Programmes in Some Malaysian Institutions of Higher Learning

Telekom Malaysia Berhad (TM School)		
1.	Network	Internet
2.	Access	Home, anywhere –Forum, Chat, Mailing List, IRC
3.	URL	http://www.tmsol.com.my/index.htm
4.	Software	OS-Unix Others–PERL, HTML Editor, Mail Server
5.	Level	UPSR, PMR, SPM
6.	Subject areas	<i>Skima Pendidikan Kementerian Pendidikan Malaysia</i>

Universiti Sains Malaysia (USM) – School of Distance Learning		
1.	Network	Intranet (Campus LAN) and Internet
2.	Access	Campus, lab, home, library –Audio/Video Format
3.	URL	
4.	Software	OS-Unix & Windows (Novell, NT Server) Others–HTML Editor, Audio/Video Server
5.	Level	Higher Degree & Bachelor Degree Programme
6.	Subject areas	Distance Education, Arts (Social Science & Humanities), Pure Science (High Degree) Bachelor of Education, Engineering, Management, Arts, Social Science and Science (Bachelor Degree)

Universiti Malaya (IUM)–PJJ		
1.	Network	Dedicated location (using ISDN) & Internet
2.	Infrastructure	Optic fibre with Multipoint Central Unit (MCU)
3.	Access	Dedicated locations and home –Video conferencing
4.	URL	http://pjj.um.edu.my/
5.	Software	OS-Windows Others–Adobe Acrobat Reader
6.	Level	Higher Degree and Bachelor Programme Degree
7.	Subject areas	(Bachelor Degree) Malay Studies, Economic, Accountancy, Business Management, Information Technology, Engineering.

Universiti Tenaga Nasional (UTN)–Dept of Mechanical Engineering		
1.	Network	Internet (Campus LAN)
2.	Infrastructure	ATM Backbone
3.	Access	Hostel, Campus Library –Audio/Video format, Mailing list, Forum
4.	Software	OS-Unix and Windows (NT Server)
		Others –Design a Course, Mail Server, WCB (Web Class package), Video, Server, PERI, Hypercam Quizplease, Crystal Ap, Real Player, Real Encoder
5.	Level	
6.	Subject areas	

Universiti Malaysia Seremban (Unimas)–Centre of Applied Learning and Multimedia		
1.	Network	Internet (Campus LAN)
2.	Access	Campus, lab –Campus, Video and Audiographics Conferencing
3.	URL	
4.	Software	OS-Windows
		Others-Audio/Video Server
5.	Level	Master’s Degree Programme Doctor of Philosophy Programme
6.	Subject areas	Educational Technology, Information Technology, Computer Science, Psychology, Education, Communication or other applied Science (Master’s Degree) Educational/Instructional Technology, Education, Information Technology, Communication; or a subject relevant to the research domain from accredited universities (Doctor of Philosophy)

Universiti Kebangsaan Malaysia (UKM)–Faculty of Medicine		
1.	Network	Dedicated network
2.	Access	Campus, centre, home –Videoconferencing
3.	Infrastructure	Telephone lines with AGS (Alphabet Audiographic Teleconference System)
4.	URL	
5.	Software	OS-Windows Others–Videoconferencing
6.	Level	Postgraduate Programme
7.	Subject areas	Health Care, Education and Research

Pakistan

By: Ms. Yameena Tamkeen

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Pakistan is an under-developed country with a total land area of 796,095 square kilometres and a population of 135 million. Generally, there is a dearth of educational opportunities in Pakistan, and opportunities for women are even scarcer. The literacy rate is poor at 38% for the general population and even lower at 27% for females.

The status of women in Pakistan is not as high as one would desire. However, women are striving for empowerment and involving themselves in the process of policy-making and decision-taking.

Recently, unconventional methods of teaching and training have come into vogue at Allama Iqbal Open University (AIOU). The university employs the open learning/distance education mode of delivery, using radio/television broadcasts and non-broadcast programmes extensively to support direct text-based education. However, the use of information communication technologies (ICTs), such as Internet, e-mail and telephone, is limited. Efforts are, however, now being made to acquire and establish a computer network for the organised and systematic use of ICTs at AIOU, but education in the public sector may be slower in acquiring and using these new technologies.

The Impact of ICTs on Distance Learning—A Gender Status Report

Education and training through open/distance learning (ODL) has been provided in Pakistan for the last 24 years by a federal university established in the public sector. Allama Iqbal Open University (AIOU) offers education at all levels, from matric (higher school certificate) to M.A. degree-level in almost all disciplines. M. Phil. and Ph.D. programmes are also offered in some disciplines. In addition, some basic-level certificate courses are offered to both men and women from the semi-literate and literate target groups. These courses aim either to create awareness and motivation or to enable the transfer of skills.

The present national priorities in ODL, set by AIOU, are to boost literacy and spread education on a mass scale. Both men and women benefit from the programmes at a ratio of 57:43 in favour of men. However, some of the programmes offered by AIOU are women-specific, such as the following:

Basic Level Certificate Courses

- Child Care
- Sanitation
- Poultry Farming (income generating)
- Women's Health

IFLP (Integrated Functional Literacy Programme)

- *Ibtadai Hisab* (Basic Arithmetic)
- *Urdu Parhiya* (Language Reading)

- *Urdu Likhiyen* (Language Writing)
- *Qurani Qaida* (Preparatory Book for Reading the Quran)

High School Level

- Women's Matric Programme

Intermediate (Higher Secondary School Level)

- Garment Making I
- Garment Making II
- Child Care
- Food and Nutrition
- Health and Nutrition
- Home Management and Home Furnishing
- Health in Family and Community

Graduate Level (B.A., B.Sc., B.Com., B.B.A.)

- Food and Nutrition
- Health Nutrition

The education authorities have determined that literacy is a basic need and have made it their prime concern. They are trying to establish facilities to spread literacy among women, as the ratio of literate women to men is quite low. AIOU encourages women to enrol in larger numbers in their programmes for literacy, functional literacy and in basic-level courses.

In a male-dominated socio-economic society like Pakistan, women are deprived of decision-making powers and are dependent both socially and economically on their male partners. Hence, women must find ways and means to equip themselves with education and training that can help them generate income and empower them economically. The priorities, thus, are both education and training, with an emphasis on technical-vocational education.

Information communication technology, in the true meaning of the phrase, is not being used extensively for the delivery of, or for the supplementary purposes of ODL at AIOU. Nevertheless, management is currently endeavouring to acquire more computers for the main campus as well as for all study centres in the outreach system and to link them through fax modems and the Internet. It will, however, take some time before the system becomes operational. However, satellite communication, carrying radio/television broadcasts, is used for delivery and supplementary purposes at AIOU. Nearly 230 television programmes (each 25 minutes long) and 700 radio programmes (each 15 minutes long) are aired during one semester.

Most local institutions, such as schools and clinics, do not seem to have access to ICTs. Surprisingly, the Chamber of Commerce does not have access either, even though they use computers for business and commercial purposes. Unfortunately, there does not seem to be much integration with other institutions using ICTs. The possibility of seeking support from other institutions for ODL has not been seriously considered.

Data on the number of women registering and completing their programmes through distance education at AIOU is available, but data on the use of ICTs by women in ODL is not.

Women's Access to ICTs for Educational Purposes

AIOU, which is the only agency employing ODL, has not established the use of ICTs through computers. Instead, it relies heavily on radio and television broadcasts, which are easily accessed by many women. Management, however, has taken the initiative to establish ICTs, but the question of women students using this technology remains unresolved. Women and girls will certainly encounter barriers such as:

- The cost of computers
- The cost of phone connection and usage charges
- Barring higher levels of education, the language problem
- Computer literacy
- In attending the study centre and sharing computers, the problem of female segregation

New ICTs certainly possess great potential to have a marked impact on women teachers, instructors and tutors, no matter what little exposure they may have to the technology.

Women, who have difficulty in accessing education have difficulty in accessing ICTs as well. Information communication technology is dependent on the availability of computers or, alternatively, the access to computers, telephones and electrical connections. The users must:

- Be computer literate
- Have an e-mail address or Web site
- Know the English language
- Own a computer and a telephone line

The majority of women, who have little or no access to education, belong to the group with poor social and economic indicators. Thus, it is hard to find examples of where ICTs may have been found useful in reaching out to women. Nevertheless, women who belong to higher social classes and have access to advanced education are making the best use of ICTs in their pursuit of higher education or in fulfilling their professional needs.

Unless the software to be carried by ICTs is programmed in local languages and access to facilities is extended to rural areas, the possibility of increased use of ICTs to deliver education and training to rural women and girls seems remote. Many rural areas in Pakistan do not even have electricity, let alone computer equipment.

In Pakistan, the user profile of new ICTs continues to be dominated by men and those people with higher education and income levels. The possibility of creating new users from low-income, semi-literate and illiterate groups, especially women, does not exist. However, some target groups in this category, located in small towns and cities, can be catered to, but not without the intervention and support of either the government or AIOU. If this happens, then programmes can be developed to support training of women in the use of ICTs for literacy and basic arithmetic.

To ensure that women are not further disadvantaged or marginalised, it is imperative to provide them with the education and training to allow them to generate income. A female capable of earning income can enhance her status and actively participate in the process of decision making, which does not happen now. The capacity to generate income can benefit poor women of towns,

big cities and villages with easy access to big cities. The same is not true for women living in remote rural areas.

In Pakistan, the socio-cultural and economic constraints that prevent women's access to educational programmes are:

- Tribal and feudal set-up
- Male-dominated decision making
- Lack of parental support for daughter's education
- Female segregation and seclusion

ODL programmes can meet the needs of women by the use of ICTs. Delivery systems must be established by AIOU in all existing outlet centres, both at regional and sub-regional levels, so that women-specific literacy programmes can be offered to target groups in specific cities and towns. The women in this potential group have to be formally enrolled so that they can then gain access to ICTs in these centres. Keeping in mind the socio-cultural nature of society, it is appropriate for such centres to be managed by women, along with some provision for face-to-face support. The core content of literacy programmes is to be determined by the university.

Training and Capacity-Building

The means of creating awareness among women and girls of the potential benefits of ICTs, and building confidence in their ability to use the technology, is based on identifying the target groups. For example, if women with limited opportunities and low income in rural areas are to be approached, then the following issues have to be addressed:

- Overcoming the language barrier
- Computer literacy
- Availability of ICTs and connectivity at centres run by AIOU
- Guidance and support

The following few suggestions need to be carried out to make the programme a success:

- a) Either government agencies or the AIOU (or both) will have to help build the base of ICTs to provide access to user groups.
- b) Special learning/training and education programmes should be developed and loaded on the Internet for the vast numbers of literate and semi-literate groups.
- c) The Telecommunication National Authorities need to be convinced to expand their services to all areas of the country and to provide phone and Internet connections to a greater number of users and at cheaper rates. This will motivate and encourage potential individual users (among them women) to benefit from ICTs in their homes.
- d) Hostel facilities at centres must be provided for interested, motivated females from distant rural regions, who otherwise cannot get involved in or benefit from the programme.

Working women in management positions, doctors, educationists and those in the bureaucracy certainly have the opportunity to access, enhance and upgrade their skills in the use of ICTs. This is true more so in the private sector than in the public sector. The use of ICTs is increasing with the increased use of computers in many urban-based institutions.

There exist some examples of initiatives to build capacity through ODL using gender-sensitive training:

- IFLP (Integrated Functional Literacy Programmes) conducted in restricted areas for target groups
- Specially designed Basic Functional Courses using local languages, meant for motivation and transfer of skills, for illiterate and semi-illiterate groups in target areas, delivered through audio and visual media
- Higher Secondary Certificate Course for female groups offered through ODL
- Some women-specific undergraduate and graduate courses

The tailor-made outreach system created for carrying basic level functional courses has successfully built learner support by encouraging interaction between learner and tutor.

If an ICT network is created at the basic education level and all other bottlenecks blocking the use of ICTs, such as the language barrier and computer literacy, are removed, then ICTs can certainly address the three chief concerns of women in the areas of:

- Education and technical training
- School curricula encouraging girls to enter technology and science-related areas
- Support of women organising and mobilising for empowerment

Public policy for women

For some time now, Pakistan's national telecom policies have been increasingly liberalised, but surely with underlying commercial concerns. The availability of phone connections, Internet, fax and e-mail has become easier, but only in urban areas. Though there are no priorities for educational purposes within this liberalisation, by default, the education sector is benefiting.

These policies do not necessarily address the issues of ICTs for ODL, nor do they address gender differences in the education sector. Policy makers have to be sensitised on these issues. Any effort for telecom managers and ODL operators to collaborate must be preceded by sensitisation and an orderly setting of priorities.

As described above, education and telecommunication policy makers do not collaborate to support women's use of ICTs. In fact, they do not seem to be sensitive to the need. The process of sensitising and building awareness can be achieved, perhaps, by government interaction or by pressure from NGOs and other development workers.

Pakistan is a member of the International Telecommunication Union, hence, national policy makers are certainly aware of the latest resolutions on gender and development in the telecommunications sector. All that is required is to draw their attention to these resolutions.

Sri Lanka

By: Professor Uma Coomaraswamy
The Open University of Sri Lanka

1. Introduction–Trends in Education and Gender Differentials

Women in Sri Lanka have had the opportunity to progressively advance towards a higher quality of life, ahead of those in neighbouring countries. Generally, Sri Lanka has achieved considerable gains in terms of women's rights and status. Universal adult franchise was introduced in 1931 and free education was introduced in 1945. Thus, Sri Lankan women gained the right to vote and the right to free education even before the country became politically independent in 1948. Sri Lanka set up a Women's Bureau in 1978, even before the introduction of the UN Convention on the Elimination of all Forms of Discrimination Against Women in 1979. A special ministry for women's affairs was created in 1983. In 1993, a National Committee of Women was formed and the government accepted the Women's Charter. These progressive policies led to minimal gender disparities in the indicators for educational opportunities and attainment (Table 1).

Table 1
Indication of the Level of Education of Women in Sri Lanka

	Male	Female	Total
1. Literacy (1993) (1)	93	86	
2. Enrolment in formal education (2)			
(Ages 5-9)	90.1	87.3	88.7
(Ages 10-14)	86.6	87.5	87.1
(Ages 15-19)	37.5	42.6	39.9
Years of schooling (1993)	8.0	6.3	
3. Enrolment in post primary/ secondary education (1993)			
Universities (2)	57.0	43.0	
Technical Colleges (2)	59.3	40.7	
NAITA (2)	63.3	36.7	
NYSC (2)	60.8	39.2	
Dept. of Labour Centres (2)	24.7	74.3	
4. Drop-out rates (2) (Grades 1-9)	4.9	3.8	4.4

Sources: 1. *Human Development in South Asia, 1997.*

2. *Gunawardene, C. (1995).*

Before looking at open and distance learning, it is useful to consider women and education in general. Although no imposed barriers exist in Sri Lanka and equal opportunities are provided in institutions, gender role stereotyping is apparent in the choice of subjects and disciplines in schools and universities. This has puzzled many educationists and no proper answer to why it occurs has yet emerged. In technical subjects taught at secondary schools, girls tend to take up "feminine" subjects such as home science and needlework, while boys take up metal work, electronics, carpentry, etc.

This trend extends into the tertiary system. Although about 45% of students in higher education are women, their participation by discipline varies, with the lowest percentages, both in Open University's distance learning programmes and at conventional universities, in engineering and other technology-related fields (Goonawardena, 1998). A survey of career aspirations of students studying in the GCE O/L grades revealed a preference for non-technology related occupations by girls (Jayaweera, 1998).

The pattern of vocational training in Sri Lanka also shows a marked gender role stereotyping, where women continue to be trained in traditionally feminine areas and service-related subjects, (Rupasinghe, 1990) limiting them to a narrow range of skills (Jayaweera, 1989). The trend continues in the employment sector too. Distribution of scientists by sex also indicates that lowest representation of females is in engineering and related fields (National Survey of Research and Development in Sri Lanka, 1998) (Table 2). However, an encouraging trend is the increasing number of females entering the STP (scientific technological personnel) workforce.

Table 2
Distribution of Scientific Technical Personnel by Sex
Year - 1996

Discipline	Male	Female	Total	Percent Female
Natural Science	1,801	1,064	2,865	37.1
Agriculture	614	274	888	30.9
Engineering	4,402	714	5,116	14.0
Medical Science	1,278	905	2,183	41.5
Social Science	1,612	622	2,234	27.8
Total 1996	9,707	3,579	13,286	26.9
Total 1984	8,816	1,663	10,529	15.8

Source: Natural Resources Energy and Science Authority, 1998.

In the computer industry, women generally execute lower level jobs such as data entry and programming. Managerial and top-level jobs, which need technical skills, are dominated by men. No study has yet been made to gather data and statistics on women working in the computer and ICT field in Sri Lanka. Therefore, it is difficult to draw conclusions about the impact of ICT on women.

2. Impact of Information and Communication Technology on Distance Learning

Several high technologies—one of which is information technology—are expected to dominate in the 21st century. Information communication technologies (ICTs) can be used in a range of applications in primary, secondary and tertiary education; in training on large or small scales; in traditional campus-based settings and study centres, in the home or the workplace. The wide variety of communication technologies are progressively converging and integrating to serve distance education needs. There is high demand all over the world by working adults for life-long education. The development of communication technologies will no doubt contribute immensely to the convergence of distance education and traditional face-to-face teaching, bringing a stimulus and the best features of each to the other. However, for developing countries, the cost of using ICTs and the dilemma of an existent poor infrastructure will be crucial factors in considering the use of “new” technologies for education in general.

2.1 Institutions Providing Open/Distance Learning Education in Sri Lanka

The two premier institutions that provide education through open/distance learning are:

- The Open University of Sri Lanka (OUSL)
- National Institute of Education (NIE)

Some elements of distance learning methods are also being introduced on a limited scale by a few conventional universities.

2.1.1 The Open University of Sri Lanka (OUSL)

The Open University of Sri Lanka was set up for the purpose of providing continuing education to adults, preferably those who have missed opportunities of higher education at conventional universities. The university's vision is to be the leader in distance education in South Asia within the first decade of the 21st century and to be a premier centre of learning, renowned for excellence.

OUSL was established in May 1980, constituted under the University Act of 1978 and the OUSL Ordinance Number 1 of 1990 as amended by Ordinance Number 12 of 1996. The nucleus of the Open University was the former External Sources Agency (ESA) of the University of Sri Lanka and the Sri Lanka Institute of Distance Education (SLIDE) of the Ministry of Education, which was established in 1976.

OUSL is one of 12 National Universities in the university system. The University Grants Commission (UGC) functions as the apex body in the university system, receiving funds from the government for the total expenditure, which amounts to only 0.4% in relation to the gross domestic product (GDP). The UGC apportions these funds among all the universities and institutions that come under it. The Open University receives about two-thirds of its budgetary requirements from the UGC. The remaining one-third is generated within OUSL.

The Open University comprises a central campus, located at Nawala Nugegoda, four regional centres and a network of 16 study centres located throughout the island. Facilities for students at the main campus and the Colombo Regional Centre include the main library, audiovisual resources, centres, laboratories and examination halls. The Department of Educational Technology provides state-of-the-art facilities for production of audio-video programmes required for academic programmes in its Media House, which was constructed in 1993 under a Japanese Grant Aid Project and at cost of 13.4 million yen. Other regional and study centres provide limited facilities for face-to-face teaching, laboratory sessions, distribution of course material, conducting examinations, registration and counselling. Facilities at these centres are being continually upgraded.

OUSL currently consists of three faculties: the Faculty of Engineering Technology, the Faculty of Humanities and Social Sciences and the Faculty of Natural Sciences. Each faculty offers education programmes leading to the award of certificates, diplomas, degrees and post-graduates degrees/diplomas. In addition to these regular academic programmes there are continuing academic programmes, beginners' courses, and awareness programmes. (Appendix I)

The system of education utilises a multimedia approach—a complete programme of study is primarily delivered through printed lesson material supported by discussion classes, audiovisual aids including audio and video cassettes, seminars, workshops, laboratory and field work. OUSL's current enrolment in various programmes of study is about 21,000. This number is more than half the total of the student population in Sri Lankan universities. Eighty-five percent of the students are employed and 42% of the students are female. The annual successful completion rate at the final levels was about 2,000 students in 1996, excluding associate students.

2.1.2 National Institute of Education (NIE)

The National Institute of Education (NIE) is funded mainly by the Government of Sri Lanka. Other funding agents include UNISEF, UNFPA, SIDA, ADB and the World Bank. NIE has Department of Education, the forerunner of which was the Distance Education Branch set up in 1981 within the Teacher Education and Curriculum Division of the Ministry of Education. With the establishment of the National Institute of Education, the Distance Education Department of the Curriculum Division was absorbed as one of its departments in 1986. This department is responsible for planning and implementing Professional Teachers Education.

Beginning in 1984, a number of distance teacher education courses were conducted at NIE (Amaragunasekara, 1995). These include:

1. Elementary Teacher Education Course for teachers of primary grades (years 1-6)
2. Mathematics Teacher Education Course for teachers of secondary grades (years 6-11)
3. Science Teacher Education Course for teachers of secondary grades (years 6-11)
4. General English Course for non-English teachers in science called English Language Improvement Programme for Non-English Teachers ELIPNET).
5. Teacher Education Area (TEA) based in 10 areas:
 - Sinhala Language Teacher Education Course
 - Tamil Languages Teacher Education Course
 - Religion Teacher Education Course.
 - History and Social Studies Teacher Education Course
 - Commerce Teacher Education Course
 - Home Economics Teacher Education Course
 - Agriculture Teacher Education Course
 - Aesthetics Teacher Education Course
 - English Language Teacher Education Course
 - Physical Education and Sports Teacher Education Course

The learning system at NIE Distance Education Department consists of print material, assignments, face-to-face discussions, study circles, practical sessions, five-day vacation sessions and school visits. These are carried out at regional centres, which number 250 throughout the island.

The Institution has provided 14,000 trained teachers. At present there are 49,329 student teachers following courses at NIE.

2.1.3 Conventional Universities

Some conventional universities that have strong computer centres use forms of computer-mediated communication for distance teaching. In some, bulletin boards are beginning to emerge as tools for teaching, and a few universities are experimenting with Web-based teaching. Lectures are posted on networks for conventional students to read at their leisure. As well, “tele-teaching” is being introduced at the University of Moratuwa.

2.2 National Priorities in ODL

In the 21st century, the quality of a country’s human resources will determine its ability to compete in the international market. To meet the challenges of the new millennium, it is imperative that the education system be developed to effectively respond to the growing needs of a market-driven economy. Some of the national priorities are set out below.

A major goal is universal literacy and universal primary education. Despite a high literacy rate (90% in 1997), about 12% of children 5 to 11 years old, who should have access to primary education, are not enrolled in schools (Jayaweera, 1998). In the case of females, it is 18%. Further, it is known that retention is low and that dropouts lower the internal efficiency of the education system. (The efficiency coefficient calculated by UNESCO, using the number of dropouts and number of repeaters, is 0.91 for Sri Lanka.)

There are many promising strategies available to resolve these issues, including formulating and implementing new, compulsory education laws for everyone ages 5 to 15 years and improving the quality of the teachers. Increasingly, distance education is being viewed as the most feasible strategy for training large numbers of teachers required to achieve the objectives of providing education for all. Teacher education through distance is especially attractive to South Asian countries, including Sri Lanka, which have understaffed schools in remote areas from which teachers cannot be released for the period of time necessary to receive institutional training.

It is also widely believed by employers, particularly those in the private sector, that the present education system is unable to produce required skills, resulting in a mismatch between educational attainment and labour market requirements. The recently introduced proposal for an education system suitable for the 21st century, as spelt out by the national policy for higher education, attempted to address these issues. The proposal recommended that distance education, with its potential for greater flexibility in combining subjects and courses, be used to advantage in matching education to employment. It also recommended that courses conducted by the Open University be strengthened to improve their effectiveness and that conventional universities be encouraged to combine distance teaching with conventional face-to-face teaching.

The Presidential Task Force on University Educational Reforms also identified OUSL’s role as serving young as well as mature students and meeting the need of a life-long learning process. It recommended that OUSL be upgraded and expanded, make increased financial provision as required and develop necessary human resources.

The recently concluded SAARC summit agreed on a set of concrete activities for the next 15 years, one of which was to provide universal primary education through ODL methods. Following are the relevant sections of the Colombo Declaration:

- 1) The Heads of State or Government were in agreement that illiteracy was a major impediment to economic development and social emancipation and that eradication of illiteracy in the region, including through co-operative endeavours within SAARC, must continue to be pursued resolutely.
- 2) The Heads of State or Government noted that the concepts of Open Learning and Distance Education could help substantially towards equal opportunities. The Heads of State or Government directed that SAARC should build on the substantial expertise already existing in the region in the field of Open Education by establishing a SAARC Forum of Vice- Chancellors of Open University.
- 3) The Heads of State or Government urged the Forum to spearhead the development of Distance Education outside the Open University system as well, drawing on advances in Information Technology to reach out to the remote and under-privileged sections.

2.3 Present Priorities in Distance Learning at OUSL

The following points outline the present priorities to develop and expand distance learning at OUSL:

- To develop new ways of working on course development, production and presentation that exploit the full potential of new information and communication technologies, both to enhance the quality of student learning at OUSL and to reduce cost without reducing quality. This will enable OUSL to successfully meet the requirements of students while satisfying the scrutiny of others.
- To further develop the MIS system to provide services for institutional management.
- To make a range of services via personal computer (PC) network of communications available to all students and staff.
- To develop research to fulfil the educational objectives of a distance teaching university at OUSL. Some of the issues being addressed are the role of gender in student enrolment and performance; effectiveness of courses in enhancing employability of graduates; impact on career advancement of course completion; evaluation of course materials and study programmes; relative effectiveness of different forms of student support arrangements; reasons for student dropout and high repeat rates; effective impact of distance education in the Sri Lankan context; and effectiveness of different learning styles.
- To train primary and secondary school teachers through teacher educational programmes at distance learning institutes in the use of gender-sensitive materials in the school and teacher education curriculum.
- To work in partnership with other distance learning institutes, Sri Lanka Rupavahini Corporation and Sri Lanka Broadcasting Corporation.

- To encourage motivation and acquisition of appropriate skills and proficiency in the application of information technology for effective open learning teaching by providing development opportunities and affording staff the conditions and opportunities to fulfil and develop their roles in the university.

2.4 Local Institutions Having Access to ICTs That Might Be Applicable to ODL

The information technology industry is of comparatively recent origin in Sri Lanka. Local institutions boasting ICTs that might be applicable to open and distance Learning are, therefore, few and recently established. They include:

- The Open University of Sri Lanka
- National Institute of Education
- Conventional universities
- Schools
- Government media sources
- National Science Foundation

2.4.1 The Open University of Sri Lanka

OUSL is the only national university using the distance education mode. The audio-visual study material forms an integral component of all programmes. The material is produced in the state-of-the-art Media House, which was donated by the Japanese Government and which is fully equipped with modern and advanced equipment. OUSL distributes audio cassettes to the students as part of study material. The students listen to them at home or at study centres, regional centres or the central campus. OUSL also uses as study supplements video material which can be viewed at home or at study centres of OUSL. Under the DFID project, which commenced in 1995, there is an increased emphasis on the effective mix of printed and audio-visual materials, resulting in more video programmes being produced for distance education in the Sri Lankan context.

Other highlights of the use of distance education at OUSL include the following:

- Sri Lanka Broadcasting Corporation has provided free broadcasting time for some non-formal educational programmes produced by OUSL. Until recently, OUSL had a half-hour telecasting time every fortnight on bought time.
- Equipment for two-way audio conferencing donated by The Commonwealth of Learning is to be used for academic programmes. The facility is available for use in Colombo, Matara and Kandy Regional Centres. This could bring together learners from different locations to participate in learning activities. It can be used to exchange and discuss experiences and to organise debates, seminars, training, etc.
- A management information system, which is being developed under DFID Project, is the first of its kind in the Sri Lankan university system. When complete, it will have all aspects of distance education programmes and will allow a student at a remote site with the right password to access any data pertaining to him or her.

- Both the Internet and e-mail are being used considerably by staff and to a limited extent by students. E-mail has tremendous potential for open and distance education as it makes possible one-to-one communication that can contribute greatly to student support. The Internet and World Wide Web make possible a range of two-way interactive educational activities.
- A campus-wide network is currently being installed. When the network and a management information system are complete, OUSL will be able to use ITCs much more for distance teaching, and it will then explore the possibilities of Web-based teaching. Two science courses have been written for Web pages and are now available on CDs. Once the campus-wide network is in place in 1999, these courses will be able to be accessed by students anywhere in the country.

2.4.2 National Institute of Education (NIE)

As part of lesson materials for students, NIE produces video material, which is narrow cast as study supplements. It also produces formal and non-formal educational programmes that are telecast and broadcast free by government corporations.

2.4.3 Conventional Universities

- Lankan Educational And Research Network (LEARN) offers some services to all universities. It provides dial-up Internet access to about 15 academic institutions, including all universities, and it introduced first e-mail and later Internet in all the universities. A large number of staff members are able to access the Internet. In those few universities with computer science and engineering courses, many students also have access to e-mail and Internet. One university has initiated the use of electronic bulletin boards. Students ask questions of teachers through e-mail and the responses are placed on the bulletin board where all students will have the benefit of the replies at a time convenient to them. Although no proper survey has been conducted on gender implications, it could be said that only about 10% to 15% of females enjoy these facilities.
- Web sites are also gaining popularity. The University of Moratuwa has begun in a small way by using Web pages to provide lecture notes, syllabi and other information for the departments of Computer Science and Engineering. Students can access and download the information at their convenience. A plan is also underway to introduce interactive learning (Dis V. Gihan).
- Telecasting is being planned and is scheduled to take off by 2001. At first, it will be limited to staff drawn from all other universities in Sri Lanka, and later it will be extended to experts in universities abroad.

2.4.4 Schools

- When the government took up English language teaching as a major event in formal education in 1982, many schools were supplied with TVs and video decks. Sri Lanka Rupavahini Corporation provided a morning telecast of one and a half hours designed for student viewing within school hours. In 1991, Sri Lanka Rupavahini Corporation and Sri

Lanka Broadcasting Corporation jointly conducted another pilot study for introducing TV and radio to the classroom. Special educational programmes were transmitted after school hours.

- International schools and some national schools in Colombo are equipped with computer centres for training in computing for their own students.
- A programme to provide 300 national schools, one in each division, with a centre of modern educational technology, including a computer centre, has recently been implemented by the Department of Education. It is envisaged that students will gather at the centre and gain hands-on experience in computers, Internet facilities and e-mail.
- The National Institute of Education (NIE) is setting up 300 computer resource centres that will cater to students who are awaiting the results of GCE examinations. These centres will certainly boost opportunities for computer education in the country, especially at a time when the demand for computer literacy, not only from the urban elite but also from the rural poor, is very high.

2.4.5 Government media sources for education (Weersinghe, 1995)

- Sri Lanka Broadcasting Corporation produces an educational service that transmits both formal and non-formal educational programmes for listening after school hours.
- Sri Lanka Rupavahini Corporation transmits educational TV programmes for formal and non-formal education. Curriculum-oriented programmes for GCE Ordinary and Advanced Level are also telecast and can be viewed after school hours. Teaching the English language through TV is a major event in non-formal education. Many schools are supplied with TVs and video decks.
- Government ministries are involved in the production of community education programmes, usually produced at commercial video production houses and then telecast over bought air time by individual sponsors. Programmes include those on health, education, agricultural extension and environmental issues and science and technology development.

2.4.6 National Science Foundation (NSF) (Talagalla, Deepani)

NSF established the Sri Lanka Science and Technology Information Centre (SLSTIC) in 1979 to facilitate students and research scientists in their work. Its information network is also the national focal point on science and technology.

The information network has 120 science and technology libraries as members. A mechanism has been developed to store, access, retrieve and utilise information. Access to information resources such as CD-ROMs, Internet and local research databases is provided to all members at a reasonable cost. Information on databases covers books, reprints, pamphlets, reports, articles of current local periodicals and newspapers and ongoing science and technology in Sri Lanka. These are accessed by ODL students for their course work.

2.4.7 Facilities available for education at other organisations (Hoole R. & Talagalla, D.)

- A number of private “cyber cafes” have opened in large cities where students can access Internet. These cafes have proven very popular.
- The Computer information Technology Council of Sri Lanka (CINTEC) hosts Web pages for all government organisations. These can be accessed by the staff, some of whom are distance learners.
- LANKA INTERNET provides e-mail, Internet connections and Web-based services for schools and individual users.

2.5 Women Distance Learners and ICTs

The two institutions that offer education through distance and open learning methods are the Open University of Sri Lanka (OUSL) and National Institute of Education (NIS). The learner population can be broadly categorised into the following groups:

- Those who complete senior secondary school education and are eligible for entry to conventional universities in Sri Lanka but who are not admitted due to the highly competitive nature of admission. They then seek admission in OUSL for tertiary education.
- Those who are employed immediately after schooling for various reasons—including economic—who too may seek tertiary education at OUSL.
- Those who are employed and seek certificate or diploma courses at OUSL for upward career mobility.
- Primary and secondary school teachers seeking training in teacher education at OUSL and NIE

In general, the entry point for tertiary education is completion of GCE A\L or foundation courses of the OUSL. Up until secondary school education there has been no apparent gender disparity in educational participation and educational attainment (Goonawardena, 1998). This has been attributed to the non-discriminatory progressive policies of the government and Sri Lankan society’s view of sons and daughters being equal in every sense. Women’s participation in tertiary education, including OUSL, is relatively high.

In addition, more than 60% of students following external degree programmes are women (Table 3). These statistics reveal that there is no gender disparity in women’s enrolment in schools and tertiary educational institutions. There is no apparent difference in trends between conventional universities and ODL institutions.

Table 3
Female Enrolment in External Degree Programmes: Universities of Sri Lanka 1992/93 to 1994/95

	1992/93	1993/94	1994/95
% F	64.7	69.0	63.2
Total No.	14770	15566	21073

Source: University Grants Commission

However, an analysis of enrolment in different disciplines indicates that there is under-representation of women in engineering and other technology-related fields (Tables 4 and 5). Table 5, which gives most of the programmes conducted at OUSL, shows that all technology and business-related fields have a low percentage of women enrolled. The pattern of women completing the programme follows the same pattern (Tables 6 and 7).

Use of technologies in open and distance learning has been accessed only in teacher education programmes to support course material. Surveys reveal that utilisation of technology provided has been poor (Table 8), despite the fact that the learner population comprises mature student teachers.

It was also found that many students who did not utilise the facilities did not have access to equipment required (Table 9) in their homes or schools (Goonawardena, 1998).

One possible reason suggested for the reluctance to use available technology is gender-based socialisation, which has an impact on children's subsequent choices of educational stream and occupation. The influence of gender-based socialisation is reflected in enrolment in selected programmes offered by OUSL, given in Table 5. Research in some industrialised countries shows that in fourth and fifth grades, girls and boys have the same career aspirations. In the case of many girls, self-esteem plummets in sixth grade and they lose interest in math and science. The research also reveals that girls seem to have less confident attitudes towards technology. Although they enrol in data-entry and work processing courses, they do not want to take up computer design and programming as boys do. This could in part be attributed to gender bias in educational software and to gender stereotyping in computer games.

Table 4
Female Participation in Higher Education by Discipline

Universities	1992/93		1993/94		1994/ 95	
	% F	Total	% F	Total	% F	Total
Arts	58.3	5558	59.1	5852	56.6	6104
Commerce/Management Studies	44.6	2430	44/0	2556	43/1	2603
Law	58.3	497	57.6	487	59.2	490
Science	40.6	5525	38.5	2026	38.0	1996
Medicine	43.1	1799	43.3	1866	42.2	1948
Dental Science	52.3	217	47.6	202	51.2	189
Veterinary Medicine	48.7	132	49.7	148	17.9	166
Agriculture	43.2	571	42.4	579	43.0	651
Engineering	13.4	406	11.7	316	11.7	320
Architecture & Quality Surveying	37.1	83	30.2	100	33.2	114
Total	45.3	13946	45.2	14132	44.5	14581

Higher Education Institutes

Fine Arts	83.5	1313	85.3	1458	83.6	1420
Indigenous Medicine	69.0	384	63.2	609	68.3	748
Labour Education	29.2	428	27.2	485	26.2	481

OUSL

Social Science					18.8	63
English					56.0	50
Management	2.8	3239	25.0	2803	24.4	2344
Technology	14.7	876	16.0	1284	15.5	1145
Education	16.7	06	63.6	11	54.5	22
Law	26.3	1617	26.6	1781	58.0	2857
Nursing	93.3	75	93.2	74	87.2	133
Science	63.8	961	56.9	2299	58.8	2261

AUCs

Management	54.3	843	51.7	543	48.0	306
English	67.7	718	61.4	246	73.8	65
Physical Science	22.6	53	43.5	23	45.7	15
Food Science	42.2	45				
Home Science	94.9	196				
Bio-Science	61.3	80				
Tourism	57.1	133	55.8	120		

Source: University Grants Commission.

Table 5
Student Enrolment According To Sex

Programme of Study	1998		1997		1996	
	% F	Total	% F	Total	% F	Total
Foundation in Social Studies	36	693	35	736	34	732
Preschool Education	100	563	99	382	99	351
Advanced Preschool Education	100	174				
Basic English	51	2222	47	1992	47	996
Certificate in English	61	976	58	638	59	591
Diploma in English	63	63	19	47	60	48
Certificate in Entrepreneurship & Small Business Management	27	556	21	515	23	715
Certificate in Journalism	20	5	24	33	24	33
Certificate in Tourism	13	22	9	21	19	33
Diploma in Management	25	1821	26	2184	26	2136
LLB	28	1566	27	1388	27	1365
B.A. in Social Science	34	151	35	62	34	65
B.Ed.	68	41	69	32	55	22
PGD Education	54	2157	65	2101	63	2538
PGD Management	36	52	37	43	28	74
M.Ed.	63	79	64	76	53	53
Elementary Certificate in Textile	45	29	61	36	54	51
Certificate in Textile Technology	27	70	27	51	29	51
Diploma in Technology	11	2039	12	2108	12	2207
B Technology	17	402	17	368	19	317
PGD in Technology	14	71	9	55	8	73
Master of Technology	4	23		19	10	10
Standalone course in Engineering	36	106	37	98	29	104
Certif. course in Wild Life Conservation	18	74	20	92	19	91
B.Sc.	61	2767	60	2779	60	2757
B. Nursing	86	155	87	133	87	133
Standalone course in Science	41	406	39	356	39	351
Total	44	17274	41	16345	41	16948

Source: Source: Open University of Sri Lanka, database.

Table 6
Output of Graduates According to Discipline and Sex 1993/94-1994/95

Discipline	1992/93		1993/94		1994/95	
	% F	Total	% F	Total	% F	Total
Universities						
Arts	53.7	1868	55.1	2219	54.3	2033
Commerce	51.9	626	47.0	610	45.2	462
Management Studies	41.0	553	39.6	457	45.3	521
Law	55.4	112	59.0	183	63.6	140
Science	41.3	903	39.3	1187	46.2	109
Medicine	42.5	447	42.1	398	40.5	442
Dental Science	47.8	69	46.3	41	69.7	66
Veterinary Medicine	27.6	29	45.2	31	45.9	37
Agriculture	45.5	220	43.2	190	46.0	226
Engineering	13.6	382	13.7	652	14.6	458
Architecture	60	40	36.2	47	39.1	23
Quality Surveying	33.4	46	17.4	21	15.2	33

Other HIEs

Fine Arts	78.5	158	77.8	325	78.3	23
Indigenous Medicine	84.3	33	87.4	27	53.8	78
Labour Education	34.7	75	21.8	78	27.4	95

OUSL

Management	30.9	136	34.3	233	NA	236
Law	NA	29	NA	NA	25.5	10
Science (including Nursing)	54.9	51	75.6	86	73.8	103
Technology (degree only)	20	10	11.1	18	23.1	13

Technical Colleges

Accountancy	61.8	3577	39.5	2887	49.4	3442
Commerce	55.4	258	43.3	460	46.4	366
Civil Engineering	71.4	35	56.4	39	43.6	39
Electrical Engineering	25.0	40	05.4	37	37.7	37
Mechanical Engineering	6.9	29	53.8		7.7	26

Source: University Grants Commission and Ternary and Vocational Education Commission

Table 7
Graduated Students of OUSL by Sex

Prog of Study	90		91		92		93		94		95		96		97		98	
	% F	T	% F	T	% F	T	% F	T	% F	T	% F	T	% F	T	% F	T	% F	T
Elementary Certificate									86	23	71	14			92	14		
Certificate in Textile							14	27			10	20			50	08		
Wildlife Conservation							14	27			10	20	35	17	18	22	30	23
Basic English															65	379		
Professional English											57	238	61	451	69	72		
Tourism Operation											38	13	16	30	13	15		
Certificate Course in Journalism							20	67	24	125	27	76	33	73	23	17	0	02
Preschool Ed			100	179	100	252	100	410	100	386	100	234						
Entrepreneurship & Small Business Management											30	134	28	215	32	191	23	213
Diploma in Tech					27	22	28	81	23	55	16	18	19	52				
Diploma in Management					21	42	29	136	29	233	26	175	25	116	31	125		
Diploma in English															75	04	57	07
Bach. Deg. InTech					40	05	11	17	15	19	0	13	12	08				
Bach. Deg. in Science	72	65	58	50	59	70	61	55	76	86	71	114	76	86	73	149		
Bach. Deg. in Nursing															85	21		
Bach. Deg. in Ed											67	03	66	06	62	16		
Bach. Of Law Deg. Prog.	14	39	37	16	27	74	45	22	31	63	18	33	25	110	30	161		
PG Dip in Constr. Mgt					10	10		02		01		04						
PG Dip in Ed					66	915	65	642	62	861	68	83						
PG Dip in Ind Eng										04								
PG Dip in Mgt									14	07	40	10	25	08	66	08		
Master of Tech											25	04	03					
Master in Ed.														25	04	100	07	

Source: Open University of Sri Lanka, database.

Table 8
Utilisation of Student Support Services1 (%)

Facility	Used	Not Used	No Response
Audio Cassettes	19.0	71.4	9.6
Video Cassettes	49.5	40.0	10.5
Computer	04.8	85.7	9.5

Source: Goonawardene, C. (1998).

Table 9
Availability of Facilities to Use Different Media (%)

Medium	Often	Sometime	Rarely	Never	No Response
Radio	9.4	21.0	14.3	50.5	4.8
Audio Cassettes	1.9	3.8	9.5	78.6	6.2
Video	0.0	1.0	27.8	68.6	7.6
Telephone	1.9	7.7	15.2	69.8	5.4
	61.0	13.3	8.6	13.3	3.8
Computer	0.0	0.9	0.9	92.8	5.4

Source: Goonawardene, C. (1998).

Some of the significant features that emerge through these analyses are the following:

- Trends in terms of women's participation in education in general and in choice of discipline are similar in distance teaching institutions and conventional institutions.
- There are gender disparities in educational opportunities or educational attainments at primary, secondary or tertiary levels.
- The percentage of women enlisting in teacher educational institutions, arts, law and biological science streams is relatively high.
- The percentage of women taking up physical sciences, engineering and other technology-related fields, including computer science and information technology is very low, although no barriers are imposed. This may be because the education system has reinforced gender inequality and gender role stereotypes through gender-based diversification of technology-related courses in schools and vocational training institutes. Therefore, subject options should be reviewed at school-level. Girls should be given more experience in technology, using technical equipment and computers. Guidance programmes and career counselling should be made available to girls at the school-leaving stage, and women entering higher educational institutes must be motivated to enrol in courses geared to technology-related subjects.

3. Widening Women's Access in ICTs for Education Purposes

Very little research on gender issues, ICTs and ODL has been done in Sri Lanka. As stated earlier, there is no gender disparity in Sri Lanka in primary, secondary and tertiary education, and that is the case in both conventional learning institutions and distance learning institutions. But the use of ICT for education and training in Sri Lanka is below expectations due to resource limitations (Section 2.1). There is an inadequate level of investment at the university level to

provide the needed equipment and infrastructure. It is in this context that women's access to ICTs must be considered. It can generally be said that ICTs are male dominated and women are not the first to gain access and use ICTs because of cultural and socio-economic factors.

OUSL has conducted a few surveys on the teachers' education programmes with respect to distance education issues in general. These have highlighted some problems faced by women students (Goonawardene, 1995). The relevant programmes are Certificate in Preschool Education, Bachelor's Degree in Education (Natural Sciences) and Post-Graduate Diploma in Education. The surveys concentrated—among other issues—on the use of technology, quality in teaching methodology and students' perceptions on delivery modes. Interesting features of the programmes surveyed were that:

- Female participation in these programmes was very much higher than male (Table 5)
- Student teachers following these programmes were scattered all over the island—from the capital, Colombo, to far-off, sparsely populated areas of difficult terrain in the most remote parts of the country.

The surveys also revealed that most student teachers did not have telephones, electronic or electrical facilities (Table 9) in their homes or in schools. Even when these were provided at regional study centres, utilisation of available technology was poor (Table 8) for reasons such as non-availability of transport facilities, the nature of terrain, which made even walking difficult, cultural inhibitions and household chores not permitting long hours away from home (Goonawardene, 1995 & Wijeratne, 1995). Inherent mindset and gender-based socialisation could also have been contributing factors.

The surveys highlighted the fact that in the distant areas from where student teachers come, they were greatly affected by postal delays and the unavailability of telephone, radio and TV facilities. Data gathered from the surveys raised the questions: Is the programme design and methodology of teaching effective for an average distance learner? Should flexibility in design be advocated to suit the needs of this category of students (Goonawardene, 1995 & Wijeratne, 1995). These issues may have to be taken seriously at least until new ICTs become available in all student centres and telecommunications infrastructure is available in every part of the country. It is encouraging to note that the National Policy on Telecommunications targets provision of telephones, telegraph and fax access to all villages by 2000 (Wijeratne, 1995).

Information technology will dominate the 21st century and will be the answer for most effective ODL. Therefore, whatever reasons can be ascribed to the present situation of non-use of ICTs by students of ODL institutions, it is clear that new technologies should be introduced in educational institutions. All students, regardless of their gender, should be geared to acquire and to use technical skills. This thinking should be fostered at school and continue through tertiary institutions.

Computer education should be introduced in all schools. Steps taken by the Ministry of Education to provide 300 schools, one in each division, with a centre of Modern Education Technology including a Computer Resource Centre, is a welcome move. Community access points and telecentres should be set up all over the island to be the focal points for disadvantaged communities to gather and gain confidence in using these technologies. To ensure that these community centres will benefit women, women support staff and trainees should be made available to help women use the technologies. The use of the Mobile Computer Laboratory of CINTECH, visiting remote locations and live radio programmes on the subject of the Internet will provide computer awareness to all sections of the community and contribute to increased

women's participation in the acquiring and using new technologies (National Policy on Telecommunications, 1996).

4. Training and Capacity-Building

For many women, access to computer networks is still difficult or impossible, mainly because of gender role stereotyping in their homes and schools, as discussed in earlier sections.

Awareness of the potential benefits of ICTs and the development of skills in the use of ICT should commence at school level. A master plan to introduce computer studies in all schools has been recommended by CINTEC. The diploma programme to train teachers in computing, provided by the Institute of Computer Technology of the University of Colombo, will help to increase the number of computer teachers at primary and secondary schools.

Guidance programmes and counselling should be made available to girls at the school-leaving stage to make them aware of both their own potential and the range of opportunities available to them in technology-related areas.

Without a change in attitudes and behaviour, the root cause of gender-related inequalities in the use of ICT cannot be removed. A strong campaign by women and the media should be established. Other plans should include "girl-friendly" computer labs. (When interacting with technology, girls tend to work better in pairs or small groups.) Special workshops could be planned in which girls and women can openly talk about their feelings.

For women who are already employed, a number of computer programmes and courses are available at OUSL. These are:

- Computer awareness programme
- Computer literacy courses as Continuing Education Programme
- B.Sc. with computer science as a subject
- B.Eng. Tech. with computer engineering as a discipline

All these courses have been designed for working students and use gender-sensitive language and open/distance learning methodology.

LEARN is also conducting training programmes to improve the level of ICT expertise. A number of private establishments also have evening and weekend classes for the working population.

5. Is Public Policy Working for Women?

National telecom policies have been formulated by the Ministry of Posts and Telecommunication to achieve the following targets (National Policy on Telecommunications, 1996):

- Telephones to be made available on demand by 2000. All wait lists to be cleared by this time. Those who are situated far from cable networks will be serviced by wireless means.
- Telephones, telegraph and facsimile access to be provided to all villages by 2000.
- Performance of telephone service to be increased progressively.

The present telecommunication policy does not address distance education or gender issues.

6. Conclusions

Although women have had access to education and career opportunities for 20 years, the cultural attitude that steers women's choices have not helped. To many women, high-tech work remains unappealing, unfeminine and unexplored. Whatever the reasons—media images, a dearth of role models, how courses are taught, teacher bias, or unappealing games and content—we need to find a way to break through the barriers that most women face when they enter the technology world. In this day and age we cannot continue to accept the stereotypes about girls and technology. The ultimate goal will be to ensure self-confidence.

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OUSL ACADEMIC PROGRAMMES IN BRIEF

The academic programs of the three faculties are tabulated, except research degrees, M.Phil., and Ph.D.

Faculty of Engineering

No.	Programme	Minimum Duration	Requested Qualification in Brief*
1.	Master of Technology in the following Engineering disciplines: Construction Management, and Industrial Engineering	One year	No 2
2.	Postgraduate Diploma in the following Engineering disciplines: Agricultural Engineering, Construction Management, and Industrial Engineering	One year	Degree in Engineering or Agriculture depending on the discipline sought.
3.	Bachelor of Technology in the following Engineering disciplines: Agricultural, Civil, Computer, Electrical, Electronic, and Mechanical	Three years	No. 4 or part of a degree in Engineering
4.	Diploma in Technology in the following Engineering disciplines: Agricultural, Automobile, Civil, Communication, Computer, Electronic, Electrical, Manufacturing and Textile	Two years	No 5. of which exemptions are given for relevant courses
5.	Foundation Programme in Engineering Technology	One Year	None
6.	Certificate in Textile Technology in the following areas: Yarn, Manufacture, Weaving, Textile Chemical Processing and Apparel Technology	18 Months	None
7.	Elementary Certificate in Woven Design and Coloration and Apparel Production	One Year	None
8.	Awareness Programme in Computer	6 Months	None
9.	Stand-alone courses in Technology and Computer Literacy vary		None

*** Other equivalent qualifications are available on request**

Faculty of Humanities and Social Sciences

No.	Programme	Minimum Duration	Requested Qualification in Brief*
1.	Master of Education	8 months or high performance in No 2.	Degree in Education second class
2.	Post Graduate Diploma in Education	Two Years	Degree
3.	Post Graduate Diploma in Management Sectors	One Year	Nominees of Public & University
4.	Bachelor of Law	Four Years	A/L four passes or No. 9
5.	Bachelor of Arts in Legal Policy	Three Years	A/L four passes or No. 9
6.	Bachelor of Arts in Social Science	Three Years	A/L three passes or No. 9
7.	Diploma in Management	Two Years	A/L three passes No. 13 or 9
8.	Diploma in English	Two Years	A/L English or NO. 12
9.	Foundation Programme in Social Sciences	Two Years	None
10.	Advanced Certificate in Pre School Education	One Year	No 11
11.	Certificate in Pre-School Education	One Year	O/L six subjects including Mathematics and Mother Language
12.	Certificate in Professional English	One or Two Years	None
13.	Certificate in Entrepreneurship and Small Business Management	One Year	None
14.	Certificate in Journalism	One Year	O/L six passes with Credit in English
15.	Certificate in Tourism Operation	One Year	None
16.	Beginners Course in Sinhala	Six Months	None
17.	Beginners Course in Tamil	Six Months	None
18.	Beginners Course in Korean	Six Months	None
19.	Stand-alone courses in Humanities and Social Sciences vary	None	

***Other equivalent qualifications are available on request**

Annexure Continued

Faculty of Natural Sciences

No.	Programme	Minimum Duration	Requested Qualification in Brief*
1.	Bachelor of Science	Three Years	A/L three passes or No 4
2.	Bachelor of Science in Nursing (offered for registered nurses of the Ceylon Medical Council)	Two Years (Ministry of Health and two year experience after qualifying)	General Nursing Certificate A/L 3 passes or No 4.
3.	Bachelor of Education in Natural Sciences (offered jointly with the faculty of Humanities and Social Sciences).	Four Years	A/L three passes, exemptions granted to BSc. Graduate
4.	Foundation Programme in Natural Sciences	Two Years	None
5.	Certificate in Wildlife Conservation and Management	One Year	None
6.	Stand-alone courses in Science vary	None	

** Other equivalent qualifications are available on request*

Source: Open University of Sri Lanka A Profile 1998