CHAPTER-4
Globalization and its influence on Women Education

"As long as women do not have the same rights in law as men, as long as the birth of a girl does not receive the same welcome as that of boy, So long we should know that India is suffering from partial paralysis. Suppression of women is inconsistent with principles of ahimsa (non-violence)"

Mahatma Gandhi

Globalization has made a tremendous impact on the lives and activities of women throughout the world over. Today in India, globalization has had positive and negative effects on women. Our Constitution grants women legal rights but they get little respect and standing in this country. Women have equal rights with men. But the male dominant society does not accept this and because of these Indian women especially the disadvantaged women suffer immensely. Women are discriminated everywhere in the family, community and in the society in terms of lower wages for equal job, less privilege in education & employment. In the developing country context, globalization has intensified gender inequality in some countries where it has led to an unprecedented employment opportunity for women.

Since a very long time, it is generally believed all over the world that, the place of a woman is at home. However, this institutional belief has been radically transformed, particularly since the beginning of the twentieth century, due to political, economic and social changes in the attitudes and outlook of the people towards women and their role in the society consequently, women are no longer exclusively confined to their homes alone. "The whirl of economic forces has lifted women from their old orbit. They have been slowly drawn into the economic arena in large numbers compared to earlier times"510. While economic necessity has drawn women into labour force participation in sizeable degree, the concept of emancipation of women has over a period of time undergone a significant and meaningful shift towards the recent concept of empowerment of women. In this context, an attempt has been made in the present chapter to examine the impact of the all-encompassing phenomenon of globalization on the education of women, with particular reference to the Indian situation.

4.1 Globalization Trends

In the post-independence era, the decade of 1990’s marks a different development policy regime compared to the early planning era beginning in 1951. During the 1990’s the Indian economy experienced a series of widespread economic reforms touching all major sectors of the economy like agriculture, industry, fiscal and financial institutions, foreign investment and technology, most important above all being the foreign trade sector and the public sector. The establishment of W.T.O. in 1995 further integrated the Indian economy into the global economic system, thus paving the way for globalization of the Indian economy. “Every section of the Indian economy is now linked with the world outside, either through its direct involvement in international trade or through its indirect linkages with the export or import transactions of other sectors of the economy. The new policy regime is as much important, and relevant, to farmers, industrialists, traders and sundry service providers as to scientists, writers and singers.” 511 In this era of globalization issues relating to the various marginalized sections of the society particularly women in the third World countries, demand added attention.

4.2 Impact of the Policy of Globalization

The policy of globalization must be judged from the stand point of improving the quality of life of the people. It must be noted that globalization has a varied impact on the different segments of the society and on the different sectors of the economy. Ensuring good quality of life depends on factors like food security, shelter and drinking water, access to health care and sanitation and the right to education and employment. It also depends on psychological factors like: self-reliance, self-respect, dignity and confidence. Novel Laureate Amartya Sen explained a person’s well-being in terms of the concept of ‘capability’, which represents “the alternative combination of things a person is able to do or be the various ‘functioning’s’ he or she can achieve”. The capability approach to the quality of life, thus, stresses on the person’s ability to achieve various functioning and the selection of the best choice among the different alternatives in leading life.

Globalization has multifarious characteristics. It influences not only the economy of a country; it also affects the culture of the country. There are people who

strongly support globalization, as well as those who strongly oppose globalization. Those who support globalizations maintain that globalization accelerates economic development reduce poverty and increases general well-being. Those who oppose globalization condemn it on the ground that it is a sure recipe for economic subjugation and a path leading to further exploitation of the poor and the defenseless.\textsuperscript{512} Either way, it is evident that globalization which represents the trend towards integration of world economies, has an impact on the economies of the poor countries in particular on the poorer and vulnerable sections of the society like women.

The mainspring of globalization, no doubt, is the development in information technology. Under the all pervasive influence of information technology, the aspirations of people in general and the aspirations of women in particular have undergone drastic changes. Even in the remote rural areas, there is a strong desire for a higher standard of living and better quality of life.\textsuperscript{513}

Liberalization and privatization are an integral part of the policy of globalization. Liberalization has created greater opportunities for education for professional men as well as women.\textsuperscript{514}

Women with the required skills, with access to resources and markets and with better links in the fast changing economic arena, have benefited from the opportunities for employment in diversified and emerging sectors like computers, information technology, fashion designing, engineering, electronics and communication and marketing. But a large majority of women in India are illiterate, poor, uneducated with meager skills and knowledge. They mostly live in the rural areas and work in the unorganized informal sectors of the economy, like petty trading, household work, food gathering and processing. The impact of globalization on the employment and income of the majority of women will be of greater interest for policy makers.

Liberalization has increased employment opportunities for women in some sectors like the craft sector. There is an increase in the female work force the

\textsuperscript{513} Rao, Dr. M.Koteswara. Globalisation and Empowerment of Women, Empowerment of Women In India, Discovery Publishing House, New Delhi, 2005, at 167-174.
participation particularly in rural home based craft sector. There are large numbers of women artisans in embroidery and lace making, choir work, earthenware and printed textiles, cane and bamboo works, weaving, leatherwear and reed mat making. Employment opportunities for women are also increasing in the services sector like domestic work, care of children, old age homes, cleaning and cooking services. But in most of these cases, working conditions of the women workers are poor; the pay is less than that of men, with no child care, or maternity benefits of sickness or unemployment benefits or other social security benefits.

Liberalization has caused loss of employment in some sectors. For example in Bihar, women working as silk spinners and twisters lost their employment due to the import of ‘China-Korea’ silk yarn, which is preferred by weavers and consumers for its shine- and relative cheapness. In Gujarat, women gum collectors lost employment due to the import of cheaper gum from Sudan.

Women are also affected by mechanization. This has happened in the agricultural sector, in the textile and garment industry, in the hosiery industry. So is the case with construction industry, the food-processing industry and the screen printing industry. Integration of information and communication technologies is a new challenge before the educational administrators.

4.3 Information as a Transformative Tool

Acquiring knowledge is the first step towards change, whether this change is technological, social, economic, cultural, legal, or political. Information is the catalyst, fuel, and product of this process of transformation. Inevitably, information systems both formal and informal play a central role in our lives. The flow of information and the associated information and communication technologies (ICTs) constitute a fundamental component of science and technology (S&T). Advances in ICTs are having an increasingly profound effect on the landscape of human activity.

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516 Singh, Raja Roy, UNESCO publication “Education in Asia and the Pacific”. Law Quest, Department of Law, University of Mumbai, Mumbai-400032, January- March 2009 at 60.
There is every reason to expect this current trend to continue, but not everyone has shared equally in the benefits. Despite the potential ability of information to modify attitudes and behaviour and empower disadvantaged groups and despite the massive investments in information and communication technologies in the North, there are still two major gaps. First, most of the positive outcomes of the "information revolution" have bypassed women; the information society has remained largely silent on gender issues. Second, little readily available research has specifically addressed the circumstances of women and information in developing countries. Women, by virtue of gender discrimination, in terms of equal access to power structure can play a crucial role in the society. Men and Women need to share power on equal terms.\(^{518}\)

In considering the link between gender and S&T in developing countries, it is important to remember that "technology" includes not only physical innovations but also social and cultural artifacts that result from historic experiences. In addition, the significant role already played by women in many areas of scientific activity for example, agriculture and health has been underestimated.

In the following sections, we can see several research issues of practical and strategic concern to women as providers and users of information. As providers, their contribution ranges from sharing traditional practices within the community through to formal membership in the information and communication professions. As users, regardless of their location, they have needs that could be met through access to information, the most abundant reusable resource in the world. However, these two roles are not being played to their fullest potential.

Is due recognition given to the value of indigenous knowledge? Do women enjoy equal professional opportunities in the information sector? Do women have ready access to the information they need? Are they being well-served by the mass media? Are they ready to take full advantage of the new technologies? Evidence suggests that the answer to all these questions is "no." The assumptions governing information interactions are increasingly suspect. A new orientation is required so that

\(^{518}\) Patnaik, Dr. (Smt.) Harapriya, *Women Inequality in Education*, P.K. Swain, & Dr. S.N. Tripathy (Edited), Unequal treatment to women and Gender Bias, Sonali Publication, New Delhi, 2006, at 202.
women around the world can become full and equal members of the information society.

Inevitably, when attempting to define the scope of such a cross-cutting field as information and communication, some aspects will overlap other disciplines. This is particularly the case in matters of employment, education, and training. Consequently, we emphasize the issues of access, use, and control of information and of ICTs. Even with this qualification, the scope of coverage is potentially immense, encompassing development communication, alternative media, broadcasting, village information centres, libraries, computer-based networking, the Internet, as well as their combinations and interactions. Policies and action in the information and communication domain must address a basic set of interrelated topics: user needs, content, format, access, system control, utilization, and impact. Each must be explored in a participatory way involving the various stakeholders in the information system. Without understanding the success and the results that Information Technology Revolution has brought to India it cannot be doubted that it is non-comparable and that it cannot be compared with the success and the positive impact that the Green Revolution brought in the life of every section of society; be it rural or urban; be it rich or poor; be it literate or illiterate. What information is needed? Does everyone have access to it? Are gender differences accommodated?

(A) Enabling technologies

Are electronic networks, microcomputers, multimedia systems, and television available? Are they adaptable and easy to use? What is their effect? Are employment, education and training, technology policy making processes, and so forth open to women?

(B) Needs and Requirements of Information

To determine what constitutes information, or more precisely valid information, one must closely examine “the rules of right” as defined by the power relations within a society. What is considered valid information in a particular society is often “produced and transmitted under the control, dominant if not exclusive, of a few great political and economic apparatuses”.

519 Sharma, Prof. Mool Chand, India at Cross Roads, Role of Universities and Youth, Nyaya Deep, Volume IX Issue, Jan, 2008, at 95.
The content and format of information made available to women is usually determined without their advice or consent. In low-income countries, for example, women are caught in a web of political and economic dependency on the men in their lives: their father when they are children, their husbands when they are married, and their brothers if they are widowed. Relative to men, they have little power at the local, national, and international levels of society, and let others decide what is important for them to know, particularly when it comes to S&T. In developing and industrial countries alike, the male voice has assumed dominance for some time and women do not usually have choices about what information they need. Is the information that women are receiving appropriate? Often, it is irrelevant to their needs and aspirations. Globalization has created a tremendous impact on the lives of women in development nations.520

Women and men have different information requirements based on their life experiences. These differences are often reflected in language. Men and women may speak in different languages that they assume, are the same, using similar words, to encode disparate experiences of self and social relationships. Because these languages share an overlapping moral vocabulary, they contain a propensity for systematic, mistranslation, creating misunderstandings which impede communication and limit the potential cooperation and care in relationships. Women’s information needs can only be understood and adequately met if women are actively involved in the identification and definition of those needs and in the selection of mechanisms that are best suited to deliver such information. Only when women receive information relevant to their needs are they equipped to carry out activities that will benefit them, their families, and their communities. Women must acquire a voice, and they also must be heard. As a necessary fall out of trend of globalization and liberal economic policies India too has moved from its “Socialistic Pattern” stance to the “free market economy” with a distant shift in the role of State in the emerging economic order.521

520 Bhuimali, Anil and S. Anil Kumar, Introduction overview, Women in the face of Globalization, Serials Publication, New Delhi, 2007 at XIX.
Access to information is empowering. It allows people to monitor policy, lobby, learn, collaborate, campaign, and react to draft legislation. It is also one of the most powerful mechanisms through which social and economic progress can be achieved. Democratization of society and elimination of poverty can only occur if men and women have equal access to the services and resources they need to perform their productive tasks. Democracy means being aware of choices and making decisions; the extent to which this is possible depends, in large measure, on how much information is available to the people and how accessible it is.

To date, a combination of factors has prevented women from gaining equitable access to the information they need and, thus, has limited their ability to participate more actively in the transformation of society. As in the determination of information requirements, language can also be a constraint to women's access to information. The whole focus of women's alternative communication efforts is viewing life from women's perspective. Until this perspective has been given equal time and opportunity for expression, language cannot be assumed to be objective. The desire to be heard, to speak in their own words, will also affect what women want to hear or learn.

Relevant technologies have a great potential to transform the lives of women in a positive manner. Yet women, particularly those in rural areas, have relatively little access to information about these technologies. They have fewer channels than men to information; even when they have equal access, many are illiterate and cannot benefit from printed material. It is possible to communicate with these women, however, as information on family planning, health, and nutrition has reached a considerable number of women in rural areas.

The information formats and delivery mechanisms most appropriate for women depend on the local context. The active participation of women in the design and implementation of dissemination efforts is critical for the success of the overall communication process. The relation between women and the media has been the subject of much study, yet this channel has been underused as a means for disseminating relevant S&T information. Again, it is essential that the socioeconomic position of the women being addressed be taken into account when determining the most effective media to use. Despite the provision in the official documents for the gender equality, it is recognized that women as a group and the poor women in
particular, have been adversely affected by the process of growth, economic transformation and development.⁵²²

In most low-income countries, the information disseminated through the media has enormous reach and power. Mass media include radio, television, and newspapers. Radio transmission tends to have the greatest effect because radios are affordable and the message is clear even to those who may be illiterate. Moreover, this medium involves low production and transmission costs and it can reach relatively remote areas. It can be used as a tool for providing informal education, distance education, and information about technical innovations and other development-related activities.

The effect of television is somewhat limited at present, as it is less affordable and its geographic coverage is less extensive than radio, and its transmission is concentrated in urban areas. Use of television also involves access to electricity, which for many is impossible. However, the reach of this medium is expanding, and it can have an exceptionally powerful influence on its audience. Its use in developing countries is growing rapidly and has great scope for timely research and action. Film and video, too, can be positive media but are used less often than others. Video is a valuable medium for women to record their positive experiences and share their development concerns with other women. Sound slide packages are less expensive and are still more suitable in some developing country contexts. As a teaching tool, they are relatively low in cost and easily adaptable to specific situations.

For women who are literate, the greatest effect is achieved by print media, particularly reports that are focused on women’s issues. A wealth of magazines, newsletters, pamphlets, and other materials is available, much of it in local languages and contexts. Some concern has been expressed over the tendency of mainstream media and communication formats to dominate, ignore, stereotype, or misrepresent women and their concerns. Much of this has to do with the nature of mainstream media that controls it, defines it, and sets its goals. The major media have the power, through newsprint, radio; and television, to transform people’s opinions overnight. They also have the power to legitimize the small, the insignificant, and the most

noteworthy. In the present era of Liberalization, Privatization and Globalization women need to be given a unique place in the society.\footnote{Patnaik, Dr. (Smt.) Harapriya, \textit{Women Inequality in Education}, P.K. Swain, & Dr. S.N. Tripathy (Edited), Unequal treatment to women and Gender Bias, Sonali Publication, New Delhi, 2006, at 202.}

In many developing countries, “alternative media” represent the most effective way to reach women. They include street plays, puppet shows, dance, and music programmes. The real difference between the two forms mainstream and alternative lies more in treatment, style, and content of the message than in the distinctive format of the medium.

\subsection*{4.4 Education and Sensitization}

Identifying appropriate information and ensuring access to it have enormous implications in terms of education in the area of information and gender. The most immediate need is for education and sensitization of women and men about the current norms and constraints that militate against women’s equal partnership in society. Strategies for providing such training must be developed at all levels of society. In addition, educating women in information management, technologies, and policy development would promote their understanding of the issues involved in these, areas and permit the capture, organization, and sharing of information by and for women. Women should also be encouraged to pursue education and professional careers in broadcasting, journalism, communications, and similar fields.

How can women be assured of an effective and equitable role in the area of information and communications? Women must define what information they need and identify appropriate delivery mechanisms. Women simply need the same resources and support that men have received, but in ways that complement their lives. At the same time, more is involved than simply gaining technological equity; once women have acquired a voice, they must also ensure that they are being heard. As part of this, men must raise their awareness and comprehension. There is a need to examine how information about women is disseminated to men. Often, men in positions of influence and with decision-making power know very little about the women who will be affected by their policies. If women are truly to establish equity in
the area of information and communications, dissemination efforts about women and by women must be delivered to men as well.\textsuperscript{524}

Several recommendations of The Nairobi Forward-Looking Strategies for the Advancement of Women addressed information and related technologies. The search for innovative ways to strengthen the role of women as both participants and beneficiaries of development is still being pursued. New ICTs have great potential to support such a goal. Although women's involvement with these technologies has increased over the last 10 years and their use for communication and information sharing has expanded, much is left to be done. In general, the percentage of women involved in information technologies, in terms of both employment and education, is low. This situation is apparent in both the North and South. At a global level, women's employment in telecommunications or information technologies more generally, is almost invisible. In addition, the proportion of women employed in telecommunications tends to decrease at higher levels of the hierarchy. The existing agenda and the dire need to fulfill the same are mind boggling. From these basic interrogations should flame forth, as from the burning embers of the old order, a New Order in the new millennium based on a new Jurisprudence Socially relevant, purposive and just.\textsuperscript{525} Of significant concern is computerized automation, which is leading to unemployment of women. Labour-intensive assembly tasks traditionally performed by women, particularly in low-income countries, are being automated; the use of new software and training skills are being taught primarily to men; and, in second-generation newly industrialized countries, computer-based programming jobs are dominated by men and women's access to these jobs is limited. Of equal concern is the devaluing of clerical work. Computer and technological skills tend to be gender-labelled. Women tend to use computers only in low-paying categories of employment; positions requiring highly skilled use of computers and other technology are most often held by men. While women are moving down in the employment hierarchy, men seem to be moving up in this field.


Research on gender and ICT in the public realm confirms that women tend to use computers in low-paying, less-prestigious jobs, and the technology tends not to address women's practices. Because information technology has such great influence, women's relative exclusion could contribute to their further marginalization. In addition, ICT is creating new types of low-paying jobs for women for example, electronics assembly or telephone answering services that will intensify the traditional gender-based division of labour.

Microelectronic or computer-based technologies are being introduced around the world into environments where gender equity has not been attained, or even encouraged. Technological practices, including the new information technologies, are often perceived as masculine, and women have been discouraged from their use. Studies have documented women's low use of computers, for example, among girls in mathematics and science classes and in university' computer labs. Computer training seldom focuses on topics and approaches of direct concern to women. However, there is some cause for optimism.

In 1984, a survey conducted on the first day of an introductory computer class designed for business students revealed a gender-based attitudinal gap; women expressed significantly more apprehension than men about learning to use computers. However, in 1993, there were no statistically significant differences in the responses of men and women; indeed, men were beginning to report more concern than women. Although this study was undertaken in the North, it tends to challenge certain assumptions about the attitudes of women to ICT. Evidently, the constraints and barriers are not insurmountable.

4.5 New ICTs

To date, women have been far less involved than men with new ICTs. However, the question of their control, access, and rights to these new technologies cannot be answered through an assessment of the extent to which they use them. Many interrelated factors must be considered. Many of the obstacles arise from longstanding expectations about stereotyped gender roles and behaviours. There is some evidence that women's control, access, and rights to new information technology are gradually increasing.

The "gender identity" of a technology can be modified by the modes of interaction
users develop; for example, the telephone was originally intended as a business instrument, but has been substantially transformed into a means of communication by isolated women. Computerized telecommunications share this empowering potential for “adapter reinvention” to aid women’s networking. However, even for women who have moved through the process of adapter reinvention, a number of more concrete factors determine access to and control of new ICTs.\(^{526}\)

Consideration must be given to whether a network is public or based on subscriber fees, whether there are public terminals and instructional sessions, and whether a group moderates its use and establishes policies. For example, the National Women’s Agenda Satellite Project was stalled by the National Aeronautics and Space Administration’s (NASA’s).

Potential users may lack the necessary infrastructure, such as access to a computer or telephone line, encouragement from parent organizations, knowledge, and resources. Language can be another barrier to access. For a worldwide women’s network, translation and mediating, regional language differences may be expensive but vital. Broad-based networks such as the Internet are currently expensive for developing countries; consequently, discussion groups devoted to gender issues are usually centred in Northern academic institutions and are biased in favour of academic interests. Indeed, there is real concern that access to networks might make information more expensive and increase the gap between those who can afford to be connected and those who cannot. Technology transfer and donor- assistance will be necessary to keep the gap between the information rich and the information poor from growing.

Electronic mail (e-mail) is a technology that women can approach in a practical way. E-mail is important because it is more “horizontal” in nature than some of the other “hierarchical” communication formats. For many, E-mail is a great communication tool because it is relatively inexpensive and much faster than other modes of communication. Such efficiency is valuable when an idea can be shared and feedback received within a relatively short time-frame, regardless of physical location. While study of science and technology helps achieve modernization, the basic education helps the poor masses to take advantage of scientific and

\(^{526}\) See supra note a15 at 252-255.
technological development, and hence, of modernization. Computer-mediated communications have capacities that offer women the potential for community control in three ways:

(a) They facilitate interaction and group decision-making;
(b) They emphasize message content rather than unrelated details about the author; and
(b) They reduce time and spatial constraints to organizing for political purposes.

Women's networking groups report that isolation can be reduced and empowerment enhanced in a liberating way. Within communities, networks facilitate the voicing of opinions. Unfortunately, for some, this way of communicating can lead to "information overload." Furthermore, relatively few women in low-income countries are in a position to take advantage of such technologies, because they lack the necessary resources and infrastructural support. However, over the last 5 years, the accessibility of the new communications technologies has been improving.

Liberalization, Privatization and globalization (LPG) are the importance planks of the economic policy reforms. Some women's non-governmental organizations (NGOs), including some in developing countries, are participating more effectively in networks. One of the most significant implications of this is the ability of grassroots organizations in the South to provide meaningful, ongoing input into national and international debates for the first time. Computer networking can facilitate women's access and input to decision-making and the power structures essential for participation. This was demonstrated by the NGO electronic networking initiative (NGONet) leading up to and during the UN Conference on the Environment and Development in Rio de Janeiro in 1992.

The Association for Progressive Communications, an international network dedicated to serving the information and communication needs of NGOs around the world, was a key player in the NGONet project and will be active in preparations for

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the sixth world conference on women. Lessons must be learned from these initial successes so that women's groups can take full advantage of the benefits made available through this technology.

4.6 Technical Education

One of the biggest factors impeding women's ability to work in the area of telecommunications relates to their under representation in technical education. These education opportunities tend to be geared toward the needs and aspirations of men. Although entry may be gender neutral, the incentive to enter and the incentive to remain reveal a significant degree of gender bias. Relatively few women study computer science at higher levels of education. In this day and age, information technologies have the power to change the world through their effect on economic growth and production. Women have much to offer, and their absence in this field must be investigated and given greater attention.

Women have fewer opportunities to pursue computer training than men. Even though access to computers and computer training has expanded substantially women are more likely to seek training to survive in a transformed workplace than to advance their interests. To improve women's ability to work with computers in a positive way, one approach might be to break away from formal training and develop programs that focus on issues of concern to women. Currently, the computer programs and training are seldom relevant or practical for women. There should also be more women trainers, especially for women who are learning how to use computers. 529

Three modes of training are required by women: the use of computers that is, aspects of the keyboard and typing, basic concepts, operating systems and software; computer networking, in terms of how to use e-mail and bulletin boards; and computer-assisted training, which is provided by software that allows a student to work through a lesson or presentation on a monitor and to respond as outlined by program instructions. No matter which mode of training women are interested in, they need appropriate support to overcome negative stereotypes associated with computer technology. Training must be extensive, on-going, and gender-sensitive.

More generally, outreach programs, help desks, on-screen help menus, and user-friendly software are vital if women are to make use of the new information technologies. In poorer countries particularly the technology may be seen as

“foreign” and not as malleable to local needs. Nevertheless, “once the technology is understood by some and used by many in the developing world, it becomes domesticated, familiar, non-threatening, and therefore capable of being harnessed to meet one's own needs”. The effects of ICT on women and on gender equity must be examined on a case-by-case basis with attention not only to intended purpose but also to the practical services it offers, its marketing and promotion, media attention, training opportunities, infrastructure available, and costs. The need of the hour is to set the goals which should set the house in order to gear up for meeting the challenges of Globalization.\(^{530}\)

International discussion about policy for the gender- and-information dimension of S&T for development is conspicuous by its absence. The report of the International Commission for the Study of Communication Problems, the McBride report, included a specific recommendation on equal rights for women. It concluded: The world cannot afford to waste the great resources represented by the abilities and talents of women. This is the thought that should be constantly in the minds of those responsible for decisions in communication. Since then, although work on national policies for information and the associated technologies have been extensive, few have made explicit reference to gender considerations. Clearly, there is scope for action.

Policy recommendations should account for the following factors:

(a) The policy vacuum

Existing policy frameworks and policy-making processes should be examined and used as a basis for introducing change rapidly.

(b) Gender equity

Policymakers should not assume that women are simply lagging behind and need to catch up in their perceptions, use, and the value they place on information systems as defined by men. Instead, ‘policies should account for the information needs of both men and women and foster an understanding of the mutual benefits to be gained by society.

(c) Time frame

Policies should account for short-term and long-term needs, that is, both the present condition and the long-term strategic interests of women.

(d) Participatory approach

The policy formulation process should encourage full participation of women and of the community in the design and management of all development information and communication initiatives.

(e) Build on success

Positive experiences of policy development in this field should be identified, shared, and examined for their broader relevance.

Many of the following policy recommendations can be applied equally at various levels, for example, local institution, national government, and international organization.

(f) Information environment

(a) Include gender-and-information issues routinely, as an integral component of all international development forums and action plans.
(b) Identify document, and promote successful women’s information and communication activities, including their effects on women.
(c) Identify document, and promote successful information and communication policies that have incorporated gender considerations.
(d) Examine and update all existing information and communication policies to ensure that they incorporate gender equity.
(e) Ensure that all development strategies and action plans routinely incorporate a development communication component that is sensitive to gender considerations.

(g) Needs of information

(a) Promote effective participation of women throughout the process of developing information services, that is, from determination of needs, through system design, access, management, and control
(b) Access and delivery
(c) Encourage discussion at all levels on the right of access to information.
(d) Formulate communication policies and standards that address the quality and quantity of media coverage of gender equity and issues of concern to women.
(e) Support innovative approaches in the media to enhance gender equity, to respond more effectively to the needs and interests of women, and to improve women’s access to relevant S&T and other information.
(f) Support communication efforts that recognize the need, for information to be presented and disseminated in appropriate channels and format that are meaningful to women.

(g) Promote measures to increase information flows and networking relating to women and technology for development, especially south, cooperation including women’s information resource centres to facilitate training and information-access appropriate to local needs.

(h) Encourage development policies that acknowledge and build on the true productive role and expertise of women.

(i) Recognize the value of women’s local knowledge and promote its use by documenting it and disseminating it among community groups, and from the grassroots level to policymakers.

(j) Education, training, and sensitization

(k) Promote sensitization to gender issues through more effective provision of information on gender equity and the relative circumstances of women and men.

(l) Develop and expand appropriate education and training services for women and girls in the information and communication fields, and ensure that they have effective access.

(m) Increase women’s awareness of the availability of various media and the ways they can be used and adapted for their own purposes.

4.7 International Research Agenda

A new international research agenda is needed to focus on the many neglected areas of practical and strategic concern to women. Such an agenda should take into account the following four factors:531

(A) Collaborative approach

The scope of the research agenda is vast and potentially overwhelming. The most effective way to ensure rapid progress in key areas is to encourage co-ordination of effort through national and international research networks, fuelled by effective exchange of information.

(B) Practical focus

Research programs must be linked to policy change and development action. The use of case studies will provide a particularly valuable source of practical lessons learned.

(C) Capacity-building
The research agenda should be structured to ensure that it strengthens the local research capacity and accounts for existing local knowledge and expertise.

(D) Sharing knowledge
Successful research is of little value if the findings are not shared within the concerned community and converted into action. Priority must be given to capturing new knowledge systematically and to finding appropriate ways of bringing it to the broader audience.

4.8 Women’s Access to Information
In society, there is an established history of critical work on the differentiated relationship of men and women to technological developments. Much of the work argues that gender distinctions in relation to technologies are fundamental to the nature and understanding of societies as “modern” entities. As we move into the new century and the information era, inequalities of all kinds including those related to gender, are at the top of political agenda for change.\(^5\)

The new integrated social sphere of the internet and the transformations it promises have highlighted the long-standing implications of all kinds of technological divides, that technologies are an integrated dimension of social structures and processes, and cultures and practices of distinctions and unequal identifications associated with them at macro and micro levels. Technologies are a social site in which political and economic, collective individual, manifestations of power, empowerment and disempowerment, are expressed.

Just as individuated texts have become filaments of infinitely tangled webs; so the digital machines of the late twentieth century weave new networks from what were once isolated words, numbers, music, shapes, smells, tactile textures, architectures, and countless channels as yet unnamed. Globalization thought a catchword of new millennium, what is especially disturbing is the discovery of a

\(^5\) Sharma, Usha; *Women Empowerment through Information Technology*, Author press, New Delhi at pp25-58.
dangerous trend in the inequality the increasing hiatus between the urban and the rural areas.533

Media become interactive and hyperactive, the multiplicities components of an immersive zone which "does not begin with writing; it is directly related rather to the weaving of elaborate figured silks." The yarn is neither metaphorical nor literal, but quite simply material, a gathering of threads which twist and turn through the history of computing, technology, the sciences and the arts. Just as textual technologies cheap paper, the typewriter, printing accompanied new discourse networks and social formations, so electronic communication technologies radio, television, computer networks-accompany the discourse networks, and social formations now coming into being.

These technologies, discourse networks, and social transformations continue the trend toward increasing awareness of a sense of self; toward increasing physical isolation of individuals in Western and Western-influenced societies; and toward displacement of shared physical space, both public and private, by textuality and prophetic communication in brief, the constellation of events that define the closing of the mechanical age and the unfolding or revelation of what, for lack of a better term, we might call the virtual age.

The nature of information and communication technologies (ICTs) and their contrasting meanings for understanding the relationships between different societies and groups within societies is an exercise in looking back and thinking forward. This kind of reflective thinking and analysis helps us to understand the technologically mediated paths by which we have arrived in the present and their intricate roles in crafting our senses of, and outlooks on, that present. Of course, we are talking about multiple presents in a number of respects, not least that different societies have different technological histories relating to their political, economic and cultural pasts. Further, within societies, technologies, as expressions of competence and innovation, development and redevelopment, public and private constructions of social space, articulate, to some extent, power differentiations between different groups/sectors/classes/genders. The kinds of technologies that dominate, who has control of them, who influences how they are designed and disseminated, who is subject to

them, how they operate, who has access to them or not and in what different ways, and in whose interests they function these are central questions to macro and micro understandings of global and local power. They are also fundamental to integrated perspectives on technologies as part of the social fabric, of the building and rebuilding of communities of people in relation to one another, and the functioning of those communities in relation to one another. Women can not avail of opportunities of education as they are denied of equal opportunities and it is found that half as many women are literate as the males. 534

Technologies articulate people and societies' relationships with the material world, their insecurities and fears in relation to it and each other, their desires and capacities to adapt it to their needs. One of the deepest psychological and material contradictions or tensions expressed by technology is the destructive/productive tendency of people and societies. Technology materializes protective and communicative, creative and cathartic inclinations. There are ways in which it could be argued that technologies capture, express and symbolize in material forms the contradictory influences that shape people and societies' relations with each other and the world around them. In other words, studying technology is one means of understanding those relational dynamics, and critically interrogating factors of empowerment and disempowerment operating across them, and the historical patterns of control, privilege and inequality have resulted.

Public/private structure of major practical historical trends across societies has been identified by many analysts as central to the socially constructed relationships between technology and gender. Technologies, it is argued, largely follow the public, private patterns that allocate most political, economic and social power and influence to the former and least to the latter. The prime association of male and female practice, power and identity with the former and latter, respectively, informs the tendering of technology. Globalization has introduced vast changes in the cultural, economic, social, political milieu in the presence of global competition. So, higher education is now seen as a fruitful investment in developing human capital, which

effects growth in two ways. First, human capital acting as a driver of technological innovation and second, human capital determining technological absorption.\textsuperscript{535}

The ICT processes surrounding the United Nations Fourth World Conference on Women in Beijing in 1995 were seminal in this context. Their importance before, during and after the conference gave expression to more inclusive global political processes, involving women from grassroots to international institutional settings. They demonstrated specific and diverse meanings of such technologies to new forms of political interactivity, campaigning and community building in the internet era. Building on networking structures and experiences already well established and utilizing and integrating different technologies, those involved showed the vast range of ways in which these meanings are generated in relation to the needs of specific groups and communities, and the contrasting communications available to them.

Networking did not arrive with ICTs. It is intrinsic to the lives of people throughout history. Questions of interest include how ICTs offer actual and potential remaining and refashioning of such practices. They strike at the ways in which we organize and reorganize as individuals and collectivities, including communities, in relation to one another, and how we perceive the implications of new found and yet to be thought of connections for activities and processes of many kinds. They also signal that the actual or potential relevance of ICTs can only be partially addressed at best without direct reference to concrete individuals, communities and particular networking and informational goals, and social, economic, political, cultural and interpersonal processes.

ICTs the internet in particular are seen as providing global access to information, people, intellectual tools, all those things which are key educational resources. However, they are simply resources, in the same way that access to information is a useless resource if you don’t have the skills to evaluate and use it. The role of women in creating the knowledge embodied in ICT networks is a key educational one. Formal education-learning communities do not just transmit knowledge and skills, they create it; for centuries traditional universities have been

key knowledge production organizations where women have only recently been allowed to participate.

Gender equality, which is the cornerstone of gender concerns, debunks patriarchy which has established “the male” as the place of humanity and equality, and puts in its place, respect for differences between individuals and equal treatment. Rather than “equality to men”, it promotes “equality between” sexes. This framework coincides with the goal of basic education for all. While one cannot assume that all women teachers are gender sensitive in their teaching methods, need is felt that in some areas recruiting more women teachers, may make girl’s parents feel more comfortable.\footnote{UNICEF 'Strategies for Girls education: For Every Child Health, Education, Equality, Protection, and Advance Humanity'. 2004.}

In terms of “engendering” educational reform, this means that the changes in the educational system should not be limited to structural and curricular changes, nor should it be regarded simply as a technical option. Rather the changes should also impact on teaching-learning relations, institutional relations, pedagogical practice, management and curriculum development. It involves encouraging reflection on practices along gender concerns, and raising awareness on its urgency and why it should be addressed. This is particularly critical among teachers and education administrators.

On the international level, gender equality was identified as one of the six goals in the World Education Forum.\footnote{Education For All, Dakar, 2000.} The purpose is radical “\textit{eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2005, with a focus on ensuring girls’ full and equal access to an achievement in basic education of good quality}.”

4.9 Lifelong Learning for Women

Concretely, gender equality was proposed to be included in the whole educational system, in all levels and in all areas. There were also measures proposed for adoption in the region to ensure girls’ access and inclusion in school and literacy programmes. Gender equality was considered as a crossroad in the Framework of Action, to which all educational, systems in the region were oriented. School enrolment differences in access to basic education were based more on income
differences rather than gender disparities. Small differences were shown when both income and gender categories were combined.

Higher gender disparity was observed in enrolment at the secondary and higher education levels, although the difference was due to income rather than gender. The selection of a professional career among women represents another form of gender disparity. Indigenous girls and women have been particularly affected by gender disparities.

Gender disparities in relation to access to early childhood education are more pronounced among economically disadvantaged and socially marginalized groups. Teen pregnancy in most countries of the region is addressed through expulsion from the school, or some other ways that push young female adults to quit from school. Teaching constitutes a part of the so called “woman professions”, where they can perform a nurturing role.

Gender is also an important qualifying criterion in the distribution of teaching positions: the higher the level of specialization in the proliferation of knowledge, the lower is the participation of women. Moreover, women occupy teacher positions of lesser importance and lower salaries. Women have also greater participation in school activities for parents in early childhood and basic education. “Gender equality” in access to basic education is not the result of gender-oriented policies; rather, it is due to the expansion of basic education and other changes in society, new images of women and their rights, and the high value families assign to boys’ and girls’ education because education is viewed as a means to social mobility.

Gender equality with regard to access to basic education coexists with other terms of inequality in more subtle ways during the same period. Global statistics on access to early childhood and basic education show greater disparity in enrolment due to location, ethnicity and/or social status. Gender equality in the access to education takes place in systems where a generalized access has not yet been achieved. The greater presence of mothers and female teachers in schools gives the impression of school as a “feminine” institution, maintaining, in children’s imagination the links with their domestic environment. New gender sensitive teacher training modules being developed by the governments of various countries ensuring that future

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538 Sharma, Usha. *Social Empowerment through the use of ICT, Women Empowerment through Information Technology*, AuthorPress, Delhi, 2003, at 32-42.
Textbooks are gender neutral. Training in gender and child rights are also being provided to national education managers and members of local parent teacher associations.539

In rural areas, women have lower educational levels of complete basic education. Schooling differences by gender are more acute in same population, for secondary and post-secondary education. Differences are observed between young and adult women, but age differences are smaller than cultural differences and that of place of residence urban and rural. Women's schooling has important consequences in terms of learning acquisition of their children, their own reproductive health care and participation in productive labour. Due to poverty, young and adult women have been "separated" from education which had unfavourable consequences including their isolation and a low sense of self. States guarantee only basic education. Thus, people from middle and high-income levels finance education of their children with their own resources.

To expand opportunities beyond basic education, the mobilizing role of civil society through emerging women organizations is of great importance. With regard to basic education for school age population, equality of access is not the same for girls and boys belonging to lower-income groups or for rural and/or indigenous populations. At the same time, other forms of inequality appear, in terms of school dropout, repetition, school performance and relations of students in the classroom. Differences based on gender remain in basic education and in youth and adult literacy levels some 80 million adult women are illiterate or have incomplete primary education. These factors are significant indicators of the need to address the educational concerns of young and adult women. Education has a great role to play in decreasing social disparities and promoting social mobility.540

The gender perspective has been incorporated in educational policies. Reforms were oriented toward an improvement of quality education for all. Girls and women have benefited from these general policies. In the countries of the region, the gender perspective has been incorporated in educational processes under different modalities, such as:

(a) In the curriculum as a whole, gender perspective is a main objective and as an underlying principle of content of basic and secondary education.
(b) In different areas of the curriculum, specifying women’s contribution to the development of culture and society and their role throughout history. In particular, there have been initiatives in the development of non-sexist textbooks, handbooks and teaching materials.
(c) In the area of sexual education, various programmes promote non-sexist perspective e.g. inter-sectoral commissions for prevention of adolescent pregnancy.
(d) In in-service teacher training programmes, workshops for supervisors and teachers have been conducted to identify sexist practices evident in textbooks, language use, attitudes and interactions in the classroom.

Gender equality promotion policies may be assessed in terms of improvements in access and process of education or decrease in school dropout rates. With regard to the access to basic education, some programmes have been developed to ensure access to school of girls from vulnerable sectors. Action programmes have also been carried out with mothers to support girls from disadvantaged groups throughout their schooling. These measures also address selection and discrimination concerns. Education and modernization are two wheels of the same cart. Both, when combined together, lead to a rapid socio-economic development of a nation.541

There are also many measures undertaken to address gender concerns pertinent to the learning process. These include incorporation of gender perspectives in the curriculum, the production of gender-sensitive textbooks, and teachers’ training. A key issue is the definition of gender equality in education policies which is one of the responsibilities of the Ministries of Education. In particular, there are still coordination problems within the Ministries of Education and other offices, with regard to organizing inter-department dialogues. Within Ministries of Education, policies arise from different departments: basic or primary education, intercultural bilingual education, rural education, teacher training, and others.

In some countries, transversal programmes have been developed to promote equality for women in education, including curricular changes, teacher training, research and teaching in universities, and the reinforcement of the female role in the cultural production.

Subsequently, girl and women participation in education is largely an unfinished task, and remain a priority concern. Some countries have carried out sensitization campaigns for women’s access to education. Infrastructure improvements also contributed to the increase of girls’ access. Coeducation has also been generalized, considered in many countries as a democratization measure.

Aware of the new challenges in the context of globalization, the public authorities, in partnership with civil society have formulated guidelines and a set of strategies that will be implemented into programmes through the tenth plan of development, 2002-2004. These programmes will take into account the major role of science and technology, on the one hand, and the great, rapid and Continuous evolution of the new information and communication technologies, on the other hand.

In the twenty-first century, school will ensure fundamental learning, providing opportunities of learning for all. It will enhance employment and employability through the development of complementarily between school and training centres, and the employment world. The preschool education system will be progressively instituted, and will prepare children to school, awakening their aptitudes and potentialities.

The new information and communication technologies imply new forms of education, learning and training. For this aim, specific TV programmes targeting large groups will cover cultural, scientific and technological fields. Each household may become a school for all generations. Learning in the twenty-first century will reinforce languages and new information and communication technologies’ learning. This will further promote cultural and knowledge exchange among individuals and countries. The Government of India constituted a two man committee Mukesh Ambani and K. Birla, both foreign educated young industrialists as members which produced a report on the policy framework for educational reforms which suggests inter alia, that the state should undertake full responsibility for the priority sector in
education, from pre-education to secondary, but abandon University education fully and hand it over to the corporate sector.⁵⁴²

Since the 1995 World Conference on Women in Nairobi, the women’s NGOs have analyzed violence against women in a variety of ways. It has been looked at firstly in terms of sites of violence. This has meant addressing the private sphere of the family versus public sphere such as state and community.

### 4.10 Online Women’s Groups

All online women’s groups and individuals are self-taught in internet use. All are therefore highly motivated. Some individuals have a strong need for the connection that the internet brings. Since the internet has grown so rapidly in such a relatively short period of time there is still a widespread shared experience. For example, all internet users can laugh about wondering whether their first email arrived at its destination.

On the other hand, because of the lack of an overall internet application strategy, individual and organizational capacity to apply ICTs is uneven, from simply placing a mission statement online to experienced online community builders. For many the issue is still that the technology gets in the way.⁵⁴³

Other than computer crashes, women’s groups cite lack of time to learn how to use it. There is still the need to see beyond the hardware and software to how to apply the technology to the mission of organizations. In most cases there has been a community development approach to internet use by women’s organizations. Inability to engage is based on ignorance born of lack of time and resources, not on making well informed choices.

Access is still a major issue, sometimes expressed as a fear of being ‘left behind’. Reasons given included have to be the biggest barrier for most women. Lower pay, difficulty in obtaining credit, and the high cost of connecting all hit women harder than men. Time was an important factor for many participants; Time is always an issue for most of these women who are busy in taking care of their families.

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and trying to earn a living especially as immigrant women who are disadvantaged in many regards.

Women have less online access than men, for all the usual gender-related reasons: time, money, control, learning opportunities, other commitments, prioritizing others' needs. As the internet becomes the major form of communication, there are implications for the future education, employment and civic participation of women. The preponderance of English on the internet has the effect of discouraging participation.

4.11 Barriers to Access

Education and training by distance and open learning is one of the few educational areas in which women are well represented. This is particularly true in developing countries where the characteristics of distance education to overcome some of the challenges that women and girls face when education provision is limited to conventional institutions. With the increased opportunities offered by the new ICTs to deliver distance/open learning, however, it is possible that this trend could be reversed. 544

Women could become disadvantaged in accessing education delivered by distance methodologies due to a variety of issues relating to the use of or access to these new technologies. Additionally, the introduction of new ICTs has implications for staff employed to work in distance teaching environments. Training and education needs depend upon where the women are in their self-development or in their employability. For instance, women re-entering the workforce might require specific refresher courses, while women in the service sectors, might require particular and regular upgrading of skills. In most cases it was felt that women initiated their own access to training and information there were few support mechanisms for women.

Technologies can be used appropriately by keeping in view the region's diversity in geographical and physical conditions. Combinations of a variety of media are dependent on and should build upon available facilities and infrastructure. It was felt that as telephone and fax was prevalent in all urban areas in the region and that radio and TV were accessible to most people in urban areas, the combination of these technologies would provide the most common medium for DE. Where computers are

544 Ibid. at 45-58.
being introduced as a medium for teaching, it was felt that the minimal function choices should be relevant to the needs of the student. Globalization and the emergence of a new society more knowledge and information technology dependent have further underlined the importance of education in pursuing developmental goals. ⁵⁴⁵

Training in equipment maintenance must be built in to enable and empower women to maintain systems. A multiple system of delivery and a bottom-up approach would be the first means to making these technologies interactive. Interactivity goes hand in hand with capacity building. Women’s responsiveness to ICT uses has a direct bearing on the different levels of interaction offered by combinations of ICTs. Responsiveness to ICTs is determined, amongst other things, by overall awareness, by demystifying the technologies, building user-confidence, using gender sensitive training methodologies, and raising awareness about lifelong learning. The benefits of globalization in the past decade have been so unevenly shared that the very words has come to acquire in certain quarters a pejorative tinge. ⁵⁴⁶

Worldwide demand for education by working adults is growing exponentially; it is being driven by a number of factors including globalization, the need for continual re-training, and the complexity of employment requirements; the age of information. The market for education, however, is very large and fragmented with only a fraction of demand of education being met by current educational systems. Within that fraction, even less attention is directed towards girls and women. Women, who have been cut off from educational resources in the past, have an uncertain future on the internet.

While the new wave of developments following the evolving information and communication technologies (ICTs) are exciting and hold great potential, the technologies themselves do not present a quick fix to deep entrenched development problems. ICT tools are important when they serve to overcome physical, material

and technical obstacles to teaching and learning, but in themselves are insufficient as tools aimed at improving the quality of education and its output. It is sometimes difficult to distinguish between problems that may follow in the wake of a new technology and problems that existed before the technology was introduced.

An assessment of access issues that prevent women from using one form of education delivery system cannot be isolated from an assessment of the overall system that limits women's education opportunities in the first instance. In other words, access to ICTs is only a small aspect of a much deeper and systemic problem around the provision of education to girls and women.

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

Even in a country like Australia, where education institutions recognize the importance of having an information technology plan, it is difficult to keep the plan up-to-date due to the rapid changes occurring in the technology field. It pays to know what the range in options of technology area comprehensive overview of the structure and basic function of telecommunications such, as satellite technology, electrical information access networks, telephony, wireless radio, and other multimedia such as television, audio/video reproduction is needed.

Particularly important is an update assessment of the availability of basic connectivity through electronic mail. Communities are better equipped then to make an informed choice about which of the options most closely relates to their immediate needs and what options might be open to them in the future. At the drawing board level, it is expected that the convergence of broadcasting technology with telephony will open up all kinds of opportunities for educational development.

It is also expected that the benefits of economies of scale in running all types of communications through the same "pipe" are especially realizable in Commonwealth developing countries where the bulk of population has still to be wired for television and telephones. India cannot effectively benefit from
globalization, unless productivity and service efficiency are enhanced. This also in
turn calls for upgradation and diversification of course curricula. 547

Historically, technological developments have tended to have both positive
effects on, say production, in terms of rate of growth and cost reduction, and negative
effects through marginalizing or excluding whole sections of the population from
those benefits. Considering particularly the case of the information and
communication technologies (ICTs), it is particularly true in developing countries
because most telecommunication infrastructure or connectivity is inherently urban-
biased.

The rationale for using educational technologies is different for developed and
developing countries. Developed counties have well established schooling systems
and high enrolment levels. They primarily use technologies to improve effectiveness
of teaching and learning, to individually tailor instruction, and to provide specialized
education to small groups of learners. Needless to say, globalization does not
constitute the original source of social inequity. Stratification by class, country,
gender, race and other social categories predates the contemporary rise of
suprateritoriality by several generations or even many centuries. 548

WTO agreements will have major implications in the future of higher
education. In developing countries, on the other hand, where good schools are
affordable only to the relative few, policy makers seek alternatives that make
significant improvements in educational and research effectiveness, while at the same
time increasing access to education, particularly at the secondary and tertiary levels, at
lower cost per student. The managerial and technical capacity for implementing
educational innovations has increased in many developing countries. In addition, the
infrastructure necessary for using more sophisticated technologies is steadily being
strengthened.

Availability of electricity, telecommunications, and computers is generally on
the increase. Therefore, in spite of educational and technological differences between
low and high income areas, the introduction of interactive educational technologies

548 Schalte, Jan Aart. Globalization and (In) Justice, Globalization, A critical introduction Palgrave,
New York, 2000 at 235.
will ultimately become more feasible in developing countries. The educational sector is one of the potentially most important beneficiaries of ICTs. The whole area of application of interactive technologies to education, however, is relatively new and still at an experimental/developmental stage.

In Asia, understanding the gendered nature of the social, economic, political, and technology systems which frame opportunities for women is the key to assessing and promoting women’s access to and use of ICTs. Women’s needs for information are often influenced by their gendered roles and responsibilities, which in turn affects their use of and response to ICTs. Compared to Africa, progress in women’s education in Asia has been substantial. About 35 per cent of adult women in South Asia are literate; eight out of 10 girls in South Asia went to primary school in 1992.

In East Asia, female enrolment in primary education is much higher. None the less, women still tend to have less access to education and training at all levels, and those who continue in school tend to keep to socially accepting or peer-group non-technological streams, all this has long term implications for continued gender differences in access to and use of ICTs.

In India, export-oriented information processing jobs have no doubt opened up new opportunities for women. In the Bangalore Science Park, 20 per cent of the programmers are women. In data entry jobs, the proportion is even higher. Women often drop out of the workforce, not only because they cannot keep up with the requirements of continuous skill changes, but also because it is often difficult for them to combine the demands of childcare with that of careers related to cognitive skills. WTO agreements will have major implications in the future of higher education in India as it will be difficult to restrict foreign educational institutions. When India agrees to implement the GATS, the Government would be unable to accord a differentiated treatment to Foreign Service providers by restricting the number of supplies of education services in a given subject area, the total value of education services per sub-sector, the overall number of institutions in a given sub-sector or subject area, the number of holders of degrees or other qualification in a given sector by applying the number of teachers in the higher education sub-sector the legal form
of the partnership that an education service supplier may adopt to implant itself in a given market. 549

Whether the arguments for distance education for women hold the same as telecommunicating and teleporting remain to be seen. The women with lower per capita income face huge waiting lists just for a new phone connection, and it has been suggested that one response would be to give some kind of priority for women in allotment of phones. While this facility may be misused in the beginning, the woman still becomes the owner of the phone and this ownership and listing in a telephone directory has potential positive impact.

Cost-related issues also impede progress and discriminate against non-elite women who have less financial resources than men. Women also identify the lack of time and human resources as common barriers. There cannot be a predetermined curriculum, anything that is necessary to study, any skill that is necessary to be acquired and discovery that is necessary for globalization of productivity should form basis of curriculum revisions. 550

In the distance education sector, multimedia applications are being continuously improved; these include interactive videodisks (IVD), Compact Disks-Digital Audio (CD-DA), Photo CD, CD-ROM and CD-ROM XA, Digital Video Interactive (DVI), Compact Disc Interactive (CDI), Video Information Systems (VIS), electronic books and virtual reality.

The internet has the potential to reduce illiteracy and step up agricultural productivity. Products like: "Virtual farmer schools" could be developed and be made accessible to women farmers with no formal training in agricultural skills. This service would also link community telecentres in Africa and provide for south dissemination of indigenous knowledge, sharing of resources, ideas, experiences and success stories.


Where rural women farmers are not able to directly harness the benefits of the internet, NGOs, extension departments, rural women's associations and unions that serve them can take advantage of the technology and repackage the critical information for the rural stakeholders.

Cost issues of ICT access especially affect women. They are generally lower paid than men and often do not have control over their income. Their family responsibilities, such as the health and education of children, are the primary priorities for the income they do earn, so that often there is little left for other less immediate needs. Compared to men, women generally have less access to training, and less opportunity to learn the skills necessary for participation, including basic technical skills, technical repair, and language training.

Women are unacquainted with ICTs and uncomfortable with using them: They need to be supported in learning to work with, and to feel confident in their ability to use these technologies productively. Capacity building and training are important components in the promotion of information technologies amongst women. Calling globalization "the central challenge we face today", world leaders attending the United Nations Millennium Summit in the evening of 8 September 2000 had to recognize that "For while globalization offers great opportunities, at present its benefits are very unevenly shared, while its costs are unevenly distributed."\footnote{Sachar, Justice Rajindar. Globalization – Negation of Human Rights Human Rights: Perspectives and Challenges, Gyan Publishing House, New Delhi, 2004 at 253, Human Development Report, 1999.}

The lack of basic computer skills is the first step in discouraging women from using e-mail. Training in ICTs for women will need to be gender-sensitive, and offered by women trainers as much as possible. In addition, relevant training guides, documentation and online tutorial software to support trainers have been insufficiently developed.

E-mail and internet access is usually limited to those with the most resources, very often to people with international projects and contacts. The high price of internet services in most developing countries coupled with the absence of local dial access outside almost all of the capital cities, severely limits access for the bulk of those with computers.

Women are increasingly active in using electronic communications, and many tools such as electronic mail have become a routine part of their day-to-day
communications activity. Increasingly, women are experimenting with online conferences, mailing lists and websites, and women continue to face barriers in using the information superhighway, such as the lack of training and the high cost of equipment and, in some places, of getting connected. Networking has been recognized by female scholars as a tool for women's empowerment, and women have taken to the net to create a cyberspace of their own."

In many places, women writers, editors, news directors and lobbyists, are not only surfing the net, but have become active in establishing numerous WWW sites of special interest to women. Women's sites cover subjects such as gender and sexuality, feminism, women's health, women in computer science, engineering, women's studies, women in academics and women in industries.

Women face two particular challenges in their use of computer networks. The first is to master access tools so they can make the best use of ICTs. The second is to use the new internet publishing tools to develop their own publishing and media activities on the networks as paradigms of gender - sensitive media products. Educational system in any society faster intellectual growth and in doing so, allow for critical thinking. The WTO is undermining our very means of resistance. There will be no power base to fight from if a university becomes a business.552

Until the advent of telecommunication technologies, distance educators were hard pressed to provide for two-way real time interaction. With the development of synchronous (two-way; real time interactive technologies) such as audio teleconferencing, audio graphics conferencing and video conferencing it became possible to link learners and instructors who were geographically apart. Now, the asynchronous (time-delayed) feature of Computer mediated communications (CMC) offers more advantages in that the CMC class is open 24 hours a day to accommodate the time schedules of distance learners.

CMC systems provide an important medium for facilitating cooperative group work among distance learners. This seems to fit in well with the ways in which women learn and counteract. Also, CMC systems arguably provide simple online training along with accessible and easy sources of trouble shooting. Through

differentiation, specificity, and better learner and teacher control ICTs should be able to accommodate the individual needs of most users.

Women’s needs for information are also structured according to their gendered roles and responsibilities, which in turn influence their use of and response to ICTs. Views of women’s capability, purpose and needs are strongly held, defining the boundaries of what women expect of themselves and what they are expected by the rest of society to achieve.

As a result, girls and women take on second-class status in the home, developing fewer skills outside the home, setting more limited goals for themselves, and gaining less access to education and health care. The colonialist and post-colonialist focus on the cash economy marginalizes women, whose triple roles in reproduction, subsistence production and community management are not valued quantitatively or economically.

In many countries, unmarried women who earn income generally turn it over to male members of the family. As a result, women are generally poorer than their brothers and husbands, and those who lead households without male heads are the poorest of all up to one-third of households in developing countries. Rural women in Africa are predominantly illiterate, being taken out of school at an early age to save school fees, to marry, to ease their mother’s workload or because of pregnancy which often occurs at an early age. Since 1991, India implemented new economic policy, based on liberalization, privatization and globalization. In this context higher education is reformed for adjusting with global standards by privatization and liberalizing our higher education system. More attention is given to information technology, biotechnology and bioscience management and many other modern courses and faculties in higher education system. 553

The importance of information and of technologies to transmit and disseminate information for development in Africa is well recognized. The ‘information highway is still predominantly male-oriented, and often a thrum for gender discrimination, intimidation and even harassment. The profound gendered implications of ICTs for both men and women in employment, education, training,

and other productive and personal development areas of life mean that women need encouragement and support to take their place in the information revolution.

Active involvement of women in the identification and definition of information needs, and in the choice of mechanisms and processes to meet these needs is critical for their productive participation in production and dissemination of information as well as definition of and access to the information they need. Equitable access to ICT technology and the autonomy to receive and produce the information relevant to their concerns and perspective are therefore critical issues for women.

The Platform for Action of the Fourth World Conference on Women states that: 554

"Women should be empowered by enhancing their skills, knowledge and access to information technology. This will strengthen their ability to combat negative portrayals of women internationally and to challenge instances of abuse of power of an increasingly important industry... Women therefore need to be involved in decision making regarding the development of the new technologies in order to participate fully in their growth and impact"

The Platform calls for increased access and participation of women to expression and 'decision making in the media and ICT's, in order to overcome negative portrayals and stereotypes of women in media and communications, and to encourage the presentation of balanced, non- stereotyped and diverse images of women.

Support of women's existing technology activities, recognition of their role as possessors of most of the indigenous knowledge in developing countries, and support of their potential for contributions to S&T are critical to community development. Communications technologies are important for the distribution of alternate, balanced and equitable portrayals of women and their potential. They are also important for facilitating analysis of women's situation and developing active strategies to improve that situation.

The new kind of communication space which ICTs introduce is decentralized, de-hierarchalised and allows the instantaneous 'registration' of many voices and viewpoints. The explosion of electronic communication among women around the

554 The "Fourth World Conference on Women, Action for Equality, Development and Peace" was held from 4 to 5 September 1995 at Beijing, China, in pursuance of the General Assembly Resolution of December, 1989.
world in the run-up to the Beijing conference is an example of the use of ICTs by women as a tool for information dissemination, communication and organization.

ICTs can facilitate participation among women in different sectors and in different regions. They can provide the information that women need to improve their own well-being and that of their families, and to more efficiently fulfill their triple roles. The introduction of computers into offices has improved the quality of work life for women in clerical and administrative occupations.

Computers and modems are imported from industrialized countries with accompanying increases in transportation and duties as well as disadvantageous exchange rates. The cost of online access is prohibitively expensive for most. Further, telephone lines are generally undependable while the electricity supply can be erratic.

Social influences on women’s relationship to technology also affect women’s attitudes toward ICTs. The tendency to direct women into non-technological professions and responsibilities means that women feel “fear and embarrassment” when dealing with ICTs. Strong hierarchicalisation in institutions and industry mean that because of their lower position, women do not gain access to the computer equipment even if they have more computer ability and need for it. All round growth and development of a nation would not be possible unless women are brought into the mainstream of national development. The role of Indian women is vital since they have become the key in the process of economic development.\textsuperscript{555}

A fundamental barrier to women’s use of ICTs in developing countries is illiteracy. This is true for Africa. The danger in such a situation is that ICTs will widen and deepen the gap between the haves and have-nots as economies become more and more information-based. However, two different approaches to this issue illustrate that ICTs can in fact overcome illiteracy. The Centre for Communications and Women’s self-employment, in Quakchott, Mauritania, like many successful literacy projects, ties literacy training to a package of skills and services provided to support women’s entrepreneurial activities. The Centre provides classes aimed at self-employment, such as sewing cleaning and drying of fish, rug weaving and reading lessons.

The support of women's entrepreneurial activities is an important ICT benefit for African women which have not yet been realized. Women's groups in Africa have used ICTs to facilitate fair trade with international partners. An increasing number of groups in the north which are importing southern goods for distribution present their product information on the web; this also presents opportunities for increased business support and markets, if African women can take advantage of them. If the States accepted mandate is to ensure equitable welfare and development of its population, the principle of social equity cannot be neglected.

The rapid growth of women's organizations at all levels and their demonstrated ability in development education, training and activities make them a key element of any strategy to encourage women's participation in ICTs. Several women's NGOs have extensive networks and operations across Africa, and are thus well placed to work with technical organizations to develop ICT training and implementation programmes. Women's NGOs also potentially could play a role in facilitating the distribution and production of information by women in Africa.

Since cost, technology expertise, repair and infrastructure issues will ensure that ICTs stay out of the reach of most individuals for the foreseeable future, alternative systems of access, delivery and information will need to be developed that are more appropriate to the situation of Africans. This is especially true for women, who tend to have less economic power, training and technical expertise.

In South Africa, a concern is that IT publications and the IT milieu are concerned only with the top end of the market, faster machines, and most impressive graphics. The situation of much of the population means that this is relevant to only a few; more attention should be paid to the great deal than can be achieved by the simpler ICTs. The majority of women, who have access today, do so from research institutions, governments and some businesses. Access among poorer and rural classes is currently non-existent, but critical for Africa's development.

In the year 1990s, computers and internet access are becoming integral components of educational technology. Computers and computer-related technology

often find students acquiring skills leading them to opportunities in higher education. These opportunities and skills transform them into potentially valuable employees in an increasingly technological job market. Women are becoming more vocal about inequities in the computer culture that deter equal participation by females. On the internet, there is no repressive authority or hegemonic voice to mandate what is and is not appropriate, and on electronic mail bulletin boards, chats and news groups, everyone who has access and can read and write has a voice. With the potential for all participants to present themselves as socially neutral race, gender, age; physique, marital status, and socioeconomic group are not immediately identifiable when one login on, it is a forum for equally powerful voices to express their opinions.

Many pre-adolescents and adolescents do not enjoy their initial experiences with the playful introductions to technology, such as video and computer games, and large numbers of those who are disenchanted are girls. The allure and excitement generated by the games captivate an overwhelmingly male segment of the population, who spend large quantities of time and money interacting with software. An educated populous is the first requirement for economic progress. In this world there is no literate population that is poor, no illiterate population that is other than poor.

However, designing software specifically for girls appears to be a risky endeavour, since in the software industry the belief exists that boys are much less likely to play games designed for girls than vice versa. Educational software design parallels that of recreational software, targeting a male audience with themes of war, crime, doom and destruction, fast-paced competitive action, and traditionally male-oriented sports. Competitive, rule-based software that involves characters demonstrating their supremacy over video challengers, using reactive, non-thinking responses and often violent means, appeal to the adolescent male culture, while girls prefer collaborative, real-world problem solving with female main characters.

Software that focuses on competition and control is less attractive to women than software involving compromise and cooperation. Even when designers, most of whom are male, are told the parameters of software that appeal more to girls, they still have a tendency to design games with themes that interest boys, at the expense of girls, when asked to design software for “students”.

557 E-mail.
Globalization is a reality; one cannot escape its forces. The real choice of governments is not how to fight globalization but how to manage it. In a way, globalization possesses a challenge to the concept of nation State. At the same time, it is the nation states, the practice they adopt, the arrangements they enter into and the safety not that they provide, that will determine whether we exploit or be exploited by globalization which represents the most potential force of this era.\(^{559}\)

In the twentieth century, computer labs themselves, with their stark walls, isolating cubicles and distinct culture comprising its own vocabulary, humour and status system among members can cause nonmembers of the culture to have negative initial encounters with computers that result in computer avoidance. Especially during their teen years, when girls are defining themselves and their place in society, the risk of venturing onto such unfriendly turf can seem too great. This avoidance phenomenon may begin with young girls, but its effects extend into adulthood. Statistics show that women who go into computer programming fields tend to drop out, and women are vastly under-represented in the field of computer science. As their educational level increases, fewer and fewer women stay in computer-related fields. The struggles women computer education and careers in technology are being documented and analyzed.

The world is in the midst of a knowledge revolution, complemented by opening up entirely new vistas in communication technologies. Recent developments in the fields of information and Communication technology are indeed revolutionary in nature. Hundreds of millions of dollars are being spent on information and communication technologies, reflecting a powerful global belief in the transformative nature of these technologies. Laws in our country are gender biased and "gender injustice" means violation of human rights of an individual which are sacrosanct.\(^{560}\)

By definition, information and communication technologies (ICT) are a diverse set of technological tools and resources to create disseminate, store, bring value-addition and manage information. Interestingly, ICT, when used as a broad tool for amalgamating local knowledge incubated by the communities with information


existing in remote databases and in public domain, heralds the formation of a new class of society the Knowledge Society.

Knowledge thereby becomes the fundamental resource for all economic and developmental activities in the knowledge society of which women form an equal part. The process of synthesis of knowledge possessed across communities, by men and women, with the global pool of knowledge with the scope for further enrichment lays the genesis for knowledge networking. Knowledge networking opens up a new way of interactive communication between governments bodies, NGOs, academic and research institutions, and the civil society. It helps communities, both men and women, to take appropriate steps to recognize and document the knowledge they possess and in reflecting this knowledge in a wider social domain for directed change through the use of information and communication technologies.

Knowledge networking impacts the governance processes by reshaping the current sociopolitical equations and revolutionizing the way government does its business. Till now, southern governments have been making sporadic efforts in fostering the involvement of women in governance process through reservations, creation of separate departments to handle women issues etc., nevertheless, it is seen, that even in their official roles, women function in a pseudo manner and they do not have the real power or the capacity to make decisions.

The marginalization of women in political processes and governance in general has been both the cause and effect of slow progress made in the advancement of women. Knowledge networking is changing the very nature and magnitude of women-governance interface. By their virtual potential to connect every woman in a network of information exchange, it offers endless possibilities for women to play a pro-active role and impact on governance processes at the local and global level. The new networking technologies are eliminating the boundaries between the various branches of the governing institutions, and between the different levels of governing institutions. The ICT governance models are marked by a shift towards community based approaches. And this model will see widespread growth and adoption in the coming years as people come to realize the control JOT-models puts in their hand to influence the governance mechanisms. Women would definitely be one of the major stakeholders to benefit from this transformation as they have been traditionally denied participation in decision-making platforms. The new models of governance open up
avenues for direct participation of women which so far has been limited to representative forms of participation in which women were insufficiently represented.

The notion of distance and time would become meaningless as the technologies have the capability of working at all times and from all geographical locations. It also means that women in rural areas for whom time is a scarce commodity and for whom it is absolutely impossible to commute to public offices the new technologies would enable them to leapfrog to an altogether different platform where they can voice their opinions and communicate to the concerned person without additional burden on their time or commuting large distances.

One of the main functions of the government is to provide information with regards to policies, rules and regulations, administrative and service delivery matters, etc. This information forms the basis of informed participation of the civil society in matters relating to governance. Women, because of their isolation from mainstream activities, do not have easy access to government issued information and therefore are unable to take part in governance issues. With the increasing commercialization of education, many particulars we take for granted are being threatened. Face to face contact with teachers will slowly be phased out. As education standardization in institutionalized through international equivalency, the uniqueness of each educational institutions will vanish. Knowledge networking however changes this situation and enables information to perpetuate right to the last digital node of the society. Women can access government websites to know more about issues such as the names of the local officials and their roles and responsibilities working hours of government offices, application forms available for download, latest rules and regulations, etc.

The opinion polls conducted over the multimedia have the potential to make known the decisions favoured by a large section of the women to the policy planners and decision makers. The Andhra Pradesh cyber model in India has proved that good policies and clear vision need to be shared with people; their support cultivated for effective governance; and information and communication technologies have an important role to play in this process of reaching out.

Inequalities and inadequacies in education training and economic life followed by unequal making result in lopsided creation of knowledge which deprives women and the next to correct this situation by providing opportunities to women in gaining knowledge through Information and Communication Technology.\textsuperscript{562}

Knowledge networking helps build alliances and develop issue-based solidarity among the women's groups which is a prerequisite for concerted action. A women's group raising a voice against environmental degradation caused by unethical practices of the government or a transnational company no longer finds itself waging a lone battle. Instead, it strikes alliances with groups located across the continents to raise their voices against similar unethical practices. Virtual communities are yet, another powerful, upcoming force in the knowledge societies. Knowledge networking could help women groups to come together digitally and form virtual communities which support a common viewpoint and value framework. The virtual communities' movement is directed at giving individuals, local communities and regional groupings the chance to advocate policies which protect their welfare interests and promote better governance at all levels. The thrust is on creating spaces for decision-making within the existing governance mechanism that would be democratically governed by welfare and human rights principles, sustainability and social development objectives.

Formation of such virtual communities could be very effective in influencing policies and debates that are transnational in nature and need strong and persistent lobbying at the international level. In a way, knowledge networking creates alliances between women groups based on common value framework and objectives rather than common geographical boundaries.

Women, however, are still very much in a minority among the beneficiaries of knowledge networking. Women still face huge imbalances in the ownership, control and regulation of these new information technologies, similar to those faced in other areas: They face a lot of obstacles to harness the full potential offered by these technologies which prevents them from attaining the full benefits of development. This is because of a number of factors which act to the detriment of women's

participation some of which are generic to all social development models such as low levels of literacy, little access and control over economic resources, low decision-making power, cultural attitudes and gender blind approaches to development.

Governments and civil society organizations have still not fully absorbed the full potential of ICT in gender development and therefore are far from the stage of creating enabling frameworks and spaces for the growth of engendered ICT models. This is often because the use of ICT in knowledge networking is a fairly new process and requires a modicum of sensitization and belief in the technology which is a factor of time as well as the willingness to adopt. The new technology comes at a financial cost which hinders its penetration to the individual and sometimes even at the community level. The concept of Globalization being promoted by the WTO and its supporting organization is said to be mixed blessing. Some say it is a blessing and others say it is a course. It is a blessing because it bearings in private finance to public domain, improves efficiency and out put enables consumers to get good quality product at the lowest possible price, opens up new employment opportunities leading to higher income and better standards of living. It is a curse because a large proportion of the populations in proper countries remain marginalized by the process of globalization.563

The problem is even more compounded by the fact that women in developing countries have little control over the household income and do not have the decision-making power to invest in these technologies. Further, there are associated physical and infrastructure requirements such as electricity, telephone lines, spare parts, and internet gateways, etc., which are unevenly distributed in developing countries and add to the cost of initiating knowledge networking.

Initiating knowledge networking processes and benefiting from them requires a threshold level of capacity and trained human resource power to handle technology and networking issues. Women, because of their low levels of literacy and lack of access to technical education are, therefore, at an even more disadvantaged position than men in developing countries to fully benefit from knowledge networking. Ironically, much of the knowledge present in the global pool is the English language, which is not understood by the poorest communities.

ICT strategies and models can succeed in bridging the poverty gap only if there is a concerted effort towards formulation of enabling policy frameworks and avenues; these create opportunities and incentives for women to participate and benefit from the networking processes. Recent important international policy documents have recognized the gender implications of the new technologies. The "Platform for Action of the Fourth World Conference on Women" \(^{564}\) states, "women should be empowered by enhancing their skills, knowledge and access to information technology. This will strengthen their ability to combat negative portrayals of women internationally and to challenge instances of abuse of power of an increasingly important industry".

Women therefore need to be involved in decision making regarding the development of new technologies in order to participate fully in their growth and impact. The starting point for any successful gender-entrenched knowledge networking approach is the development of relationships that make it easier for women to talk about their needs, share information, and work together. This entails an initial scooping process to define the nature of the system under consideration, the needs and opportunities facing the different interest groups that may be involved, who should be involved, and what can or should be changed. This is where the intermediary organizations can provide a platform for women to get actively involved within the processes. The economic roles of school education, learning by doing, technical progress and even economics of large scale can all be seen as contributing in different ways to the centrality of direct human agency in generating economic expansion. Recent work on economic growth has brought out sharply the role of labour, education, and experience, and the so called 'human capital' \(^{565}\).

Knowledge about other comparative ICT based systems could be provided by these organizations to the women communities to catalyze the entire process and setup prototype ICT-models for customization over time. Later in the process, these organizations have a significant role to play in managing the rapidly growing body of knowledge about development, and in building the capacities of women communities.

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to transform information and knowledge into ingredients of empowerment and equitable development through outreach and training of direct beneficiaries.

The personal ownership of ICT for the vast majority of women in developing countries is not feasible for the foreseeable future, which implies that the question of where and how they can gain access to ICT becomes central to the knowledge networking processes. The intermediary organizations can facilitate in bridging the "last mile" of connectivity by providing community-based technological interface for the networking process.

The potential of ICT for women in developing countries is highly dependent upon their levels of technical skill and education, and is the principal requirement for accessing knowledge from the global pool. The sophistication of any ICT infrastructure introduced into any environment becomes meaningless if women do not have the skills to operate the system and use it to their best advantage. This implies that the government and the NGOs need to focus on interventions, which lead to skill development and a rise in educational levels among women. It could be done through imparting of technical education on the use of ICT as a part of both formal and informal educational systems and initiating distant-learning and vocational courses on the same.

Further, start-up CD-ROMs could be created for women communities having access to ICT. These start-up kits should contain the elementary tools of website designing, such as website designing manual and designing software, search engine codes, guestbook and counter codes, links to sites providing free web-space, translation/transliteration software, image file compressor software, etc.

ICT offers an unprecedented potential of providing help to local women communities through virtual networks backed by a team of ICT volunteers and professionals working from any part of the globe. Virtual networks can help build technical capacities of women groups to use ICT to their advantage and can help them get linked with other communities sharing similar interests. These networks could capture institutional learning and knowledge products, and build a database of which ICT models work under such conditions, and later enable sharing of these products with different women groups.

Remote volunteers could bring about a transfer of expertise to these women groups and also facilitate in trouble shooting and sourcing relevant software and codes for their use. The application of information technology in areas such as health,
education, environment and small and micro-enterprises is expected to result in significant benefits to those who have been marginalized by poverty and lack of access to basic services. ICT has become a patent force in transforming social, economic, and political life of women globally to keep them realities. ICT is for everyone and women have to be an equal beneficiary to the advantages offered by the technology, and the products and processes, which emerge from their use. 566

Women will not be able to benefit from knowledge networking processes unless specific ICT-models are created which are targeted to the needs of the local women community. This learning could then be disseminated by creations of startup CD-ROMs or websites that contain information and the necessary software tools for setting up simple ICT-models that women can initiate at the community level.

Fostering corporate partnership in ICT ventures and raising venture capital funds for social development projects become important lines of thought. This could be done through a plethora of ways such as ICT-based advertisement, using existing corporate infrastructure for opening of telecentres, bringing about transfer of technical expertise from corporate to the development sector, etc. A knowledge-sharing model that puts women in greater control over the kind of information they need and produce becomes fundamental to the empowerment for women. The first of these, CEDAW, includes wide ranging provisions for ending gender discrimination. There shall be no distinction in the extent of educational provision for women and men, that there will be equal opportunity for scholarships, for continuing education, literacy, sports and physical education and that stereotyping in curricula shall be eliminated. Further, it recognizes that special and unequal resources allocation, introduced for the express purpose of ending inequality is not in itself discriminatory provided that such special measures are ended once equality has been achieved. 567

For an all encompassing knowledge networking which empowers the women, the governmental and international agencies need to follow an innovative approach to ICT-based knowledge networking supplemented by start-up and capacity-building

support, and making full use of available technologies in the simplest ways. Incubator initiatives therefore need to be launched for the creation of dynamic, result-oriented ICT modes which focus on social benefits rather than individual profits.

In 1995, UNESCO's *Beijing Declaration and Platform for Action* (PfA), adopted by the Fourth World Conference on Women, drew attention to the emerging global communications network and its impact on public policies, and private attitudes and behaviour. It called for the empowerment of women through enhancing their skills, knowledge, access to and use of information technologies. The twenty-third special session of the General Assembly, held in June 2000 to review progress made in implementation of the Platform for Action, recognized the increased opportunities created by *information and communication technologies* (ICT) for women to contribute to knowledge sharing, networking and electronic commerce activities. It also noted that poverty, lack of access and opportunities, illiteracy, including computer illiteracy, and language barriers prevented some women from using ICT, including the internet.

ICT can indeed become a tool for the promotion of gender equality. As the potential of ICT for development has now become a focus of attention, this is the most opportune time for clarifying the gender perspectives in ICT so that such perspectives can be integrated from the outset into all aspects of this new sector. The *Commission on the Status of Women*, as part of its multi-year programme of work for 2002-2006, will consider the topic “Participation and access of women to the media, and information and communication technologies and their impact on and use as an instrument for the advancement and empowerment of women” as a priority theme at its session in 2003. This will be the first time that the Commission will give in-depth consideration to the question of ICT and the empowerment of women.

While some organizations have recognized the importance of gender in ICT, this has not resulted in the inclusion of gender concerns on the policy agenda. While ICT policy tends to focus on technology, it must also consider the social and economic impact of ICT; which is by its very nature gendered. It is clear that, because ICT and technology in general are not gender-neutral, ICT policy and projects must integrate gender perspectives. The case for gender analysis and gender perspectives in ICT is greatly hampered by the current lack of sex desegregated statistics and indicators. In 1993, representatives from the world's nine most populous countries, Bangladesh Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan
came together at the E-9 Education Summit. These countries which account for more than half of the world’s population and 70 percent of its illiterates, pledged to achieve universal primary education by 2000.  

ICTs have been extensively used as a networking and advocacy tool. The goal is to enhance interaction with, and influence, government institutions and ICT, and provide a powerful tool to strengthen women’s capacity to participate in civil society and the public sphere in general. ICT is an instrument for enhancing women’s capabilities. Education and training are key areas where ICTs have a twofold role: on the one hand, they are used as a tool to improve and facilitate education, including access to education. On the other hand, education and training in ICT and its related fields are crucial to ensure that women can take advantage of career opportunities in this field and use ICT effectively to enhance their capabilities for personal use, as producers and consumers of ICT. Despite the benefits women and girls can accrue from enhanced ICT capabilities and training, it is important to be aware of some pitfalls:

(a) The tendency to use training in ICT as a means to perpetuate traditional roles rather than creating empowering opportunities for women;
(b) The tendency to equate ICT mastery with masculinity;
(c) The tendency to cluster ICT-trained women in lower-paying technology-related jobs e.g., telephone and call centre operators, data entry clerks;
(d) The tendency to train women to fulfill specific business demands such as ICT training to complement other activities instead of providing educational opportunities that lead to strong technical capabilities and related career opportunities e.g., support for women in science and technology, such as ICT engineering and policy areas; and
(e) The tendency to provide additional training and learning mechanisms as added burden on women’s time the problems of the “Third Shift”, With respect to early education, the extent to which ICT add pedagogical value to education is still unclear.

At present, most ICT programmes fail to address gender concerns. ICT training for workers in the formal or informal sectors and for unemployed women can provide not

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only with a tool to enhance their capabilities, but also with the means to develop new work and business opportunities. Such programmes also ensure that women have opportunities to develop necessary skills to use ICT for their own advancement and empowerment. The “information revolution” and information flow have become the distinguishing features of the modern age. The role of information is important as a raw material for development. Information on all walks of life should be transmitted to everybody by a systematic process of communication. Therefore ICT is equally important to educate people particularly women folk who would also begin to share as well as care for social change.\(^{569}\)

Several programmes and initiatives have demonstrated how ICTs are an instrument for women’s economic empowerment, such as the *Grameen Phones Programme* in Bangladesh, the Development through Radio Programme in Zimbabwe, and the deployment of competitive wireless options in Bolivia and Dominican Republic, particularly for women in the informal sector. Notwithstanding these solutions, availability and access to the necessary facilities remain major concerns.

When properly planned, this kind of access strategy not only takes advantage of affordable technologies but can also resolve such issues as location, availability of funds or special service tariffs, the development and training needs of the community it serves, and the gender dimensions and constraints associated with each type, and use of technology. Another way of providing access to ICT can be by using a business case scenario, that is, a scenario where any type of access point be managed as a fully sustainable business enterprise.

### 4.12 ICT and Gender Equality

The ICT revolution opens vast new opportunities for economic growth and social development but also poses challenges and risks. While bringing important economic and social benefits, it can at the same time further widen disparities between and within countries. In considering the impact of ICT on the creation of a

global knowledge-based economy, it is worth noting that the majority of the world’s population still lives in poverty and remains untouched by the ICT revolution. The emerging new economy, characterized by a rapidly increasing reliance on value creation through information and knowledge, remains heavily concentrated in the developed countries. Unless access to and use of ICT is broadened, the majority of people, particularly those living in developing countries, will not enjoy the benefits of the information revolution that is transforming the way that production is organized and information is shared around the world. ICTs provide unique opportunities for economic growth and human development.

They can shape and enhance a wide range of development applications from electronic commerce to access to financial markets; from generating employment to providing opportunities for investment to entrepreneurs, in particular small and medium-sized enterprises; from improved agricultural and manufacturing productivity to the empowerment of all-sections of society; from long-distance education to telemedicine, from environmental management and monitoring to prevention and management of disasters.

ICTs comprise a complex and heterogeneous set of goods, applications and services used to produce, distribute process and transform information. The ICT sector consists of segments as diverse as telecommunications, television and radio broadcasting, computer hardware and software, computer services and electronic media, e.g., the internet, electronic mail, electronic commerce and computer games as well as the content of these media to help foster sustainable development empower people women and men, the young and old, build capacities and skills, assist small- and medium-sized enterprises, reduce poverty, and enhance participation and informed decision-making at all levels which is enormous. The “information revolution” and information flow have become the distinguishing features of the modern age. The role of information is important as a raw material for development. Information on all walks of life should be transmitted to everybody by a systematic process of communication. Therefore ICT is equally important to educate people

particularly women folk who would also begin to share as well as care for social change.\textsuperscript{571}

The promotion of ICT should not be a substitute for the efforts to ensure the development and modernization of basic sectors of the economy but should complement and enhance these efforts. ICTs are far more than a sector. They are a phenomenon reshaping the nature of global economic, social and political life. It is the centrality and importance of this phenomenon that mandates that women and men have equal opportunities to shape, access, use and master it.

While women in several OECD countries have achieved, their numbers are few in developing countries. The presence of women in the ICT arena does not guarantee attention to gender issues. All factors in ICT have the responsibility and capacity to ensure attention to gender equality concerns in the use and impact of ICT. ICTs are not gender neutral. Like any other technology, they are socially constructed, and impact men and women differently. Globally, there are substantial differences between women and men in access to and impact of ICT.

Global patterns of inequality between women and men, as reflected in women's political participation and their representation in decision-making structures; differences in women's and men's economic opportunities, access to resources, and division of labour within the economy; women's over-representation among the poor; their higher levels of illiteracy; the persistence of stereotypical attitudes about women's roles and of discriminatory laws and practices, are among the factors that also shape women's capacity of access to and use of ICT.

Applying a gender perspective to ICT means assessing the implications for women and men of policies, programmes and projects to ascertain how opportunities, benefits and risks accrued to women and men differentially based on their socially constructed roles. Focus on the gender dimensions of ICT is essential not only to prevent adverse impact of the digital revolution on gender equality or perpetuation of existing inequalities and discrimination, but also to enhance women's equitable access to the benefits of ICT and to ensure that ICT can become a central tool for women's empowerment and the promotion of gender equality.

Policies, programmes and projects need to ensure that gender differences and inequalities in ICT access and use are fully addressed so that ICTs actively promote gender equality, and ensure that gender-based disadvantages are not created or perpetuated. Such a perspective should enable the reduction, if not elimination, of the gender divide in the digital divide. ICTs facilitate new techniques of presentation because of the flexibility and interactivity of the medium and the possibility of adapting it to the social context. The most powerful countries will control the educational agenda of the world. With corporate controlled education, the security of the educational institution will disappear as it losses out to big merger deals and high stakes investment.  

Without explicit attention to gender-based inequalities, men and women will not have equal opportunities to enter the information age. Without explicit gender analysis and incorporation of the results into policy, programmes and projects, it is unlikely that the results will have positive impact on women. The benefits of ICT may bypass women even if their countries develop adequate information infrastructure and service delivery.

Making ICT policy gender-sensitive is an area of great importance in securing the benefits of the information age for girls and women. Gender concerns and objectives need to be articulated in ICT policy; otherwise it is unlikely that girls and women will reap the benefits of the information society. Furthermore, the increasing gender digital divide within and among countries warrants urgent attention and commitment to gender equality in ICT.

Unless governments and decision-makers pay explicit attention to gender in ICT policy, gender issues will not be considered in implementation. Neither does the existence of a gender equality policy per se obviate the need to spell out gender issues in every sectoral policy. Therefore, it is of the utmost importance to create an enabling environment for the use of ICT as an instrument for the advancement and empowerment of women.

Such environment includes, among other things, national policies on gender equality as well as sectoral policies that include gender equality objectives. Specifically, this enabling environment should facilitate and lead to:

(a) Inclusion of gender equality and development goals in ICT policy;
(b) ICT policies that reflect gender perspectives and recognize that technology policy is not gender neutral;
(c) Policies that result in change towards equal gender relations;
(d) Policies that recognize the diversity of women and their roles as producers and consumers of ICT;
(e) Policies that address differential impact of ICT on women and men, and consequently respond to the different development needs and priorities of women throughout the lifecycle;
(f) Adaptation of technologies to the needs and realities of women;
(g) The reaffirmation of the right to information, as contained in Article 19 of the Universal Declaration of Human Rights; 573
(h) The acceptance of communication as a right and a public good;
(i) The creation of universal opportunity to access ICT through ICT education, training and information.

Government services 574 remain outside the purview of GATS provided they are not meant for commercial purpose and do not have competition from private service suppliers. Therefore education also come under the preview of GATS trade liberalization, since many institutes, colleges, high schools and coaching classes operating in private sector in India. 575

To create an enabling environment, ICT policy processes must integrate gender analysis at all stages of their development, the initial design to implementation, monitoring and evaluation. This requires an analysis of the current status of and men’s participation in, and use of, ICT, including a comprehensive

573 Everyone has the right to freedom of opinion and expression, his right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.
574 As per Article 1.3 of GATS.
analysis of sex desegregated statistics and indicators and policy responses that target gender-based differences and inequalities.

There are enormous opportunities for women in ICT:
(a) as users of technology,
(b) participants in civil society,
(c) producers and consumers of ICT,
(d) the decision-makers, and,
(e) advocates in ICT, to work towards building an environment where those opportunities are realized.

Policy makers have the responsibility to, among other things; ensure that affordable universal access to ICT in all areas of the developing world becomes a reality, rather than being a utopian dream. It is clear that ICT can have a crucial role in development efforts but the opportunity will be missed if women are not provided the tools and skills to effectively participate in their countries’ development efforts.

There are great challenges in creating an enabling environment for gender equality in ICT; however, there remain challenges to be overcome in this area. They include:

Most national ICT policies are generally silent on gender issues and do not address gender equality goals. It is therefore vital to convince policy makers in the ICT area on the benefits of integrating gender equality in ICT policies.

Gender advocates need to undertake self-education in gender analysis of ICT and become actively involved in national ICT policy making. There is little awareness and knowledge about the significance of ICT for development as well as the gender dimensions of ICT. There is a need to build constituencies for gender equality in ICT development within civil society and government, especially within national machineries for the advancement of women and government bodies involved in all aspects of ICT.

In developed countries, globalization has not been distributed equally across developing regions, but rather has affected Asia first and most heavily, followed by Latin America and the Caribbean as well as Central and Eastern Europe, where political transformation concomitant with globalization leads to increasing poverty. Africa is the region least affected by these changes. Globalization has accelerated the growth of global, networked elite and of an excluded layer that exists in the most developed geographic regions and contains disproportionate number of women. ICTs offer the potential for facilitating a diverse, inclusive globalization, with increased
opportunities for women and other presently excluded, in a more just world. The rise of gender sensibility is one of the distinguishing features of our times for all practical purposes; the concern for gender equity has graduated to the level of a policy objective. More importantly, it has begun to dominate public discourse overshadowing vital concerns for other kinds of inequalities such as caste and classes.576

Women need to know the opportunities that ICT can bring and get beyond the fear of using it. Women need affordable technology to increase access and opportunities. They need to occupy higher-level roles in the information society. Technologies such as wireless and internet combined with more traditional technologies have an important part to play in these efforts. Women are concentrated in end-user, lower-skilled ICT jobs related to word processing and data entry, and make up small percentages of managerial, maintenance and design personnel in networks, operating systems and software.

More women are becoming software programmers but very few are in hardware design. Women comprise the majority of those employed in computer and electronic assembly manufacturing jobs, but the first generation of women workers in ICT industries, first in developed and now in developing countries, are not being trained for new, more advanced jobs. New ICT jobs for women are in the service industries in information processing, banking, insurance, printing and publishing.

The dysfunctional consequences of liberalization and globalization are evident in many developing countries and its indicators are available in India too. Therefore, there is need to understand economic development along with social, cultural, psychological and moral dimensions of development. In other words development has to be given a human base because until and unless we understand poverty and its related problems in a sensitive manner there problems in sensitive manner there is no sense of democracy or development.577

However, few women are ICT entrepreneurs and there is a need for appropriate and affordable technologies for women entrepreneurs. Women have not

reached high-level positions in information technology in technical and managerial or at decision-making levels. The concentration of economic power in global multinational firms has not increased leadership opportunities for women. ICTs offer economic opportunities both in salaried employment and entrepreneurship, in the ICT sector itself, and in jobs enabled by ICT in all sectors at all levels. In developing countries there are growing possibilities for outsourced service-sector jobs.

Globally IT-enabled communications businesses offer possibilities of entrepreneurial opportunities for women. The technology inherently makes possible flexibility in time and place that offers great possibilities for women in view of their multiple roles. The sector also gives the possibility for women everywhere, despite their location, of connection to the global economy through e-commerce as producers and distributors of goods and services. For this, women need management capability, trade infrastructure, credit, and an enabling policy environment. It is widely known but worth mentioning that education is of value in itself and is valued for what it can do. Education is desired for itself as it opens up a vast world of opportunities and ideas to the educated persons. It is also of great instrumental value in the process of economic growth and development. Education plays a crucial role in demographic transition; female education, in particular is important in the process of lowering fertility and mortality.578

ICT-enabled information access can break the isolation of rural women, giving them the knowledge to make decisions to improve their economic situation. ICT provides virtual space and linkages that favour small-scale enterprises, where women’s entrepreneurship is more frequently found. While ICTs offer many new opportunities for women, in order to take advantage of them many women have to overcome significant obstacles. Women’s high rates of illiteracy and lack of ICT training prevent them from entering the information economy.

The English-language dominance of ICT in software and in content affects women more, as women globally are less likely than men to know English. Even where women have the necessary skills, persistent cultural constraints, such as

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stereotypical views of the roles of men and women and women’s lack of mobility, remain a barrier to their full participation in the information age.

In developing countries, more women tend to live where infrastructure is poorly distributed or not available at all; such infrastructure imbalances may adversely affect many women, particularly those in poor urban and rural areas, from using the economic opportunities of ICT. The costs of technology and access also present barriers to many women in developing countries using the technology for economic advancement.

The following strategies can bring women into the mainstream of the information age and the information economy:

(A) Increase educational opportunities for women
(a) Provide increased, strategic and focused investment in training for women to enter the ICT sector and take advantage of ICT-driven economic opportunities.
(b) Combine economic literacy and ICT literacy to create opportunities for poor rural and urban women in the new, global economy.
(c) Encourage educated women to acquire ICT skills to increase their economic competitiveness and productivity.

(B) Increase participation of women in the ICT sector
(a), Promote and recruit more women to decision-making positions in regional and international economic policy organizations, as well as in IT firms and ministries.
(b) Mobilize more resources for successful ICT for women’s economic empowerment projects.
(c) Expand women’s participation in the ICT sector and ICT-enhanced enterprises, including by scaling up and sustaining successful pilots, setting up economic-enterprise incubator, and establishing mentoring projects, especially those involving national and regional digital diasporas.

People become gendered partly through their engagements with the technologies in their world. This is a complicated relationship, not simply one of technology acting on people but of people and technologies interacting with each other to produce change in societies, cultures and technologies. Women and men engage with new ICT not from a level playing field but from a position of social and cultural inequality and difference. In the social and cultural arena, the particular opportunities that ICT provides are in education, e-learning, health, e-governance and cultural production.
E-governance offers opportunities for the transformation of governance processes that could be the key to women’s empowerment and the achievement of gender equality. It can also be a key approach to enhancing women’s full and equal participation in public life, particularly for women living in rural or remote areas, or that are otherwise marginalized.

In the field of education, there is a dearth of information, research and codified knowledge on women and the educational use of ICT in education worldwide. Furthermore, continuing restricted access to education, particularly for girls, high teacher-pupil ratios in classrooms, shortage of qualified educators, budgetary cuts in education and limited infrastructure contribute towards a proliferating social crisis in education, especially in the developing world. The *International Conference on Population and Development*, 1994 in Cairo (ICPD), underscored the importance of human rights, female empowerment, autonomy and education and linked these to the development of society as a whole. Participants from 179 countries re-examined the role of population in development and adopted a programme of action calling for the gender gap in primary and secondary education to be closed by 2005.579

The internet-based e-learning in the developed world could undercut the achievements made by women in their participation in higher education in particular, but with women being disadvantaged in ICT access and skills, this limits their participation in e-learning.

One of the most important democratizing aspects of the internet has been the creation of private online spaces including secure online spaces for women, protecting them from harassment and enabling them to enjoy freedom of expression and privacy of communication. Utilizing this aspect of the internet for the development of democracy, particularly in opposing gender discrimination, contributes to overcoming oppression and exploitation. However, government legislation in some countries is threatening privacy and security, and this potentially has a greater impact on women than men.

In India, equal access to education for women and girls will be ensured. Special measures will be taken to eliminate discrimination, universalize education,

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eradicate illiteracy, create a gender-sensitive educational system, increase enrolment and retention rates of girls, and improve the quality of education to facilitate lifelong learning as well as development of occupation/vocation/technical skills by women.

Article 11.1 introduces MFN clause, Article 11.2 allows countries to negotiate exemptions from commitments and those exemptions must be mentioned in the schedule of commitments made.\textsuperscript{580} Article XII. 1 allows countries to take measures to control the balance of payment problems. India does not face a BOP problem at this time.\textsuperscript{581} Moreover Article XIV allows measures to protect public morals, mountain public order and national and fraudulent practices.\textsuperscript{582}

Reducing the gender gap in secondary and higher education would be a focus area. Sectoral time targets in existing policies will be achieved, with a special focus on girls and women, particularly those belonging to weaker sections including the Scheduled Castes/Scheduled Tribes/Other Backward Classes/Minorities. Gender sensitive curricula would be developed at all levels of educational system in order to address sex stereotyping as one of the causes of gender discrimination.

Programmes will be strengthened to bring about a greater involvement of women in science and technology. These will include measures to motivate girls to take up science and technology for higher education and also ensure that development projects with scientific and technical inputs involve women fully. Efforts to develop a scientific temper and awareness will also be stepped up. Special measures would be taken for their training in areas where they have special skills like communication and information technology. Efforts to develop appropriate technologies suited to women’s needs as well as to reduce their drudgery will be given a special focus too.

4.13 Women on the Net

UNESCO encourages the participation of women through the initiation and reinforcement of women’s networks, particularly media networks. An example of UNESCO’s work with media networks is its cooperation with the Society for International Development (SID). Through this programme, UNESCO has been

\textsuperscript{580} Special treatment to student of SAARC.


\textsuperscript{582} Study materials which are not in accordance with the morals and values of the land.
working to strengthen women's use of new communication technologies so as to enable them to challenge and correct the inherent gender biases of cyber-culture.  

The key strategy is too adept the new information technology in an appropriate manner so that it supports the everyday work and lifestyles of women. On the basis of this project, the Special Project: Women Working on the Net was created in 1996, to deal with international communication systems through a multicultural perspective. Elaborated, again in cooperation with SID, this project aims to create dynamic cyberspaces for women on the net, especially those living in developing countries, and women of marginalized groups in the developed ones.

By strengthening women's skills in networking and policymaking, and by encouraging them to use the internet as an empowering space, the project focuses on how men and women approach and perceive the net as a communication tool with immense social and political potential. Its main aim is to facilitate the creation of women's alternative communication to counteract discrimination and stereotyping, promote gender equality, and help NGOs and advocacy groups defend women's rights. Within the context of the project, UNESCO and SID produced the booklet, An International Annotated Guide of Women Working on the Net, to sensitize women on the role and impact of information and communication technologies (ICT) from a cultural local and gender sensitive perspective.

The project aims to assess women's participation in ICTs from a specifically cultural/local environment perspective. As such, its was designed not just to focus on the so-called electronic “support” tools, i.e., e-mail, internet, fax and phone facilities, and connectivity issues, but also on how women shape the contents of their electronic interactions from a cultural perspective vis-à-vis men interacting on the net.

In order to help the media promote a more balanced, non-stereotyped portrayal of women in the media, in Jamaica, women from different backgrounds speak on various issues concerning gender and media, with particular emphasis being put on whether there is a link between the violence shown in the media and the violence against women in real life.

As requested in the Toronto and in the Beijing Platforms for Action, and in conformity with UNESCO 28 C/Res. 4.7, UNESCO has been playing a catalytic role.

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583 Sharma, Usha, Social Empowerment through the use of ICT, Women Empowerment through Information Technology, AuthorPress, Delhi, 2003 at 89-95.
and facilitating role in the development of a global network of women and men journalists and media practitioners that are committed to gender equality in the media, in all its aspects and at all levels, including the decision-making and management ones. This network, known as WOMMED/ FEMMED, encourages greater freedom of expression for women and a more balanced access for them to decision-making in the media.

The network has been developing particularly fast in Africa (with core action in Senegal) and, more recently, as part of the Asia-Pacific Women's Information Network (APWIN) initiated by the Sookmyung Women's University in Seoul, South Korea. The APWIN Centre, established in 1996, and being in charge of the UNESCO Chair on Communication Technology for Women, and is in the process of developing comprehensive cyber-information service systems for the Asia-Pacific region, in addition to providing educational programmes for women-related information technologies and communication technology services such as electronic mail, cyber classroom and teleconferencing.

Similarly, in the Central Asia region, women media professionals of Kazakhstan, Kyrgyzstan Tajikistan, Turkmenistan and Uzbekistan are connected through the Women in Media Network of Central Asia (WIMNCA) which helps them organize training activities, acquire equipment and other. The network focuses on issues such as women's health and reproductive rights, education, environmental issues and economic activities.

Women journalists are also being trained to produce awareness-raising television programmes on violence against women, which are also made available as audiovisual learning packages used for training other journalists in gender-sensitive reporting.

Beyond the Women Working on the Net project, UNESCO is also supporting the development, by the International Information Centre and Archives of the Women's Movement, of a database which will be accessible on the internet and which will provide links to women’s information centres all over the world. Thus, women's organizations, researchers, policymakers and the media can find information regarding the status of women in most countries of the world. It further provides tools for linking government policy agendas and civil society concerns and action.

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584 Concerning the implementation of these two Platforms of Action on women in the media.
The international community has made progress in recognizing that the ICT revolution should not proceed as a technologically deterministic law onto itself, but must be shaped by human values. The need to align development in the ICTs arena with human development objectives is now widely accepted. However, to date, these reshaping efforts have been relatively silent on the need to include gender equality and promotion of women's empowerment as central tenets of the transformation effort.

World Trade Organization (WTO) was formally established on 1st January, 1995 by the members nations of GATT, offer the Uruguay Round Negotiations. The WTO is the umbrella Organization responsible for overusing implementation of all agreements that have been negotiated under Uruguay Round or will be negotiated in future. Secondly, it is to provide a forum for further negotiations on matters covered by the agreement as well as on new issues. Thirdly it is responsible for settlement of disputes among member nations.585

In this regard, the ICTs arena trails behind peace and security, education, health, human rights, enterprise promotion, macroeconomic reform and trade, where there is acceptance that there can be no meaningful progress, without consideration of gender equality and women's empowerment. There is an urgent need to fill the "gender equality in the ICTs arena" conceptual gap and to develop effective strategies that can encourage concerted action. These steps are needed to ensure that women secure access to the potential benefits of the information and communication technologies (ICTs) and to minimize potential disbenefits associated with the ICT revolution.

ICTs cannot fulfill their potential for use as a tool for gender equality, women's empowerment and human development unless decision-making and participation in the ICT sector undergo fundamental change. Growth in the ICTs arena must become embedded in a set of efforts to promote human development rather than remaining an end in itself. Without a link to human development, ICTs will remain a technological sideshow, the applications and services will continue to be the playthings of the global elite, and the digital divide statistics will continue to be

585 Analil, Stephen. *Globalization of Higher Education and Developing Countries*, Development Agenda of Third World Countries under the WTO Regime, Serials Publications New Delhi, 2005a at 5810 vol. 2.
alarming. Social Justice as distinguished from economic justice has a special
significance in the context of Indian society.  

Positive human values and aspirations such as equity, equality, and justice
must be integrated into the ICTs arena. Without these ethical considerations, the ICT
revolution will remain shallow and unconnected to the central development problems
of poverty, insecurity, disease and growing inequality. Without concerted action, ICT
infrastructure and applications will continue to enjoy unprecedented diffusion rates;
but will only provide benefits to the rich and privileged. The poor will remain shutting
out and excluded. The promotion of a human development-based ICT revolution will
require a much broader set of means to achieve ICT sector development, rather than
the limited reliance on market mediated tools of liberalization, privatization and
deregulation.

Expansion of ICT services and applications to all citizens rather than only to
consumers who can pay market determined prices will require creativity and
inventiveness on the part of all actors. Non-market mechanisms will be a necessary
element of any pro-development ICT strategy.

Transformation of the ICTs arena should include a range of focused and
strategic actions that are accelerating full and meaningful participation of women in
the ICT sector in a manner that promotes gender equality, furthers the empowerment
of women and advances overall human development. Although it is expected that the
strategies used to transform the ICTs arena will vary according to context,
environment aid type of factors involved, it is argued that greater collaboration among
factors and sharing of information knowledge and expertise is likely to produce
beneficial impact on the timeliness of achievement of objectives. Literacy and
education play crucial roles in the social and political life of the nation and are viewed
as factors eminently suited to bring about social change, economic growth, political
development and modernization in a given society. Literacy is considered as one of
the Key indicators of human resource development. Literacy could be considered as
both cause and effect of development.  

587Rahi, A.L. Literacy for the Oppressed, Education and Adult Literacy, in Davendra Thakur and D.N.
The definition of the term "ICTs arena" is used here in an all encompassing sense to include ICT production units, ICT services and applications telecommunications, information technology services such as software, multimedia, e-commerce, etc, ICT equipment, ICT policy and regulatory bodies operating at national, regional and international level as well as technical bodies involved in setting technical and industry standards for the ICT infrastructure and services.

Further, the ICTs arena is defined to include both intermediate and final goods and services. This comprehensive definition is important because it recognizes that ICT infrastructure, services and applications are often integrated into the value-chains of production and consumption of other sectors. For example, ICTs are used as intermediates or inputs in the production of other goods by the manufacturing sector and as the means for delivering services such as news, entertainment, education and training, etc. As a result of this sprawling nature it is often difficult to measure the boundaries of the sector and to identify decision makers.

It is acknowledged that the majority of ICT infrastructure, services and applications are designed and produced by private sector companies, universities and research institutions. It is noted that the deployment of ICTs however involves a much larger set of actors. For example, public sector decision makers set the rules and monitor operations of companies, and private citizens are employed by ICT companies, and also consume and use ICT equipment, services and applications in their daily lives.

The interaction of profit motivated companies, citizens using ICT services, consumers buying ICT equipment, services and applications and public sector institutions carrying out oversight makes for a complex terrain. This complexity means that when designing a strategic approach, it is necessary to be mindful that variation in context is centrally important. Various dimensions of social cultural change in any society can be understood in light of the level of literacy and education. Education is the single most determinant of long term economic growth of a nation.

The ICT arena is acknowledged to be technologically-intensive in which decision making about ICT infrastructure, services, policies and regulations requires a minimum level of familiarity with computer, telecommunications and information

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technologies. Meaningful participation as a producer or competent user is assumed to require additional competence, increased knowledge and deeper understanding of the underlying technologies.

There is an explicit focus on identifying and explaining the ways in which the ICTs arena is gendered and devising strategies to change gender relations that are disadvantageous for women. It is assumed that women’s meaningful participation in the ICTs’ arena as producers, employees, consumers or users, is influenced by gender relations. The process of unearthing the gendered nature of the ICTs arena, influencing gender relations and reducing inequality is explicitly deemed to be a political process involving conflict, bargaining and negotiation over change and transformation of power relations as well as access to resources. It is expected that change agents will meet with resistance and will have to devise strategies to overcome resistance.

Rural women’s illiteracy and lack of formal education was not an impediment to local knowledge-based empowerment. But as they operate today information and communication technologies centred information development and dissemination process pose certain threats to empowerment. Yet, it can be argued as tools for processing and disseminating information, the ICTs also present possibilities to integrate rural women’s knowledge and information needs to expand women’s knowledge-based choices. The World Trade Organization (WTO) came into being as the final outcome of the Uruguay Round of Multilateral Trade Negotiations. The basic intention of the formation of the WTO is to create an international environment that facilitate the free flow of goods and services across the borders of member countries so as to achieve trade without any sort of restrictions or discrimination, increase in market access, promotion of competition and to encourage economic development.589

In the nexus of empowerment through knowledge, proper application of ICTs could close the knowledge divide among the traditional and local systems of knowledge and the modern and external knowledge system and foster connectivity between rural and rural population.

Though there are technological solutions to improve connectivity of rural people for sharing ‘state-of-art information, the political will, rural divide, rural

589 Analil, Stephen. Preface, Development Agenda of Third World Countries under the WTO Regime, Serials Publication, New Delhi, 2005 at (v).
illiteracy and cost consideration remain as obstacles. The emerging trend in information and communication technologies presents opportunities to improve rural women's participation in information economy and knowledge society.

The potential also exists within the countries to set up information technology-based data management system in the gender mainstreaming machineries and other relevant technical line ministries on the projects and programmes that serve rural women. The IT-based database on rural women's programmes including that of NGOs could lead to efficiency in programme delivery to rural women through improved coordination among diverse agencies and dispersed service delivery.

Inadequate telecommunication and service infrastructure in the rural areas pose constraints for penetration of ICT-based interventions in rural areas. "The opportunities offered by information and communication technologies (ICTs) telephone, radio, video and internet are unevenly distributed. Barely 6 per cent of the world's population is linked to the internet, and many people on the planet have never made a telephone call. There is growing disparity between those who have access to information and those who do not. The latter are the majority, and most of them live in rural areas of developing countries."

In addition, language used in ICTs applications continues to be predominantly western and rural communities face language barriers in using these applications. In many developing countries where women are illiterate without the ability to use formal reading skills, these applications become useless. Equally important is the content relevance of the ICT based communication and programmes. Most are not directly relevant to the situation of rural women and address their resource and technical information needs. In progress if technological research is to overcome these barriers these could be affordable and available to rural women. As education belongs to the service sector it was included in the General Agreement on Trade in Services (GATS) in the WTO agreement. It defines trade in services in terms of for modes of delivery: (a) Cross border supply of services, (b) Movement of the Consumer to the country of supplier, (c) Movement of the supplier to the country of consumer, and (d)
temporary movement of natural persons employed by the supplier to the country of
the consumer. 590

The internet connectivity in developing countries is limited. In such IT
resource-poor environment, rural women’s share is negligible or non-existent.
Economic affordability of information technologies among rural population is a major
concern in adopting IT-based interventions in rural communities. Though the prices
are falling in IT technology, it should be recognized they are not within the income
range of most people in developing countries, even among the urban population.

Gender specific constraints to access and use ICTs for social and economic
participation among rural women have many facets. The first and foremost
impediment is rural women’s lack of formal education and thus limited skills to
operate information technology and use IT-based systems. In almost all-global
regions rural female literacy is far less than rural male literacy gains.

The social conditioning or gender role socialization is such that creates
inherent technology fear among women in general and rural women are no exception.
The assumption that men are more technology-oriented as compared to women could
operate in capacity building for accessing and using IT technologies. Investment in
rural female education is limited and such asymmetry is carried out to capacity
building in the ICTs use and application in rural communities. Though India has also
benefited from globalization, thanks to its advances in IT. However, it has yet to
deviser a well thought out long term policy of coping with the challenge of
globalization to enhance its capability of self reliance. It is time that policy makers,
planners and social scientists in India awaken to the challenge of globalization. 591

Even public access to ICT centres such as cyber-cafes and telecentres could
present user constraints to rural women due to lack of economic means, capacity and
physical access to these group centres. The very social and transport barriers
manifested as lack of mobility in reaching training centres, would pose problems in

590 Analil, Stephen. Globalization of Higher Education and Developing Countries, Development
Agenda of Third World Countries under the WTO Regime, Serials Publications New Delhi, 2005 vol.
II at 585.

591 Sharma, S.L. Globalization and its socio-cultural Discontents,Surya Kant, Nina Singh, Jagadish
Singh, A.B. Mukerji (Edited) Reinventing Regional Development of Rawat Publications, Jaipur and
New Delhi, 2004 at 66.
reaching cyber cafes and telecentres. In short, information and communication technologies can be an effective instrument for increasing choices for rural women, for multifaceted empowerment. The ICTs can be effective tools to expand the knowledge among rural women and that can enhance their abilities to negotiate for their resource share and participation. But it would be important to review the potential for ICTs in two broad approaches, namely, their application directed to rural women as primary users of this technology and their application directed to improve the quality of life in rural communities that would assist rural women to improve their lives.

Despite the fact that the internet may provide more comprehensive information on a particular topic, it may very well be that a radio programme or video produced in the local language will be more effective in the short run in disseminating requested information for women in a rural area. These types of solutions may be accompanied by discussions groups, where women can exchange ideas and share concerns. ICT advocates and practitioners must be aware of the gender dimension and constraints associated with each type of technology. It is responsibility to make technology work for the people and in many cases that requires a gradual transformation in the use of ICT themselves.

Globalization refers to the phenomenon that emerged in the 1970's involving the spatial reorganization of production, movement of industries across borders, and spread of financial markets that resulted in flexible production methods and integration of production into global commodity and production chains. In many countries women became the preferred candidates for certain jobs needed in a global economy. These ranged from manufacturing, where they were regarded as nimble, docile, and more able than men to perform repetitive tasks, to services.

From the 1970s on, an unprecedented number of women workers from developing countries entered both-the formal and informal labour force to service the global economy, with the phenomenon coming to be known as feminization of labour. The phenomenon was most marked in Asia, but affected much of Latin America a well. In general, globalization has not changed gender divisions of labour. The least skilled levels of work with the lowest remuneration continue to be assigned to women following nearly universal gender divisions of labour and patterns of work organization.
For poor women, existing inequalities and insecurities have intensified. Some unskilled women have lost their livelihoods as alternate sources produced the goods cheaper and faster. For some women workers, it has meant a loss of rights, benefits, and job security. For others, particularly those educated and with skills, it has meant new opportunities and better paying employment. Globalization has also meant out migration for many women from developing countries.

In developed countries, most of the literature on the impact of information technology on gender and work deals with the association of men with technology and power. In developing countries, women are looking at the issue not only in terms of gender relations with the men in their society, but also at western dominance over innovation and as the source of technology. The new technologies are not appropriate for women because they are imported. However, this position seems to be head-in-the-sand.

Information technology is no more foreign than air travel or electricity. The technologies are there and will not be displaced. It is more appropriate and effective for women to devise ways of dealing with them to improve the situation of women than to reject them for being foreign.

In the first phase of global migration of manufacturing to Asia in the 1970s, the IT-related jobs were labour intensive, assembly line jobs largely involving the assembly of electronics. Women’s wages in these jobs were low; hours were long and working conditions harsh. In the last 15 years, the pattern has changed. Information technology has become the driving force behind the new phase of globalization, which began in the 1980s. Employment in information technology in manufacturing has changed from making information technology to using information technology in nearly every manufacturing industry. Globalize manufacturing still demands cheap labour but with greater technical and cognitive skills than in the first phase of industrialization in developing countries.

In the move to the knowledge economy, computer literate skilled technicians and engineers are needed; nimble fingers have become largely redundant. Information technology and the concomitant changing skill requirements are decreasing the number of women in industrial jobs, in developing countries particularly in Asia. While there has been a fair level of interest to encourage international trade in most services, some hesitation has been seemed in the case of education services. For in most nations of the world education is treated more as a social issue. Hence
corporatization of education has yet to find favour with many. With the WTO’s mandate to relaunch negotiation on trade in services, there is increased cause for concern of public education. 592

It becomes necessary for women to expand their knowledge and skills to take advantage of these new economic opportunities. The internet can make learning easier. Distance learning, lifelong education, community learning and informal information networking contribute to the capacity of women to use the internet to enhance knowledge and skills. Distance courses that incorporate an online component and include group discussions and online projects have transformed distance education into a more complete educational experience.

On the other hand, expectations on teachers have meant that workloads have increased: Teaching online is very time consuming and now there is an immediate expectation for instant answering and instant feedback. Expectations of the learner and the facilitator are changing. Women are using the internet for learning. Online directories can help with finding courses, and many courses are now offered by distance learning, making it more possible for women to take courses without having to relocate close to the institution, and to take courses at times convenient to them. As per Nobel Laureate Amartya Sen, that globalization could be a major force for prosperity only if it was backed by adequate national polices in a conducive social and economic environment. He stressed that he was not against globalization and said countries threatened by it were those where human development was very low. “There are major gains to be made in globalization. So I am pro-globalization,” he said, but he added, if a country has globalization at the highest possible spread and pays to attention to lack of social opportunity, illiteracy and lack of health care, it was creating problems for itself. 593

Participating online requires basic computer skills, and once online there are many guides to learning more about internet tools and facilities. Informally, women are networking and providing resources which may be enabling women in specific

situations, e.g., health-related or living in violent relationships, to take steps towards greater control in their lives. Yet, the learning needed to keep up with the new online possibilities requires additional time, and it has been suggested that this is a ‘third shift’ for women.

Unless women are supported and resourced to take up the new learning opportunities, the skills required by new technologies sit as an additional burden to women’s existing workload, which often makes it impossible for women to take them up. There may also be care giving opportunities through online technology which, in the coming years, may add to women’s workload. Broadband access is available in the cities. A fast connection opens up many opportunities, such as in health. Globalization has also hurt the cause of gender justice. The available evidence indicates that it has led to increase in women’s unemployment rate.594

The present implementation of a knowledge society is allowing the inequities of racism and sexism to be repeated and embedded into the future. The internet is a powerful tool, and then distributing it within existing power structures can only result in further inequality. Policy decisions need, to take better account those who are becoming marginalized by communications technology, by including those who will be affected by the policy-making process. If inequities are to be overcome, there need to be socially sensitive programmes, which are analyzed to ensure the participation of marginalized groups. The most effective way for these to occur will be from the ground up, rather than being top down.

A strategy to increase the online capacity of women’s organizations needs to recognize that organizations generally go through phases in their use of the internet communicating via e-mail, searching for information on the net, establishing a web presence by creating a website. Some organizations quickly move to including interactive dialogue on their sites while others remain at the website stage for a long period of time. There is need for support in the use of the internet as:

(a) An awareness tool: to promote issues, and support informational resources,
(b) A form of media: to develop ways of getting voices out, extend electronic networking, women’s radio online, communication inter-activities, and

A way to engage in policy issues with the government: to prepare for civic participation, e-democracy, and online consultations.

Measures need to be taken to ensure that women and women’s organizations will be consulted by government on policy issues. At the same time there is a need to facilitate the development of women’s capacity in understanding the technology and in online consultation. Resources are required to assist women’s equality organizations in analyzing the issues in preparation for consultations. Learning how to use the technology is only a part of successful participation. Being informed about the issue, being critical about the issue and being able to articulate ones’ point of view are also essential. Collaboration amongst organizations, sharing information and strategizing together enhanced by online capabilities is important factors in effective participation on policy issues.

Building community online and learning from each other is the key to women’s use of the internet for equality. The mentoring and support offered during this women space online consultation was critical in women’s successful participation with internet tools that were new changing information while learning the technology from their peers.

4.14 Internet Communication

In the broad educational context, the use of Internet software is likely to increase as a channel for communication between learner and teacher. A partial list of desired communications includes:

(a) Free form text messages between lecturer and individual students and vice-versa e-mail software, Eudora.
(b) Messages from lecturer to entire class mailing list software.
(c) Delivery of learning materials and assignments to student when, where and as they need them Telnet, Fetch or Gopher session, or a Web page with links to download files to the students own machine.
(d) Response by student to short structured questions to allow lecturers and students to assess learning achieved forms-based Web pages backed with CCI scripting to extract results.
(e) Text-based commentary between students about the learning resources IRC Chat session or computer conference.
(f) Transfer of image files between students for discussion, together with manipulation of such images visible to many students concurrently whiteboard facility included in many forms of desktop video conferencing.

(g) Submission of assignments by students electronically, together with return of assignments to students by the lecturer e-mail with attached documents.

(h) Synchronous audio communication between a student and students and the lecturer audio-conference equipment, party-line call or Internet Phone.

(i) Asynchronous audio communication between relevant parties' answering machine and audio download from a Web page.

(j) Face-to-face visual communication between a student and students and the lecturer video-conference, desktop video-conference or CUSeeMe call.

Using electronic communications that require reprocessing and involve an educational technician may also slow the process enormously unless the lecturer takes action to minimize delays, preferably by retaining as much control as possible just as the growth of desktop publishing has benefited semiprofessional authors by passing control over the appearance of a work from the printer back to the author and reducing the overall production time, Web publishing and course management tools need to be put into the hands of teachers to retain as much immediate as possible in student-teacher interactions.

4.15 Transformative Strategy

Globalization has become a catch-all term for many different economic, social, political and cultural processes. These processes are reflected in increasing trade, labour and financial flows, technological innovations, as well as the increasing spread of cultural practices; and the harmonization of legal and judicial norms and political and economic systems. During the last decade, many countries have opened their markets to international competition at a pace that is faster than that experienced in increased growth.

Reducing barriers to trade as been promoted under the assumptions that trade will lead to increased productivity, growth and competition, and reduced poverty levels. However, economic restructuring has often led to social polarization. More importantly, there is no convincing evidence that openness systematically reduces poverty or improves the quality of life for the vast majority of women and men in developing countries. In practice, the links between openness and economic growth
tend to be weak, and contingent on the presence of complementary policies and institutions.595

The term 'globalization' masks the fact that the flows in world trade, production and investment have remained highly concentrated, largely within the rich OECD countries and the larger economies within the developing world. Most developing countries, however, have not been integrated into the so-called 'global' economy. Hence, processes of international integration for some countries and regions are happening hand-in-hand with the marginalization of others. Effects of globalization can be countered only by strengthening human rights norms and institutions which protect entitlements of the people such as, right to work, right to food, right to education, right to health, right to environment etc.596

The effects of globalization for women and men, gender relations, poverty reduction, and development are very contradictory and partially dependent on resource endowment infrastructure, labour market Policies, skills and educational levels, socio-cultural norms, and women's and men's positions in the processes of production and reproduction, and the position of the country in question within the global order.

There are several ways in which the forces of globalization affect poverty reduction in general and poverty among women in particular. It was agreed during the meeting that in the context of open capital markets the choices in macro-economic policy making have been narrowed, deflationary and fiscally conservative policies have become the norm throughout the world often without sufficient consideration of national realities. This has imposed a number of constraints on governments seeking to reduce poverty, improve human welfare and enhance gender justice and women's empowerment.

Neverthelese, economic growth is not in it sufficient to achieve eradication of poverty and social and economic rights for women. What matters if the benefits of growth are to be widely share is in part the quality of growth. This includes a more

595 Sharma, Usha. Social Empowerment through the use of ICT, Women Empowerment through Information Technology, AuthorPress, Delhi, 2003, at 131-134.
equal distribution of income, more and better jobs, rising wages, an improved quality of life, reduction of gender inequalities and women's empowerment. Globalization encompasses wide-ranging moves towards trade liberalization, the removal of non-tariff barriers and the leveling of traffic rates, increasing freedom of capital to move across national boundaries, and advances in communication which turns the world into a global market.597

Globalization raises issues of global governance, the regulation of international trade and migratory movement, peace and conflict resolution and other questions that impinge on the capacity of the world system to promote universal human rights and human development. Existing institutions that channel debates and negotiations around these questions are located very far from the position occupied by poor women.

During the period 1980-1994 the gap between girls' enrolments and boys' enrolment at primary level narrowed in developing countries. But there are some important anomalies that stand out. Despite the link between education and income, studies from diverse regional contexts indicate that equal years of education do not translate into equality of job opportunity for men and women. Men everywhere tend to get better jobs than women with similar levels of educations.

Women constitute the greater majority of the poor. Hence, 'the lack of income, food, health, care, education, and opportunities that characterize poverty affect more women than men, and women's efforts to overcome poverty are further constrained by discrimination in access to social and economic resources.' While the forms and levels of empowerment of women are essential within the framework of a gender equal approach to poverty eradication, aiming at the elimination of gender disparity between women and men living in poverty, it is also necessary to contemplate at this point the essential characteristics of policy and institutional contributions to women's empowerment within a more holistic approach to poverty from a gender equal perspective. A globally competitive nation requires the ability, through the mobilization of a range of skills and his development of supporting infrastructure, to generate sustainable growth in output and employment while

remaining exposed to global competition. The quality of the labour force and its education and skills profile are major determinants in realizing this objective.598

With new trends in perceiving development at the academic and practical levels, one can trace that the disenchantment with the modernization theory, the depleted influence of the dependency paradigm, and global is at of the political economy has led to renewed foundations for development analysis and implementation. It is the case however that in a vivid demonstration of “global feminism on the ground” was the myriad preparatory activities around the world for the Fourth World Conference on Women, and of course the participation of numerous women’s NGOs at the conference itself. The Beijing Declaration and Platform for Action may be regarded as the “manifesto” of global feminism.

Today, information technologies within societies as well as across the world have been termed “the digital divide”. It reflects a division between the information “haves” and “have-nots” on many lines that often overlap within countries by race, ethnic group, class, age, region, and gender; between countries; and globally, between those who have access to abundant information resources and those who do not have this access.

Women within developing countries are in the deepest part of the divide, further removed from the information age than are the men whose poverty they share. The gender gap in the digital divide is of increasing concern; if access to and use of these technologies is directly linked to social and economic development, then it is imperative to ensure that women in developing countries understand the significance of these technologies and use them. If not lack of access to information and communication technologies becomes a significant factor in the further marginalization of women from the economic, social, and political mainstream of their countries and of the world. Without full participation in the use of information technology, women are left without the key to participation in the global world of the twenty-first century.

It is essential that gender issues be considered early in the process of the introduction of information technology in developing countries. Despite frequent claims to the contrary, information technology is not gender neutral. Gender needs to be considered at the early stages of the diffusion of IT in order for women to participate fully in their use. It's true that globalization has decreased gender inequality in some cases especially in countries where it led to an unprecedented employment opportunity for women. But there are countless examples where globalization has inconsistent the gender inequality. Gender inequality has aggravated particularly in poverty affected developing countries of sub-Saharan Africa, Latin America and Asia.599

Gender influences factors such as income, time constraints, literacy, education, language, and cultural contexts that affect access to facilities, training, and employment in the information technology area. Seemingly gender neutral, national level decisions about infrastructure can impact gender and affect women's opportunities to use new technologies, including decisions about what systems to put in place, which suppliers of communications services, and where facilities will be located. These aspects of technology choice impact whether women will have equitable access to the new technologies.

At the same time, failing to consider gender issues such as sexual division of labour, cultural definitions of women’s activities, women’s paid and unpaid labour, and women’s multiple roles from the early stages of technology diffusion may unwittingly generate unintended negative effects on women. This happened with the Green Revolution where technology and technological change brought significant costs for rural women. Our higher education system should be commercial in that sense, it can sell and purchase in the market. It should have market values and market value additions. We should follow the global educational standards and norms when restructuring our higher education system. We should not only consider national

599 Bhuimali, Anil and S. Anil Kumar, Introduction overview, Women in the face of Globalization, Serials Publication, New Delhi, 2007 at XI.

In the case of information technology, the potentially adverse impact on gender may be even more pervasive than with the Green Revolution because information technology is a meta-technoJogy that cuts across virtually every economic sector and geographical area. As with all new historical trends the advent of information technology has been accompanied by a tremendous amount of hyperbole about its transforming powers.

Information technology in itself will not bring about an end to poverty or transform the lives of women in developing countries. At the same time, IT can threaten the livelihoods of women, when, as part of economic globalization, it eliminates the jobs they were performing or puts them in new jobs under harsh conditions and with low pay. It can even be a tool of sexual exploitation.

The new information and communication technologies have given us remarkable tools to achieve an enhanced vision of inclusive development strategies. These tools, along with an expanded understanding of the power of knowledge, wisely applied, have the potential to transform our rhetoric into reality, our pilot projects into large scale but locally responsive campaigns.

Overall, there is no correlation within countries between female literacy and women's internet use. Countries with nearly universal female literacy are found both near the upper end of percentage of female users Russia and Estonia with 38 per cent each and near the bottom Slovakia and Lithuania with only 10 and 12 per cent respectively. Nor did internet use by women correlate with percentage of female technical and professional employment.

Countries where women are nearly half or more of this category are found among the high percentages of female users of the internet as well as among the lowest. Nor do countries with a high percentage of female users have a high female GDP Countries with the highest female GDP per capita on the list are in the lowest quadrant Czech Republic among Percentage of women users. Globalization is a reality; one cannot escape its forces. The real choice of governments is not how to
fight globalization but how to manage it. In a way, globalization posits a challenge to the concept of nation state. At the same time, it is the nation states, the practice they adopt, the arrangements they enter into and the safety not that they provide, that will determine whether we exploit or be exploited by globalization which represents the most potential force of this era.\(^6\)

In developing countries elite women are well, represented. As GDP rises, the overall dominance of men in these societies edges the percentage of female users lower. The lack of correlation of women's internet use with expected indicators supports the hypothesis that most women internet users in almost all developing countries are not representative of women in the country as a whole, but rather are presently part of small, educated urban elite.

According to regional statistics, more than 90 per cent of Internet users are in industrialized countries, while 57 per cent are in US and Canada alone. High current growth rates as well as potential are apparent in Asia, particularly in China and India where growth figures for these countries have overtaken those of Japan. The number of Asian internet users is growing by 38 per cent a year and will be 27 per cent of the global internet user population by 2004. Latin America will capture 5.3 per cent, and because of its considerably lower starting point, will show the highest growth rates, with Brazil and Mexico taking the lead. High growth rates are also expected in Russia and other transition economies, in particular in Hungary and Estonia, which are moving forward rapidly.

The uses to which women are putting new information and communication technologies are determined by the extent to which women access the technologies. The situation is very different in developing countries from that of developed countries. In the United States where 46 per cent of homes have internet access and women have become as connected as men, 27 using the computer has become a home activity that can take up many hours of women’s time each week. Women in the US generally use the internet to find information that will make their lives easier as well as improve the quality of life for themselves and their families.

In India all electronic media, ranging from satellite television to e-mail and the internet, are accessibly only to the 'privileged classes and cater almost exclusively to


282
their predominantly information and entertainment needs and desires. In Bangladesh the cost of hooking up to the internet could feed a family for a Year.

In Africa, the majority of women have access to IT only at work. Among users at work, a rough division could be made between those women who use information technology largely as tools of production routine office work, data entry, manufacturing computer industry jobs, programming and related work and those who use IT as tools of communication creating and exchanging information.

The first linkages between gender, information technology, and developing countries began with the work of NGO Net in preparation for the 1992 Earth Summit organized by the United Nations Conference on Environment and Development in Rio de Janeiro. NGONet’s aim was to give women and other groups from developing countries a chance to use electronic communication to express their views to a global development forum. NGONet inspired the creation of the APC Women’s Networking Support Programme (WNSP), which has become the single largest force globally in stimulating the use of information technology on behalf of women’s causes in developing countries.

In Africa, APC is a network of Internet providers consisting of or working closely with non-governmental organizations working on behalf of social justice, with a particular emphasis on women’s rights. Created in 1990, its women’s programme came into existence in 1993, with the impetus of preparing for the Fourth World Conference on Women to be held in Beijing in 1995 and with the rapid development of digitalized information and communication technologies. In globalization, higher education system should have quality, standards in terms of knowledge, skill and competences indifferent fields which can directly create the national wealth.

The women’s programme promotes women’s rights and democratic access to new communications technologies and supports the empowerment of their organizations and networks through the incorporation of computer networking as a tool for coordination, expression and access to information. It also aims to increase women’s visibility in the field of information technology. ICT has been turning point for women in securing timely access to information. The technology offers

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opportunity to cyberspace as a form for shaving knowledge and experience. It has served as a productive tool in coordinating women’s activities at the local and global levels in the past years. 603

E-mail is the major information technology application that women’s organizations and individual women in developing countries use. The predominance of e-mail over other applications is almost universally true among women, given the time constraints that most women face. However, in developing countries much of the choice of applications is conditioned by the amount of available bandwidth and speed of the connections. Where there are good telecommunication infrastructure and fair numbers of women connected, there is more use of the World Wide Web. Where there is not, concentration is on e-mail and electronic discussion groups. One can assume that as infrastructure grows; the particular applications used will evolve as well. However, the infrastructure constraints also mask problems with the World Wide Web in terms of relevance of content. There are immeasurable amounts of content on the web; however, little of it appears to be relevant or useful to women in developing countries.

Women in developing countries raise the issue of women as producers of information technology. Women are few and far between as producers of internet content, programmers, designers, inventors, and fixers of computers. This issue made much concern about women remaining passive consumers of IT rather than producers and lacking the skills and opportunities to attain leadership roles in IT. As the economies of the future are increasingly based around IT, women solely using information technology risk being disenfranchised from positions of power related to IT, and unable to develop IT that address women’s needs, interests, and priorities that the men who design and produce the technology may disregard.

Women’s lower representation in the production and design is a result of reduced access to education, socio-cultural norms discouraging women from studying science and technology, and feminization of the IT jobs that women hold.

While female gender gaps in primary and secondary school enrolment have narrowed in recent years, girls still comprise two-thirds of the school age children in the developing world without access to basic education and girls are much less likely than boys to enroll in mathematics and computer science courses. Female basic education in Central and Eastern Europe, where there are high levels of female adult literacy and primary and secondary school enrolment, is less of a concern. Here the relevant educational obstacle for women is the lack of affordable higher education and training for IT jobs.

The cost of a computer can be 10 times the annual GDP per capita of many LDCs in Africa. In Vietnam, yearly dialup access to the internet costs $360, while the annual per capita income is less than $350. Most women in developing countries also cannot afford to use public access sites. User fees charged for internet access at public venues may not be within reach for women who generally have lesser access than men to resources to pay for fees, and are certainly not within the reach of poor women.

The geographic location of public internet centres also affects women’s access to information technology in developing countries. Women’s mobility is considerably more limited than men’s in most societies. When public internet centres are located in unsafe neighborhoods or at a great distance from residential communities, women are less likely to frequent them. Beyond safety issues, women’s IT access can be inhibited when offered in settings and institutions that women are unlikely to frequent.

Girls’ and women’s ability to access IT is also shaped largely by socio-cultural norms that determine female behaviour and interests. In many culturally conservative societies, women are often not allowed to go without supervision to public venues where men are present. Moreover women may be uncomfortable frequenting a cybercafe with predominantly male users or seeking help from male staff. Cultural norms discourage interaction between women and men outside their family and women may also be unfamiliar and thus uncomfortable with interaction with men, due to sex segregated classrooms or schools, which are common in many Middle Eastern countries.

In most cultures, males are conditioned to be more aggressive than females. These behavioural norms may manifest themselves in interaction with boys and girls or men and women in sharing use of a computer, where boys and men tend to
dominate the computer, edging out girls and women, whether at home, within families, or at a school computer lab or public cyber-cafes.

4.16 Influence of Globalization

Information technology, info highways, information products and services etc. are concepts and realities that have become unavoidable for anyone involved in the issues of development. In tandem with these developments, globalization and worldwide processes of economic change are at work in all sectors of activity throughout the world. The emergence of new information and communication technologies (ICTs), especially those with Internet connections, is a fantastic opportunity that women should seize. Such ICTs are choice tools for development. The Internet itself is likely to become a principal instrument, rather than an accessory of economic and social renewal, Development aid, whether bilateral or multilateral, has in every case been changed profoundly, as one must now take into consideration the new ICTs and the lightning progress the Internet is making throughout the world.604

Education and training for women that focuses on building women's capacities in information and communication technologies for information sharing, community building and enhancing women's skills is critical for women's full participation and leadership in the rapidly developing information society. Access to ICT is particularly difficult for women in poorer and less urbanized areas where telecommunications infrastructure is inadequate. The problem is not only the lack of access to computers, telephones and other resources. It also involves a severe absence of educational, training and application opportunities for women and girls. This will present a serious disadvantage for women's employments as the information economy stress an increasing level of technological literacy. Experience has validated the unparalleled demand for a wide array of training and education programs throughout the region, especially among women. Women's ICT training needs are varied, reflecting the spectrum of women's levels in use, understanding and engagement of ICT. As more and more women use these technologies around the world, the' need for accessible, appropriate and gender sensitive education and training programs is becoming more pronounced. An online learning center is essential to develop & learning training courses in a virtual educational environment being the first step

towards structuring a regional ICT; centre for training of women and their communities.

Experience shows that women who receive training in a village are often better motivated and then more willing to take a course at a centre. Women who wish to have a job or create a micro enterprise would require training in technical competencies or simple management practices. They should receive this type of training in conjunction with training in credit and commercialization procedures, health, environmental protection, and other related subjects.

Governments can render a precious service to women and young girls by encouraging national educational institutions to introduce technical subjects into the school syllabuses subjects such as agriculture, market gardening, livestock rearing, artisanal transformation of agricultural products, elementary accounts, and management. Teachers might use a good portion of the teaching and popularization materials drawn up within such projects, and popularizes might make visits to local schools. The pace of globalization seems to have picked up in recent decades due to improvements in technology, the lowering of barriers to trade and capital flows and the progress made in human development. 605

The new information technologies can considerably widen access to information and communication and advance and accelerate sustainable development. The policy formulation process should reformulate and adapt new approaches in favour of sexual equality to encourage women’s and communities’ total participation in the conception and management of all development initiatives in the ICT sector. This process should also encourage the media to respond more effectively to women’s needs and interests and increase women’s access to S&T information and other relevant knowledge. People should have appropriate, adaptable and widely available ICTs at their disposal, especially ICTs related to women’s information needs. Political reform and the creation of economic alternatives will bring the information and communication era to Africa by dissolving the inequalities and disparities in Africa today.

Because information is power and women constitute more than half of the African population, it is essential to free women’s productive potential by taking specific steps to give them access to information. Information centres should be established in rural towns or areas covering more than one village or commune. Women would meet at these centres to discuss issues, with due consideration being given to their realities, such as poverty, and their needs, such as education, water, health, and appropriate environmental technologies. These centres would enable women not only to resolve their problems by themselves but also to open up to the world and have a larger vision of it. They should develop a sort of drug-like dependency on information. These centres should not only be accessible to women but also reflect their perspectives as much as possible.

4.17 Access to open Distance Learning

In Africa men greatly outnumber women in most distance learning programmes for which statistics were provided, and this is true whether or not ICTs are the delivery medium, and appears to hold for both formal and non-formal training. When it comes to non-formal open distance learning (ODL), the experience in Kenya is probably representative, with learners tending to be men in distance education initiatives such as agricultural extension programmes, and programmes for health field workers, co-operative extension officers and teachers. Women tend to be the majority in adult literacy classes and traditional birth attendants’ health programmes. In Mozambique, the INSET course trains primary in-service teachers using ODL, and 1999 enrolment statistics show more men than women participating in the programme on a ratio of almost two to one. At the University of Zambia, during the five-year period 1994-1998, females comprised 17% of the total enrolment in distance learning. Data from 1999 for the Zimbabwe Open University show that women comprise about one-third of the student population. The report from Tanzania found that institutions do not collect accurate data on gender participation in their ODL programmes, but ‘experience indicates that women are in the minority. Women comprise 17% of the enrolment for four courses at the Kenyatta University Campus of the African Virtual University (AVU) (courses on the Internet, Physics and Calculus). The gender disparity for these AVU courses is greater than the

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overall participation rate of women in the Faculty of Science, which is 23%. Female enrolment for the AVU at the Uganda Polytechnic at Kyambogo was 36% in 2000.

In the Commonwealth Asian countries most of the ODL enrolment figures cited was much closer to parity between male and female students, with the exception being those presented for India. In Sri Lanka, no gender disparity in women's enrolment in schools and tertiary educational institutions, and no apparent difference in trends between conventional universities and ODL institutions. Women represent 60% of the students following external degree programmes. In Malaysia 46% of the students at the Institute for Distance Education at University Putra Malaysia are women I, and in Pakistan, 43% of AIOU students are women. However, in India, the enrolment of women in *Indira Gandhi National Open University* (IGNOU) was 28.4% in 1998. Women are capable of achieving excellence in any field they pursue. Therefore to make women contribute effectively to national development they must be sufficiently equipped to participate fully by receiving a quality education to stimulate their creatively.607

The University of the South Pacific is the largest provider of ODL courses in the region with a total of 4,204 enrolments in 2000, within which 48% were women. However, (here is variation among the USP campuses in the various countries. In the Solomon Islands, 25.5% of the USP students are female, in Vanuatu the figure is 35% and in Tuvalu and Kiribati about 60% are female.

Illiteracy was raised as the major barrier to women's education for most Commonwealth African and Asian countries. In most sub-Saharan African countries, about 70% of adult women are illiterate with similar figures for those Asian countries that cited data. A study from Malaysia said, without basic literacy, there is no access to more and higher education, much less to ICTs. The challenge of illiteracy must be overcome before women can benefit from ICTs. In the South Pacific the issue of illiteracy was mainly raised for women in the rural areas and outer islands. In the Caribbean, female illiteracy was not viewed as a gender-based barrier. Poverty and

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lack of economic power is borne much more by women than by men, especially as reported in the African and Asian research. As a result, women have much less access to disposable income for expenditures related to education. As the report from Zambia described the problem, Women are generally not engaged in their own economic activities and very few women have money. In many cases, their husbands bar them from making money. Since they need consent from husbands to obtain loans, some women may have no access to lending institutions.

All the regions referred above lay bare the fact that women have less time to learn because of heavy domestic chores. The Tuvalu report explained that women's family and household commitments make it hard to access education. In Kenya, a programme called Regional Reach provides rural populations with information in local languages through community screening of videotapes focusing on current social problems. Women viewers comprise only about 16% of the audience during the week, due to their household chores and responsibilities. Both the reports from Malaysia and Nauru pointed out that woman remain the primary caretakers of the children, even though more of them are now in the workplace. Women are showing interest in taking advantage of ICT in all spheres of life, thus confirming that ICT a tool to enhance the economic, political and social empowerment of women and promote gender equality. At the same time a "gender divide" within the digital divide is of women users of ICT, compared to men. It is thus essential to focus on the gender dimensions of the digital divide, not only to prevent adverse impact of the digital revolution on gender equality and to the benefits of ICT, but also to ensure that ICT can become a central tool for women's empowerment and the promotion of gender equality.608

The Asia reports also talked about a similar lack of equipment for the ODL. In Bangladesh, the Bangladesh Open University has to limit its use of radio, television and audio/ videocassettes because of lack of appropriate equipment at the grassroots level and lack of infrastructure needed for widespread dissemination. In Sri Lanka, an attempt was made to solve the lack of equipment through the use of study centres, but even access to the equipment in the study centres remained a problem for women because of a combination of factors difficulty reaching the centre, lack of time and socio-cultural barriers.

608 Ibid at 508.
In Barbados, Programme EduTech 2000 aims ‘to equip all primary and secondary schools with JETs over a seven-year period’. As well, working women are able to upgrade their IT skills through centres located across the island. Lack of access to a communications infrastructure that allows for the use of the new ICTs in ODL is a problem, at some level, for all countries. The issue was most often emphasized by the African countries with the problem being most severe in rural areas.

4.18 Educating Rural Women: Role of ICTs

4.18.1 Trends in Bangladesh

Bangladesh is a small but densely populated country. Being a poor country its rural economy has been under enormous pressure owing to its rising population. Gender disparity is common. In spite of so many constraints, Bangladesh is distinct from similar countries by its linguistic ethnic and cultural homogeneity and political stability. The total population, as of 1993, has 115 million and, of this, 55 million are women, of whom nearly 86% live in rural areas.\textsuperscript{609}

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. 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. 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. Since a large number of children are not enrolled or are dropouts, some non-government organizations (NGOs) have pioneered systems of non-formal primary education, designed to reach those children who are outside the government school system. 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.

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, formal and non-formal. These programmes are aimed at everyone, particularly working people and women and those socially disadvantaged groups who cannot enroll in traditional universities.

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 grassroot level and infrastructure needed for widespread dissemination. Most of the existing, telecommunications infrastructure in Bangladesh belongs to the Bangladesh Telephone and Telegraph Board (BTJTB). Bangladesh Railway Communication Systems and the newly arrived GSM operators offer relatively small capacity.

4.18.2 Trends in Pakistan

Pakistan is an under-developed country with a total 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 method of teaching and training has 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 organized and systematic use of ICTs at AIOU, but education in the public sector may be slower in acquiring and using these new technologies.\textsuperscript{610}

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. \textit{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.

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 enroll 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.

\subsection*{4.18.3 Trends in Sri Lanka}

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 of 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

\footnote{Panigrahi, L.K. \textit{Women and Child Education}, Abhishek Publications, Chandigarh, 2003 at 71-73.}
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. 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 needle world while boys take up metal work, electronics, carpentry, etc. This trend extends into the tertiary system. 611

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. 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, limiting them to a narrow range of skills. The trend continues in the employment sector too. 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.

The Open University of Sri Lanka (OUSL) 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 the year 1980 and was constituted under the University Act of 1978 and the OUSL Ordinance Number I 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.

4.19 Women’s Development through ICTs

In the last decade of the century, the process of globalization has significantly altered the nature of economic, political and cultural relations among nations, economies and people. It is now widely accepted that the changes inherent in this process are not unequivocally positive. Just as globalization has produced winners and losers depending on the positioning of groups and individuals vis-à-vis this complex set of changes, so too with rapid diffusion of ICTs. The positive benefits of diffusion of information and communication technologies (ICTs) productivity gains, job creation, improvements in wealth, enhancement of well-being are for the most part, limited to wealthy countries. In those countries, the rapid diffusion of ICTs has been facilitated by technological innovation, economic restructuring, reorganization of firm-level, Production processes, changes in functioning of markets and special and political change, and through a series of feedback effects, has produced material and social gains.612

ICTs are usually understood to include computers, the rapidly improving communications technologies, including radio, television and mobile telephony, as well as networking and electronic data processing capacities, and the software for applications of these new technologies and capacities. Their defining characteristic is the capacity to harness access and apply information and diffuse knowledge at electronic speed to all types of human activity, thereby giving rise to contemporary knowledge-based economies and societies.

The digital revolution is rapidly transforming social, economic, cultural and political interactions the world over. The internet is emerging as a source of considerable potential for individuals, businesses and countries. In the year 2000, the internet had 150,000 new users per day and 2 million web-pages were added daily. E-commerce, or e-business, is projected to grow from $45 million in 1998 to $7 trillion in 2004. Knowledge and information are essential in taking advantage of the opportunities presented by ICT, and have become commodities of value in their own right in the networked economy.

ICT have the potential to create new types of economic activity and employment opportunities, and enhance the quality, of life. They have changed the nature of work, the range of occupations and skills requirements, making it necessary for workers to acquire a broader and more adaptable knowledge base. E-commerce is creating opportunities for even small firms to market their products and services directly in a globalizing market. Education and training, and access to relevant institutions, are critical factors in taking advantage of ICT related opportunities. At the same time, ICT's are transforming education itself, and are creating new possibilities for achieving educational goals. Distance learning, lifelong education, alternatives to formal education, as well as community-based learning are among the areas where important ICT based applications are emerging.

(A) ICTs and Women's Development

Historically, technology has been defined as exclusively male activities in such a way that many tasks women have traditionally performed are not defined as technical despite involving a high degree of manual dexterity an computation. The newly emerging cultural analyses of technology a suitable framework for analyzing gender and ICT relationships. This framework understands both technology and gender not as fixed and given, but as cultural processes which are subject to “negotiation, contestation, and, ultimately transformation”613.

Early studies of women in relation to the engineering, computing and information technology sectors draws attention to women’s under-representation in technical occupations and their over-representation in operator and clerical jobs. Although, more recent studies show women making some inroads into technical and higher level occupations, there is an increasing feminization of some of the lower

613 Ibid at 61-62.
level jobs. Educational data, too, show a distinct gender pattern with women representing a small and declining proportion of entrants to university computer studies courses. Studies on the conditions of work for women in technology draw attention to salary differences which show women earning less than men.

Today, the monopolization of global information and communication structures where government monopolies control a huge share of the world’s telecommunication flows, while a few immense corporations dominate the world’s mass media, is a very real challenge to women and the democratic process of society. The ‘democratization of communications’ is an important issue that appears in the gender and communications literature. It is understood as a process whereby the individual is an active subject and not only an object of communication, various messages are exchanged democratically, and the extent and quality of social representation or participation is augmented.

The difficulty of access to new information and communication technologies for women is an important issue in the literature. This includes access in terms of sheer hardware and software, as well as requiring access to meaningful resources about women. The fact that most computer networks are currently dominated by men raises further questions about women’s access to new information technologies.

Gender is one of the many factors that determine the impact of information technology on women’s working lives. Ethnicity, religion, age and class can play even greater roles in defining women’s working position. Similarly, the degrees of exclusivity that arise from the information revolution sharply differentiate regions and communities. Technological changes affect the quality and quantity of women’s work. Along with women’s employment benefits from new technologies there are associated health, environmental and other costs.

(B) ICTs for Women in Developing Countries

ICT offers many new possibilities that offer women in developing countries a lifeline for economic, social, and political empowerment. Most women within developing countries are in the deepest part of the divide further removed from the information age than the men whose poverty they share. If access to and use of these technologies is directly linked to social and economic development, then it is imperative to ensure that women in developing countries understand the significance of these technologies and use them. If not, they will become further marginalized from the mainstream of their countries and of the world. It is essential that gender
issues be considered early in the process of the introduction of information technology in developing countries so that gender concerns can be incorporated from the beginning and not as a corrective afterwards.\textsuperscript{614}

Many people dismiss the concern for gender and IT in developing countries on the basis that development should deal with the basic needs first. However, it is not a choice between one and the other. IT can be an important tool in meeting women's basic needs and can provide the access to resources to lead women out of poverty.

Most women internet users in almost all developing countries are not representative of women in the country as a whole, but rather are part of small, urban educated elite. In many developing countries, less than one percent of population male or female has internet access. By regions, women are 22 percent of all internet users in Asia, 38 percent of those in Latin America, and six percent of Middle Eastern users.

Most women in developing countries who use information technology use it at work. Except in upper income enclaves, home access to a computer and the internet is not a phenomenon. Users at work generally divide up between those who use it as a tool of production and those who use it as a tool of communication.

As a tool of communication, the most prevalent application is networking for political advocacy on behalf of women. These came about because the non-governmental organizations that promoted electronic networking and worked in political advocacy were the early adopters and are continuing users of the technology in developing countries. Also, developing country women have used electronic communication for networking to promote their business interests. This area is far less developed than that of politically active networking, but it represents an interesting area with possibilities for further development.

E-mail is the major information technology application that women's organizations and individual women in developing countries use but, time constraints as well as bandwidth limitations make web use difficult for women. Few women are producers of information technology, whether as internet content providers, programmers, designers, inventors, or fixers of computers.

\textsuperscript{614} Mitra, Charulatha. \textit{Women's Development Goals, Reshaping Globlisation}, Author Press, Delhi, 2003 at 64-66.
In developing countries, there is a great deal of variation in the percentages of women in natural sciences, computer science, and engineers. There are indications that young women in developing countries are not as affected as US women by attitudes that computer science is not an attractive field to enter. For example, women comprise between 30 and 50 per cent of students in computer science and other natural sciences in a number of developing countries. Africa remains the area of greatest concern, however, as African women have the lowest participation rates in the world in science and technology education at all level.

(C)Equality and Social Justice: Role of ICTs

Policy makers have been actively promoting growth of the ICT sector and seeking to maximize the positive benefits of ICTs. Increasingly their attention is turning managing the negative social consequences of use of ICTs and ensuring that there is equity in access and distribution. For example, European policy makers have sought to understand how ICT development can produce social consequences that are undesirable and can reinforce existing social inequities and to produce guidelines for ameliorating these negative effects. In developing countries, policy makers lack the capability to make the series of sophisticated interventions necessary to promote and manage the rapid growth of the ICT sector and face the burden of uneven pace of development and a few degrees of freedom.615

The agenda facing gender justice advocates the transformation of the ICT sector so that its effects produce the following benefits across all countries, and are available to women and men on a fair and equitable basis. Without transformation, however, ICTs will not produce the benefits associated with the virtuous cycle for women. Within ICT firms there are processes which reproduce gender inequality by confining women to low status occupations and ascribing low value to areas where women are more represented than men. There is evidence that ICT firms reproduce organizational cultures and work climates which are not conducive to women fully participating on equal terms with their male counterparts, or sharing equally in power. While the broad trends show little improvement for women's conditions of work in ICT firms, there are also suggestions that the frontier mentality of ICT firms may favour some women who can perform the particular 'masculine' behaviors.

615 Ibid. at 79-82.
ICT firms have organizational structures which adopt flexible work practices, and for the most part, this has meant greater instability in women’s employment. Much more empirical work is needed to better understand the extent and variation of these characteristics of women’s employment in the ICT sector, and the processes through which power and status are ascribed and attained in ICT firms. Indirect negative effects on gender equality through the domination of privatization and liberalization are approaches to developing of ICT markets. Since the social benefits to be derived from access to ICTs greatly exceed private benefits, supply and demand of ICTs is subject to market failure and requires public sector intervention. Markets for ICTs involve interaction between private capital and formal bureaucratic organizations.

ICTs can have positive effects of use of ICTs on women’s confidence, self-esteem and status, when through its use, women get access to information which challenges existing gender inequality. Women consumers may or may not affect unfavorable gender relations by using more ICTs; to understand the effects of consumption we need more information on how use of ICTs impact on particular concerns of women consumers and whether they produce harmful consequences such as online pornography and harassment. Women’s organizations, by making use of these technologies for networking and information sharing, have added to the communal level of women’s power and have provided an enabling environment for renegotiation of power relations. At the level of the international community of civil society and development agencies, use of ICTs and the efficiency gains that these technologies provide have been an important way in which women have expressed and increased their agency and undertaken positive action to move towards gender equality.

(D) Women’s Movements toward ICTs

The Beijing Declaration and Platform for Action (PfA)\textsuperscript{616}, drew attention to the emerging global communications network and its impact on public policies, and private attitudes and behaviour. It called for the empowerment of women through enhancing their skills, knowledge, access to and use of information technologies.

\textsuperscript{616} Adopted by the Fourth World Conference on Women in 1995.
The twenty-third special session of the General Assembly, held in June 2000 to review the progress made in implementation of the Platform for Action, recognized the increased opportunities created by ICT for women to contribute to knowledge sharing, networking and electronic commerce activities. It has also noted that poverty, lack of access and opportunities, illiteracy, including computer illiteracy, and language barriers prevented some women from using ICT, including the internet. Several were proposed to ensure that women benefited fully from ICT, including equal access to ICT related education, training and entrepreneurship opportunities, and equal access as producers and consumers of ICT through public and private partnerships.617

The role of ICT as a tool for development has attracted the sustained attention of the United Nations. In 2000, the Economic and Social Council adopted a Ministerial Communiqué on the role of information technology in the context of a knowledge-based economy. Later that year, the Millennium Declaration underscored the urgency of ensuring that the benefits of new technologies, especially ICT, be available to all. In 2001, the Council considered the role of ICT for development in the context of partnerships with relevant stakeholders, including the private sector. In June 2002, the General Assembly called a two-day meeting devoted to ICT for development. A World Summit on the Information Society, with the ITU as lead organizing entity, has take place in Geneva, 2003 and Tunisia, 2005.

Based on recommendations of the ECOSOC, a United Nations ICT Task Force was launched in November 2001 to help harness the power of ICT for advancing the goals contained in the Millennium Declaration, in particular the goal of having the number of people living in extreme poverty by 2015. The Task Force's mission statement and action plan recognized the potential of ICT for enhancing women's educational, health and economic opportunities, and for participation in public life.

4.20 Inequalities in Education

Under the socialist system, education for all, regardless of gender, was an important component of the drive for gender equality in the labour market and an essential element of economic development. But concern is growing that the lack of clear direction experienced in the last decade, combined with the increasing incidence

617 Mitra, Charulatha.Women's Development Goals, Reshaping Globalisation, Author Press, Delhi, 2003 at 82-84.
of poverty and shrinking government budgets, may have eroded some of the achievements of the pretransition era and may have increased gender inequality in education, especially in Central Asia. The transition brought about lower government budgets, an increasing incidence of poverty, and lack of clear direction in the area of social service reforms. It also led to considerable changes into the way the labour market operates and the skills it requires. These factors have had important implications for the education systems in ECA countries, especially at the secondary and post-secondary levels.

The process of economic transformation has led to a welcome move away from traditional-style vocational training, but only some countries have seen a matching increase in Gender and Socio-economic Transformation general secondary enrolments. In other cases, such as Albania, the failure to transfer from vocational to general schooling explains a large part of the fall in boys' enrolment. Finally, falling levels of resources going to education have raised serious concerns about the quality of schooling provided and the level of learning achieved by those attending school.618

The issue of income-related inequalities in enrolment has acquired increasing importance during transition, as the private cost of secondary and post-secondary education has risen across the world. Basic education remains largely accessible to all income groups, but the introduction of formal fees in some countries (combined with various informal fees) has put considerable stress on students and their parents, especially those from low income groups.

Contrary to expectations, in all the countries under considerations girls from the bottom income quintiles do not appear to face higher barriers to enrolment than better off girls. Indeed in a number of countries the ratio of female to male enrolment is higher from the bottom quintile. This may reflect the fact that poor boys are more likely to leave school and join the labour market than girls in the same age group.

Policy intervention in the area of education requires a deeper understanding of why boys drop out of school before girls across the region, and of the effects of early school leaving on (a) boys' labour market outcomes and (b) the poverty status of their households. Meanwhile in the case of Tajikistan and Uzbekistan, where girls at a disadvantage, it will be necessary to go beyond simple culture/religious explanations

618 Ibid. at 140.
to explore other reasons for recent trends, notably including the role played by out-ofpocket payments and by the poor quality of the education system.

4.21 Transnational Provision of Higher Education

(a) The growth of provision of higher education across national borders, utilizing mainly internet-based technologies, by traditional universities as well as by solely online providers619;

(b) The participation by a number of universities in joint ventures with for-profit corporations and other higher education institutions for the provision of higher education relying on internet-based materials and technologies;

(c) The growing concern among higher education personnel, students and the communities they work with regarding the lack of clear and unambiguous information available in relation to governance structures, quality assurance and accreditation procedures, and employment practices within such joint ventures;

(d) Predominantly on-line higher education providers should be subject to rigorous quality assurance mechanisms to ensure a curriculum developed, taught and under academic control of faculty who have tenure and academic freedom, and this principle should be reflected in international accreditation procedures;

(e) It is the responsibility of national governments, international organizations and higher education providers to ensure that the expansion of web based transnational higher education provision is informed by public interest concerns and objectives, and not solely by profit motives or market forces;

(f) Encourage higher education trade unions to develop strategies for actively organizing members across national boundaries to ensure that the employment rights of personnel employed by transnational providers are protected;

(g) In conjunction with higher education unions that have already undertaken significant work in this area, develop guidelines for best practice in relation to the provision of transnational education and actively pursue their endorsement and implementation by UNESCO, the ILO, the World Trade Organization and international accreditation bodies, such implementation to be pursued in conjunction.

619 The Third World Congress of Education International meeting in Jomtien, Thailand, from 25 to 29 July 2001.
Such guidelines should address, among other issues, governance structures, quality assurance, the importance of culturally relevant content and modes of delivery, accreditation, intellectual property management and academic freedom.

4.22 Why Globalization?

Thus, there are mechanisms for globalization, as defined above, but mechanisms can remain unused if there are no incentives for their use. What are the reasons for globalization? The reasons are inter-related and cumulative, but they include travel, economics and education.

Following from the above, ways are needed to provide, internationally, information about the nature, level, and quality of education.620

(A) Mobility of education

A second educational reason for globalization is that people learn about the education on offers elsewhere, and wants it. This means that the people travel or the education does. There are many ways to achieve the latter, and each has its own characteristics, benefits and drawbacks.

(B) The business of education

Building on these needs, education itself has become an international business. This brief introduction indicates the central role played by education in globalization.

(C) Education at a Distance

The first clutches of aspects are as follows:

(a) Transnational education
(b) On-line education
(c) Distance education
(d) Collaborative education

These concepts intersect, and a single educational activity may take two or more of these forms: distance education may or may not be online or transnational; transnational education may or may not be collaborative, etc.

(D) Transnational Education

Transnational education (TNE) denotes any teaching or learning activity in which the students are in a different country (the host country) to that in which the

institution providing the education is based (the home country). This situation requires that national boundaries be crossed by information about the education, and by staff and/or educational materials whether the information and the materials travel by mail, computer network, radio or television broadcast or other means.

This is a response to people's desire for an education offered by an institution abroad, and the institution arranges for the education to be available in their home country. Alternatively, the impetus comes from the institution, seeking markets for its education.621

The following are some examples of TNE, to give a flavour of some possibilities. Branch campuses, campuses set up by an institution in a host country to provide its educational programs to foreign students. Such campuses may be staffed by local people from the host country and/or staff from the home country on short or long-term visits.

A recent survey by IDP of involvement by Australian universities in TNE found that the typical program abroad has, inter alia, the following characteristics.

(a) In business, administration or economics.
(b) In Hong Kong, Malaysia or Singapore.
(c) Four semesters.
(d) Involves a local partner that is an education institution.
(e) Face-to-face teaching or supported distance learning.
(f) Curriculum not adapted to local conditions.
(g) Intellectual property owned by home institution.
(h) Responsibility for curriculum, teaching assessment and QA with home institution.
(i) Responsibility for study location, marketing, financial administration with host institution.

(E) On-line Education: the 'Virtual University'

At present there is no generally accepted meaning of the term 'virtual university, or more generally ‘virtual institution’, but at present it is capturing the absence of a campus with a group of academics located together. Now, not only are the students likely to be in distant locations, but the staff may be too, so the programs are provided and serviced primarily on-line through some form of computer-mediated communications. Furthermore, the staff that develops programs may not be those who

621 Ibid. at 118.
support them, and those who assess them may be different again. Without a campus, the institution has been dubbed 'virtual'.

The virtual university builds directly on the widely available computer power and computer networks that have been identified as mechanisms for globalization. The options offered to education via the range of information-provision and information-handling techniques may change the whole character of education - or at least, of some of education. The last phrase is an important qualification. The new modes do not mean the end of education as we know it. On the contrary, they may be the savior we need. There has been an endeavours to do things like increase enrolments, open access, and provide lifelong learning, while using traditional tools, methods and systems not well-suited to these new tasks. To us 'higher education’ is a public good’ in which every class or society and each member of the society has a stake.622

The new modes might enable us actually to do these things. One new aspect is the unbundling of activities assumed to be integrally related to each other and to a place the campus, such as information provision, admission & registration, program development, study, student support, ‘library’ access, assessment etc. This unbundling will lead to new models for education.

(F) Distance Education On-line

Many existing 'non-virtual' universities, who were not interested in distance education via print or video, are making increasing use of the internet to develop on-line distance education. To further clarify the idea of globalization, it may be enlightening to see its linkages with and divergence from the concept of modernization. Globalization, in a sense, represents an extension of the economic and cultural logic of modernization.623

Many institutions are taking up on-line education because they envisage economies in staff costs: once a course is created, it can be repeated to indefinite

622 Sharma, Prof. Mool Chand, India at Cross Roads, Role of Universities and Youth, Nyaya Deep, Volume IX Issue, Jan, 2008, at 93 .

numbers of students without further staff intervention. However, that there may be other benefits for the same costs, such as increased access and internationalization. In this new environment, existing practices or policies may be inapplicable. Copyright and intellectual property is two issues that have come to the fore with on-line education, as the ability to manipulate and re-combine information has increased. It is worth remembering the term ‘flexible learning’. As campus-based institutions are introducing distance options via electronic means possibly for economy or to serve a new clientele often they find that the major users are their own campus-based students doing some of their courses on-line.

Universities that are effectively implementing online courses also report student’s appreciation of the high level of interaction with a greater number of other students than usually occurs in face-to-face learning. John Seely Brown of Xerox suggests that we are moving from using technology to support individuals to using technology to support relationships. This will facilitate lifelong learning.

(G) Collaborative Education

In the UK, this tends to mean franchising, and tends to subsume TNE on the grounds that all off-shore operations involve partners. This, however, is a rather restricted interpretation of the concept.

Two models for collaboration in DE in the USA are Western Governors University (WGU) and the Southern Region Education Boards Electronic Campus (SREB). WGU is a virtual institution that offers courses created by about 40 colleges and universities. Started in 1998, it offers a competency-based testing system to achieve its degrees, in competition with existing colleges. It has 950 courses, five degrees, and 200 students. It is seeking accreditation, and this is forcing four US regional accreditation commissions to work together. SREB is a loose collective that started by providing members with little more than a common Internet site on which to advertise their on-line courses. Also started in 1998, it now lists 3,200 courses and 100 degree programs from 260 institutions. Students earn course credits and degrees from those institutions. SREB has yet to work out an easy credit transfer scheme. Judging by the numbers, the low-key, de-centralized approach seems to have been more successful.

(H) Trade in Education

Not long ago, the international movement of students or education was seen as either for mutual benefit between equals, or for the purposes of aid to less wealthy or
developed countries. Although these aspects have not entirely disappeared, these movements are now firmly in the basket of international trade. This brings into sharper focus such considerations as consumer protection and cultural impact. It also means that education falls within the sphere of GATS, and a country signing the agreement without making explicit reservations at the time of signing can find that it is required to accept from beyond its borders courses and providers about which it has some reservations. Various Codes of Practice have been drawn up to address this. The GATS Principles for TNE were written with a very strong consumer protection focus. Cultural impact is much more difficult to handle. One way is to require that courses be adapted to match the needs and nature of the society in the host country, but sometimes students do not want such an adaptation, and sometimes the provider uses the adaptation to provide a cut-down course. Other Codes of Practice address the treatment of students who have traveled to study in the institutions' home country.

4.23 Internationalization or globalization of higher education?

Coming from the International Association of Universities, her we will focus on the internationalization of higher education on the one hand, and the impact on higher education of the forces of globalization on the other. This is fitting because IAU's existence and mandate for more than 50 years have rested on the premise that international cooperation among universities and more recently internationalization of higher education, offer solid paths towards better and stronger universities, in a more just and peaceful world. Today globalization of the higher education sector is radically changing even the way it is internationalizing by creating a new and complex dynamic. The governments both at federal and state level cannot absolve itself of these responsibilities. They cannot absolve themselves of the responsibility of providing primary education as well as to provide higher government should to surrender its economic resources to private entrepreneurs especially the TNCs, which as of now, has no human rights accountability.

The full extent of the changes that globalization of higher education may bring is still largely unpredictable and may remain so for some time. But already the debate

is on about its threatening or negative aspects, as well as about the positive opportunities that it may offer. Indeed, higher education is both a major driver of economic growth through its teaching and research functions, and simultaneously, higher education is an economic sector itself, a huge one, representing millions of dollars or Euros in each country and billions internationally as a service sector being exchanged or traded. As this sector continues to globalize, many argue that here too, we must beware of the fact that those who are doing the globalizing may reap its benefits while those who are being globalized may be subject to far less positive consequences.

All of us are searching for a better understanding of the interconnected forces that are transforming societies, forces of a technological, economic, political and social nature. And in this search, very broad but often undefined concepts such as globalization, knowledge society, sustainable development, public good and even internationalization, have become shorthand in our higher education discourse in the last few years. Yet, to really explore what is happening and to do so in an international context, with the intercultural and linguistic dimensions as additional layers of meaning, it is critical to start by articulating what we mean by the words we use. We may not all agree. However, at least the areas of disagreement will become clearer and that too is essential for a dialogue or debate.

4.24 Challenges of Education in Globalization

Developing and transition economies face significant new trends in the global environment that affect not only the shape and mode of operation but also the very purpose of tertiary education systems. Among the most critical dimensions of change are the convergent impacts of globalization, the increasing importance of knowledge as a main driver of growth, and the information and communication revolution.626

Knowledge accumulation and application have become major factors in economic development and are increasingly at the core of a country’s competitive advantage in the global economy. The combination of increased computing power, diminishing prices of hardware and software, improvement of wireless and satellite technologies, and reduced telecommunication costs has all but removed the space and time barriers to information access and exchange. Both opportunities and threats arise from these changes. On the positive side, the role of tertiary education in the

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construction of knowledge economies and democratic societies is more influential than ever. Indeed, tertiary education is central to the creation of the intellectual capacity on which knowledge production and utilization depend and to the promotion of the lifelong learning practices necessary to update individual knowledge and skills.

Another favorable development is the emergence of new types of tertiary institutions and new forms of competition, inducing traditional institutions to change their modes of operation and delivery and to take advantage of the opportunities offered by the new information and communication technologies (ICT). But on the negative side, this technological transformation carries the real danger of a growing digital divide between and within nations.

Even as these new opportunities and challenges emerge, most developing and transition countries continue to wrestle with difficulties stemming from inadequate responses to long-standing problems facing their tertiary education systems. Among these unresolved challenges are the need to expand tertiary education coverage in a sustainable way, inequalities of access and outcomes, problems of educational quality and relevance, and rigid governance structures and management practices.

The World Bank has actively supported tertiary education reform efforts in a number of countries. Nevertheless, there is a perception that the Bank has not been fully responsive to the growing demand by clients for tertiary education interventions and that, especially in the poorest countries, lending for the sub sector has not matched the importance of tertiary education systems for economic and social development. The Bank is commonly viewed as supporting only basic education; systematically advocating the reallocation of public expenditures from tertiary to basic education; promoting cost recovery and private sector expansion; and discouraging low-income countries from considering any investment in advanced human capital.

Given these perceptions, the rapid changes taking place in the global environment, and the persistence of the traditional problems of tertiary education in developing and transition countries, re-examining the World Bank's policies and experiences in tertiary education has become a matter of urgency. How tertiary education contributes to building up a country's capacity for participation in an increasingly knowledge based world economy and investigates policy options for tertiary education that have the potential to enhance economic growth and reduce poverty. It examines the following questions: What is the importance of tertiary
education for economic and social development? How should developing and transition countries position themselves to take full advantage of the potential contribution of tertiary education? How can the World Bank and other development agencies assist in this process?

Using this background, it explores how countries can adopt and shape their tertiary education systems to confront successfully the combination of new and old challenges in the context of the rising significance for tertiary education of internal and international market forces. It examines the justification for continuing public support of tertiary education and the appropriate role of the state in support of knowledge-driven economic growth. Finally, it reviews the lessons from recent World Bank experience with support of tertiary education, including ways of minimizing the negative political impact of reforms, and makes recommendations for future Bank involvement. Many of the themes developed in the first World Bank policy on tertiary education, higher education, the lessons of experience, it emphasizes the following new trends: The emerging role of knowledge is a major driver of economic development, the appearance of new providers of tertiary education in a 'borderless education' environment, the transformation of modes of delivery and organizational patterns in tertiary education as a result of the information and communication revolution. The rise of market forces in tertiary education and the emergence of a global market for advanced human capital, the increase in requests from World Bank client countries for financial support for tertiary education reform and development, the recognition of the need for a balanced and comprehensive view of education as a holistic system that includes not only the human capital contribution of tertiary education but also its critical humanistic and social capital building dimensions and its role as an important global public good.

Briefly, the main messages of this document are as follows:
(a) Social and economic progress is achieved principally through the advancement and application of knowledge.
(b) Tertiary education is necessary for the effective creation, dissemination, and application of knowledge and for building technical and professional capacity.
(c) Developing and transition countries are at risk of being further marginalized in a highly competitive world economy because their tertiary education systems are not adequately prepared to capitalize on the creation and use of knowledge.
(d) The state has a responsibility to put in place an enabling framework that encourages tertiary education institutions to be more innovative and more responsive to the needs of a globally competitive knowledge economy and to the changing labor market requirements for advanced human capital.

(e) The World Bank Group can assist its client countries in drawing on international experience and in mobilizing the resources needed to improve the effectiveness and responsiveness of their tertiary education systems.

4.25 Tertiary Education Policy in the Context of the World Bank's Development Strategy

As this study shows, support for tertiary education programs contributes to the Bank's overall strategic framework and goals, as outlined below.

Poverty Reduction through Economic Growth

Tertiary education exercises a direct influence on national productivity, which largely determines living standards and a country's ability to compete in the global economy. Tertiary education institutions support knowledge-driven economic growth strategies and poverty reduction by

(a) Training a qualified and adaptable labor force, including high level scientists, professionals, technicians, teachers in basic and secondary education, and future government, civil service, and business leaders;

(b) Generating new knowledge; and

(c) Building the capacity to access existing stores of global knowledge and to adapt that knowledge to local use.

Tertiary education institutions are unique in their ability to integrate and create synergy among these three dimensions. Sustainable transformation and growth throughout the economy are not possible without the capacity-building contribution of an innovative tertiary education system. This is especially true in low-income countries with weak institutional capacity and limited human capital.

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4.26 World Bank Support for Tertiary Education

In the 1970's and 1980's much of the support provided by World Bank tertiary education projects was piecemeal, with a narrow focus on the establishment of new programmes or on discrete quality improvement measures for existing teaching and research activities. These projects sometimes created well-equipped academic oases-which tended to become unsustainable over time. The Bank was rarely able to offer the type of long term comprehensive support for tertiary education that is required for successful reform and effective institution building.628

An internal review of implementation experience with tertiary education projects undertaken in 1992 and an assessment of recent and ongoing interventions in this sub-sector have offered critical insights into more productive ways of supporting tertiary education reforms and innovations.

Comprehensive reforms can be more effective than piecemeal ones. Interventions integrated into a broad reform program based on a global change strategy are more likely to bear fruit than isolated efforts. Financing reforms, especially the introduction of tuition fees and the expansion of private tertiary education, are difficult to implement successfully without equity measures to help disadvantaged students gain access to and afford tertiary education. They also require significant devolution of government control in matters affecting institutional costs, as well as incentives for institutions to engage in cost-saving and income-generating activities. The preference for comprehensiveness does not mean that all aspects of a reform should be packed into a single operation. Sequencing provides the tools for responding to and adjusting to evolving challenges. Long-term involvement through a series of complementary operations, as occurred in China, Indonesia, the Republic of Korea, and Tunisia, has proved essential for ensuring structural change that is sustainable.

Attention to the political-economy aspects of reform is vital. Until the beginning of the 1990s, little attention was paid to the political economy of tertiary education reforms, on the assumption that a technically sound reform program and agreement with top government officials were all that was needed for change to succeed. But when it came to actual implementation, political reality often proved stronger than the technocratic vision. In many countries various interest groups have resisted proposed reform programs. Launching and implementing tertiary education

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628 Ibid. at 86-88.
reforms has been more successful when decision makers have managed to build a consensus among the various constituents of the tertiary education community.

Reliance on positive incentives to promote change can be pivotal. The extent to which projects rely on positive incentives rather than mandatory edicts to stimulate change has a great influence on outcomes, as institutions and actors tend to respond more readily to constructive stimuli. The World Bank has had positive experience with such policy instruments as competitive funds, accreditation mechanisms, and management information systems. Well designed competitive funds and incentives encourage better performance by tertiary education institutions and can be powerful vehicles for transformation and innovation, as demonstrated by the positive results of projects in Argentina, Chile, the Arab Republic of Egypt, Guinea, and Indonesia.

4.27 Women and Globalization of Higher Education

Globalization is particularly the removal of barriers to free trade and the integration of national economies has potential as a force for reducing poverty levels in the world. The problems in reaching those goals (poverty reduction) are mainly due to policies adopted, the management of those processes, the politics in decision-making, and lack of representation from those whose lives are directly affected by globalization. Views from the South that could inform those policies are often ignored by international development agencies. Academic debates on these issues try to incorporate other views but the outcomes of those debates seldom have direct impact on development policies. Recently at the World Summit on Sustainable Development (WSSD) President Mbeki, in addressing a crowd of protesters mentioned that the greatest enemy to development is global apartheid. Care needs to be taken to ensure that globalization of education is not at the cost of teaching learning of human values like ethics, equality, human security, sustainability, and reduction of poverty of the masses, especially the rural masses.629

Representatives at the WSSD objected to because of the concept apartheid because of its association with South Africa's former governments deliberate move to discriminate against people of different racial backgrounds. The implications are that there is no deliberate intention to treat countries differently in the new economic

process. The issue is debatable because there is evidence of global apartheid around - the gap between the rich and the poor has widened more in the last decades as poverty levels rose.

There is evidence of the devastation of globalization on developing countries as the poverty gap has increased despite the fact that globalization was meant to benefit all members of the global community. To date it is estimated that about 40 percent of families in the world survive on less than one dollar per day. This is in contrast to the subsidies given to farmers in countries like the US where the subsidy is about $1.00 per day per animal. The G8 Summit of June 2002 refused to address the issue of subsidies provided for in the United States Farm Bill that perpetuates over production and export dumping that undermine agriculture in Africa.

The new farm Bill announced around April 2002 is aimed at increasing U.S farm subsidies by $35 billion and that translates to more than $20000 to each farmer. The negative impact of globalization has been felt more by those in developing countries. For example, Africa has had a 4% decline in GDP - a decline in per capita income that has resulted in a drop of living standards. This has happened within a context where the world income has increased annually by 2.5%.

Apartheid was defined as an empowering strategy through the separation of races, the unequal distribution of resources and privileges, and preservation of cultures. Policies were decided upon by the dominant minority with power who tried to justify the need for people of different races to develop separately, whilst remaining connected and being dependent on each other. The global economy operates with comparable strategies and policies to those that were adopted by the repressive, former government of South Africa.

Change to power sharing in South Africa was brought about through strategies that included the mobilization of masses for mass protests. International activists have adopted similar strategies as evident through scenes of conflict at World Trade Organization meetings, United Nations Conferences, World Bank and IMF meetings in DC. World politics are intertwined with policies for development and impact negatively on development strategies. Speakers at the WSSD complained about how the Summit agenda was dominated by EU and US views that imposed their own perceptions and definition of humanity.

At the end the US stood alone due to its hard-side, refusing to set targets on the eradication of poverty and undoing environmental damage as part of the strategy for
sustainable development. Globalization is characterized by increased connectedness as well as major inequities between countries and within countries. The digital divide between the North and South often presented in globalization debates is real but also problematic in the sense that the division cannot only be explained in terms of the division between the North and South, because there are cities in the North that are worse or similar to some cities in the South. There is poverty and illiteracy in the North and instances where people live under worse conditions than those in the South. There are also pockets of technological advancements in both the North and the South that shifts the parameters to the "haves" and 'have not's' rather than just the North and the South.630

Overall globalization apartheid has had a devastating effect on developing countries. There have been acknowledgements from the World Bank and the British Department for International Development that the benefits of globalization are not being passed on to Sub-Saharan Africa and instead globalization has exacerbated many of Africa's problems. Africa and as a result the percentage of trade has dropped in the last two decades. There are warnings and signals of the possibility that developing countries are at risk of being excluded from the dynamics of the world economy. In the present situation there is need to radically rethink policies imposed on developing countries in areas such as trade agreements. He further argues that for globalization to benefit all there is need to share growth in a more equitable way.

4.28 Globalization and Higher Education Challenges

The General Agreement on Trades in Service (GATS), plus other regional trade agreements, is testimony to the increased emphasis on trade and the market economy in this era of globalization. GATS is the first legal trade agreement which focuses exclusively on trade of services as opposed to trade of products. It is administered by the World Trade Organization, a powerful organization with 144 member countries.

Education is one of the 12 service sectors covered by GATS. The purpose of GATS is to progressively and systematically promote free trade in services by removing many of the existing barriers to trade. What does this mean for higher education? The current debate on the impact of GATS on higher education is divided,

if not polarized. Critics focus on the threat to the role of government in the 'public
good and the quality of education. Supporters highlight the benefits that more trade
can bring in terms of innovations through new providers and delivery modes, greater
student access and increased economic gain. Trade liberalization has the potential to
profoundly change the nature and provision of higher education provision and the role
that government plays in that provision. The purpose of this chapter is to discuss both
risks and opportunities that GATS brings to higher education and to identify some of
the policy implications and issues which need further analysis.

(A) Changes and Challenges in the Provision of Higher Education

The promotion of trade in education services is directly linked to a number of
significant trends in higher education.631 These include
(a) The emergence of new profit education providers,
(b) The growth of alternate electronic delivery modes both domestically and
internationally,
(c) The response to the labour market,
(d) The increase in international academic mobility of students, professors and
programs, and
(e) The limited budget capacity or political will of government to meet the increasing
domestic demand for higher education.

These trends are contributing to, as well as responding to, the expanding
business of cross border delivery of higher education services. The GATS aims to
capitalize on this market potential and promote further international trade in education
services by establishing rules and procedures to eliminate barriers to trade. Indian
women face discrimination, inequality and violence from womb to grave in the family
and society. 632

The scenario of higher education provision is changing as providers - public
and private, new and traditional are delivering education services across national
borders to meet the need in other countries. As a result, an exciting but rather

631 Ibid at 175-176.
632 Bhuimali, Anil and S. Anil Kumar, Introduction overview, Women in the face of Globalization,
Serials Publication, New Delhi, 2007 at XVIII.
complex, picture of higher education provision is emerging. So what? It is important to ask ‘so what’. Many educators would point out that demand for higher education has been steadily increasing for years and that academic mobility for students, scholars, teachers and knowledge has been an integral aspect of higher education for centuries. This is true. But the picture is changing. Now, not only are more people moving; academic programs and providers are also moving across borders.

More and more, economic rationales and benefits are driving a large part of the international or cross border supply of education. This profit motive is a reality today, and applies to both private providers and in some cases public institutions. In short, the business or commercial side of education is growing. A recent OECD study estimated that the value of trade in education services was about $US 30 billion in 1999.

In fact, because this figure only includes students studying abroad and does not include other types of cross border education, it represents only a portion of the current level of trade. The future market is growing and this is one reason why education is one of the major sectors targeted by GATS. It is therefore important that educators are cognizant of the impact of trade liberalization on higher education and are taking steps to maximize the benefits and opportunities, and at the same time, minimize the threats to robust and quality higher education system.

(B) Purpose of GATS in Education

The GATS is the first ever set of multilateral rules covering international trade in services. The GATS has three parts. The first part is the framework which contains the general principles and rules. The second part consists of the national schedules which list a country’s specific commitments on access to their domestic market by foreign providers. The third part consists of annexes which detail specific limitations for each sector and are attached to the schedule of commitments. To understand GATS, it is essential to understand what kind of education services will be covered by GATS and what is meant by higher education services. The GATS defines four ways in which a service can be traded, known as modes of supply. These four modes of trade apply to all service sectors in GATS.

Trade in education is organized into five categories of service according to the UN Provisional Central Classification. They are Primary, Secondary, Higher, Adult and Other. The last three are of particular interest to this chapter. Clarification is needed to determine what is included in each group, especially the ‘Other’ services...
group. At this time it is wide open and includes services as diverse as language testing, student recruitment and quality assessment of programmes.

With the GATS in place several countries have agreed to open up their education sector too to international trade. Some of these commitments could well lead to increased pressure in favour of corporatization of education. The move to market mechanics in this sector will have wide implications in regulations pertaining to study abroad, movement of faulty between countries, award of qualification, distance education, investment etc, to name a few. On the one hand, with rapid developments in the information sector and consequent spill over effects in the education sector there, is no doubt that deregulation would be beneficial to the spread of quality education across the globe.633

(C) Major Principles of GATS

The overall framework contains a number of general obligations applicable to all trade in services regardless of whether a country has made a specific commitment to sectors or not. These are called unconditional obligations. There are three which are fundamental to this discussion.

The Most Favoured Nation (MFN) rules require equal and consistent treatment of all foreign trading partners. It means treating ones trading partners equally. Under GATS, if a country allows foreign competition in a sector, equal opportunities in that sector should be given to service providers from all WTO members. This also applies to mutual exclusion treatment. For instance, if a foreign provider establishes branch campus in Country A, then Country A must permit all WTO members the same opportunity / treatment. Or if Country A chooses to exclude Country B from providing a specific service, then all WTO members are excluded. It may apply even if the country has made no specific commitment to provide foreign access to their markets.634

The third important element is Market Access. It means the degree to which market access is granted to foreign providers in specified sectors. Each country

633 Analil, Stephen. Globalization of Higher Education and Developing Countries, Development Agenda of Third World Countries under the WTO Regime, Serials Publications New Delhi, 2005 at 586.
determines limitations on market access for each committed sector and lists in its national schedules those services for which it wishes to provide access to foreign providers. In addition to choosing which service sector/s will be committed, each country determines the extent of commitment by specifying the level of market access and the degree of national treatment they are prepared to guarantee.

The GATS is described as a voluntary agreement because countries can decide which sectors they will agree to cover under GATS rules. This is done through the preparation of their national schedules of commitments and through the 'request-offer' negotiation rounds. However, there are aspects of the agreement that question its voluntary nature, notably the built-in progressive liberalization agenda.

There are several aspects of GATS which are most controversial and require the serious attention of the higher education sector. According to the WTO, the agreement is deemed to apply to all measures affecting services except 'those services supplied in the exercise of governmental authority'. GATS supporters maintain that education provided and funded by the government is therefore exempted. The agreement states that in the exercise of governmental authority' means the service is provided on a 'non-commercial basis' and 'not in competition' with other service suppliers. These are the core issues at the heart of much of the debate about which services are covered. Education critics of the GATS maintain that due to the wide-open interpretation of 'non-commercial' and 'not in competition' terms, the public sector/government service providers may not in fact be exempted.

The situation is especially complicated in those countries where there is a mixed public/private higher education system; or where a significant amount of funding for public institutions is in fact, coming from the private sector; or where so called public institutions are providing privatized programmes.

Another complication is that a public education institution in an exporting country is often defined as private/commercial when it crosses the border and delivers in the importing country. Therefore, one needs to question what non-commercial really means in terms of higher education trade.

The debate about what not in competition' means is fuelled by the fact that there does not appear to be any qualifications or limits on the term. For instance, if non- a government provider provides on-profit or commercial are delivering services, are they deemed to be in competition with government providers. In this scenario, public providers may be defined as being in competition by the mere existence of
non-governmental providers. Does the method of delivery influence or limit the concept in competition? Does the term cover situations where there is a similar mode of delivery, or for instance, does this term mean that public providers using traditional face-to-face classroom methods could be seen to be competing with foreign for-profit e-learning providers? These are unanswered questions which need clarification. Supporters of the GATS emphasize that education is to a large extent a government function and that the agreement does not seek to displace the public education systems and the right of government to regulate and meet domestic policy objectives. Critics express concern that the whole question of the protection of public services is very uncertain and potentially at risk by the narrow interpretation of what governmental authority’ means and a wide-open interpretation of what ‘not in competition’ and non-commercial basis’ mean. Clearly, the question -which higher and adult education services exercised in governmental authority’ are exempted from GATS needs to be front and centre in the debate on the risks and opportunities associated with the agreement. Further and immediate action is required to gain clarification of which higher education providers or services are exempted from GATS.

The higher education sector is not the only sector who has been troubled by the ambiguity of the Clause 1.3. For instance the Financial Services sector, took an important step and prepared two annexes to the agreement which spelled how what was meant by financial services and secondly, delineated which ones were considered to be those services supplied in the exercise of governmental authority’. This is a constructive and concrete step that the higher education or perhaps the entire education sector needs to consider. Increased commercialization of education would naturally change the way education is imparted. It is possible that personal teaching is soon substituted with other cost effective forms like distance education and virtual classrooms. 635

*(D* Extent of country commitments*)

The education sector is one of the least committed sectors. The reason is not clear, but perhaps it can be attributed to the need for countries to strike a balance

635 Analil, Stephen. *Globalization of Higher Education and Developing Countries*, Development Agenda of Third World Countries under the WTO Regime, Serials Publications New Delhi, 2005 at vol.II at 586.
between pursuing domestic education priorities and exploring ways in which trade in education services can be further liberalized. Or it could be linked to the fact that to date, education has taken a very low priority in the major bilateral/regional trade agreements and rightly or wrongly, the same may be true for GATS.

Only 44 of the 144 WTO Members have made commitments to education, and only 21 of these have included commitments to higher education. The full unconditional commitments in higher education, perhaps with the interest and intent of encouraging foreign providers to help develop their educational systems. Australia's commitment for higher education covers provision of private tertiary education services including at the university level.

The European Union has included high education in their schedule with some limitations on all modes of trade except 'consumption abroad' which generally means foreign tuition paying students. As of March 2002, only four of the 21 countries with higher education commitments have submitted a negotiating proposal outlining their interests and issues. In June, 2002 all requests for liberalization of trade were due. The responses to these requests, known as offers, are due in January of 2003.

This is a critical time for educators to be in close contact with the government education and trade officials to ensure that their opinions and expertise are heard. Different rationales and approaches exist. For example, a consumer oriented rationale can be interpreted as the need to provide a wider range of opportunities to consumers or the need to protect consumers by assuring appropriate levels of access to and quality of education services.

The voices of developing countries need to be heard so that the benefits and risks associated with increased trade are clear and do not undermine their own efforts to develop and enhance their domestic higher education system. However, the voices and interests of the developing countries differ.

The impact of GATS on developing countries is the fundamental issue of their capacity to participate effectively in the global trading system and to be equal members in the WTO. Strong sentiments exist about the potential for trade rules to make poor countries poorer, instead of narrowing the gap between developed and developing countries. The perceived injustice regarding the expectation that poor nations are expected to remove trade barriers while rich nations retain barriers on

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USA, New Zealand, Australia, and Japan.
certain goods, contributes to the strong reactions of some developing countries about GATS in general.

4.29 Trade liberalization and trends in higher education

Trade liberalization is firmly associated with other issues and trends in higher education and it is therefore challenging to isolate implications emanating from trade alone. These trends include:

(a) The use of information and communication technologies (ICTs) for domestic and cross border delivery of programs;
(b) The growing number of private for-profit entities providing higher education opportunities domestically and internationally;
(c) The increasing costs and tuition fees faced by students of public and private institutions;
(d) The need for public institution to seek alternate sources of funding which sometimes means engaging in for-profit activities or seeking private sector sources of financial support; and
(e) The ability or inability of government to fund the increasing demand for higher and adult education. The following sections identify questions and issues which need to be explored in terms of the impact of trade liberalization and GATS on policy directions for higher education.

Government and public education institutions have keenly felt the responsibility of ensuring access to education. In many, if not in most countries, this is a challenging issue as the demand for higher and adult education is steadily growing, often beyond the capacity of the country to provide it. This is one reason why some students are interested in out-of-country education opportunities and more providers are prepared to offer higher education services across borders. When increased trade liberalization is factored into this scenario the question of access becomes complicated.

Studies in Information Technologies Applications (SITA), a project to empower women, has the following observations, has the primary focus on training of socially disabled women such as divorced women, widows and women from families who cannot afford the cost of computer education? SITA ensures that large number of women participate in IT revolution. SITA’s visionary approach to women

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empowerment is "educating a women is educating a family". Their project aims suburban and urban areas, through computer training, customized to meet the demands of both the public and private sectors.638

Advocates of free trade maintain that consumers/students can have greater access to a wider range of education opportunities at home and abroad. Non-supporters of trade believe that access may be more limited because trade will commercialize education and consequently escalate the cost of education and perhaps lead to a two tiered system. This raises a fundamental question regarding the capacity and role of government with respect to providing, open or limited access to higher education and the question of funding.

The development of a regulatory framework to deal with the diversity of providers and new cross border delivery modes becomes more critical as international trade increases. In some countries, this will likely mean a broader approach to policy which involves licensing, regulating, monitoring, both private profit and nonprofit and foreign provider is in order to ensure that national policy objectives are met and public interests protected. More work is necessary to determine how domestic/national regulator frameworks are compatible with, or part of a larger international framework and how they relate to trade agreement rules.

New types of education providers, new delivery modes, new cross border education initiatives, new levels of student mobility, new opportunities for trade in higher education- all this can spell further confusion for the recognition of qualification and transfer of academic credits. This is not a new issue. Trade agreements are not responsible for the creation of this confusion, but they contribute to making it more complicated and also to making resolution more urgent. Globalization has created a tremendous impact on the lives of women in development nations.639

639 Bhumali, Anil and S. Anil Kumar, Introduction overview, Women in the face of Globalization, Serials Publications, New Delhi, 2007 at XIX.
National and international recognition of qualifications and the transfer of credits has already been the subject of a substantial amount of work and the UNESCO Global Forum on International Quality Assurance, Accreditation and the Recognition of Qualifications is currently focusing on this important issue.

Increased transnational education activity and new legal trade rules require that more attention be given to the question of quality assurance and accreditation of cross border education programs and providers. It is dear that national quality assurance schemes are being challenged by the complexities of the international education environment. Not only is it important to have domestic/national policy and mechanisms, it is equally important that attention be given to developing an international policy approach to quality assurance and accreditation.

Can coherence between a domestic/national system and an international policy framework actually strengthen national quality schemes not weaken them? Clearly there are risks and opportunities associated with this issue but doing nothing is a risk unto itself. Quality assurance of higher education is in some countries regulated by the sector and in others by the government to a greater or lesser degree. The key point is that authority for quality assurance, regulation, accreditation for cross border delivery needs to be examined and guided by stakeholders and bodies related to the education sector and not left in the hands of trade officials or the market.

4.30 Future of Higher Education in Globalization

Globalization can be described as the imitation, adaptation and diffusion of technological innovations as the process of industrialization spreads from one country to another. That a particular innovation might undermine, or render obsolete, the basis on which a firm stands together with the recognition that this threat might arise from an increasing number of places located anywhere in the world, has the immediate effect of increasing competitive behaviour amongst firms. Further, competition always launches a discovery process and it follows that an increase in competitive behaviour will manifest itself in the intensification of the search for innovations.
One way of searching is for firms to engage in R&D activities. It is perhaps because R&D is understood to produce new knowledge that it is frequently argued that in the process of innovation, knowledge has become the scarce resource.\footnote{Chandra, Ramesh. Education and Challenges of Globalisation. Universal Education and Technology in 21st Century, Kalpaz Publications, Delhi, 2003, Vol.1, at 249-288.}

So, it might be appropriate to recognize this claim by speaking of innovation as a search for "knowledge solutions" of various kinds. Globalization, then, describes the spread of industrialization from one country to another. But, what are spread are innovations that depend increasingly upon more or less specialized knowledge inputs and this, in turn, is driven by competition between firms. What is not often enough recognized is that at any given time competition between firms operates simultaneously at two levels: the level of static competition and the level of dynamic competition.

The presence of static competition drives a firm’s to search for efficiency gains by constantly trying to improve the ways in which existing resources are allocated. At this level, the discovery process often involves a degree of R&D activity, sometimes with universities, as firms seek to improve the industrial processes they have adopted and performance characteristics of the products that they currently make. The result is a stream of incremental innovations within the framework a previously chosen set of technologies; what is often described as a design configuration. At the level of static competition, markets operate to choose amongst products and because firms differ in the efficiency with which they operate, there results in each sector, a hierarchy of firms distributed about what is sometimes referred to as "average best practice".

Under dynamic competition, things are very different. Dynamic competition also launches a discovery process but in a different form, in the sense that it is a search for novel design configurations novel combinations of scientific ideas and technologies that might form the bases for the long term survival of the firm, should its existing set of technologies its current design configuration be attacked by innovations from one quarter or another.

In other words, dynamic competition launches the sort of search behaviour that firms undertake in anticipation of the possibility that from somewhere a knowledge solution will arise which might render their current technological base and
associated work force obsolete. But since it is not known what these knowledge solutions will be or where such they may arise from, firms deal with this type of risk by participating in joint activities, often joint research activities. To accomplish this, they join networks, enter alliances and form partnerships of various kinds. In terms of the search process, these collaborations form complex problem solving sites.

The evidence for this is unequivocal: the numbers of these collaborative ventures are expanding exponentially across a large number of sectors. Of course, the human resources for these collaborative research ventures are drawn the employees of firms, but they also make use of the expertise that lies in a socially distributed knowledge production system which is rapidly acquiring a global dimension. Now, these sites of collaborative research function as ‘attractors’ for the academic community, in part because in many cases they involve research at the leading edge of a disciplinary field, but also because, for many academics, the opportunity to work in these problems solving groups provides an important way for them to utilize and develop their specialist skills.

The spread of globalization is accompanied by the proliferation of collaborative research arrangements and these ventures are the sites in which new research practices are being developed. Into this process are drawn an increasing number of members of the academic community. In fact, the numbers of academics participating in this type of industry driven search for involved are already large enough for the experience to begin to feedback into, and so affect, the ways in which research is pursued in universities.

4.31 Importance of Higher Education in the era of Globalization

Globalization has turned a piercing spotlight onto each country’s higher education systems and institutions. Globalization refers to the process whereby countries become more integrated via movements of goods, capital, labour, and ideas. Trade the main channel through which globalization is occurring offers great advantages because it allows each country to specialize in what it does best - in other words, to have a more refined international division of labor. Globalization has both facilitated, and been facilitated by, advances in information and communications technology. These advances, coupled with the increasingly refined international division of labor, have meant that new ideas are quickly brought to action and new technologies developed, and superseded, more rapidly than at any other time in
history. Knowledge has become an increasingly important determinant of the wealth of nations, and access to knowledge, and the ability to disseminate it, has become a major source of competitive advantage. Higher education can be a vital tool for helping developing countries to benefit from globalization. So far, most technological advances have been borne in the developed world.

Well-managed integration into the global economy, on the other hand, can boost economies, promote foreign investment and create jobs, enabling countries to take advantage of the products of their higher education systems and benefit from their skills and knowledge. Globalization can also help institutions benefit from lessons learned in other countries, and from linking up with foreign institutions to solve problems.

The combination of globalization and higher education offers huge potential for improving living standards. India for example has taken advantage of globalization by building up its software engineering industry, both in terms of trained software engineers, back office services industry, and new companies and projects. The economies of those parts of India such as Bangalore and Hyderabad that have got in on the act are flourishing, and provide a good example of a country using higher education to take advantage, of one of the many promising opportunities offered by globalization. Over 80,000 people work in Bangalore's high-tech industry many of them products of the city's 100 research universities and technical colleges.

IBM, Intel, Microsoft, Oracle and Sun Microsystems have all either set up software development centers or established links with local firms so that they can take advantage of India's supply of well-trained computer graduates. But the international community, and most developing countries themselves, have yet to realize the enormous benefits of higher education. Girls can be the most effective and inspiring advocates of child friendly education if they are given chance. The Girls Education Movement is a dynamic pan-African girl's organization supported by the Forum for African Woman Educationalists as well as by the governments of Norway and Uganda. Launched in 2001, the Movement aims not just to galvanise action education for all, but also to change the character of school systems so that "they offer rich, rewarding and friendly learning experiences for all children". 641

Large gains have been made in promoting basic and secondary education, but the UN’s Millennium Development Goals, and the recent declaration of the World Summit on Sustainable Development in Johannesburg make no mention of tertiary schooling. It is particularly striking that higher education is not mentioned as an instrument for achieving even one of the Millennium Development Goals of the United Nations. A look at the Goals makes it pretty clear that attainment of nearly every one of them will be much easier if a country has a strong and productive higher education system.

4.32 Digital Technology and Its Impact on Education

Today, many people thought that computers would revolutionize education, that computer-based teaching and learning would become the savior of education and the solution to falling test scores. This has never really happened. Over the past two decades, many teachers have successfully prepared students, some with computers in the classroom and some without. Teachers could avoid computers, either because they chose not to learn how to use, them or because they had none in their classroom or college to use. Teachers entering the profession have not been required to understand computational technology in order to graduate from college. ⁶⁴²

In US, the Internet has been in existence for almost two decades and began to extend into colleges about 15 years ago. It did provide an opportunity to expand learning options for teachers and students who were fortunate enough to have Internet access, a few computers, and appropriate guidance on usage. Often this took place in only one classroom and only one school within a system and did not become systemic throughout the school. Globalization is a double edged process as far as the women are concerned. This is so because it reduce benefits enjoyed by them in terms of social security, subsidy and safety nets provided by the government and the same time it provides better education facilities and opportunities globalization of the economy marginalize majority of development countries women, including India, due to reduction in formal sector employment, reduction of wages, actualizations of work and exclusion from the modernized production techniques due to lack of education and proper training facility available for them. ⁶⁴³

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There are many factors affecting this slow implementation of computing and communication technology in colleges, including administrations with no knowledge of its value or no willingness to realign school budgets to include computational technology; insufficient in-service professional development programs for teachers; a lack of specific curriculum benefits or of resources for teachers to use in their courses; and deficient preservice preparation of teachers in technology or computation.

In 1993, United States 'National Center for Supercomputing Applications' (NCSA) released Mosaic, the first World Wide Web browser for all three computing platforms. The Internet had become the World Wide Web, and now Mosaic allowed anyone who knew the basics about using a computer and a mouse to go out in to the Web and easily and quickly locate multimedia information. Files rapidly became hypermedia text pages, and nascent searching and information integration tools became easily accessible. So what is the difference between the past two decades of computers and Internet access and the present, since even now WWW access requires computers and an Internet connection? The difference is that the Web represents Information, and information cannot be disregarded the way that computers can be ignored. Teachers cannot choose to ignore nor have their students omit available information on any subject when the goal is for them to learn.

Colleges were connect to the Web has been simply to access information and this incentive has made a great deal possible collaboration around numerous kinds of educational activities will become a primary motivation for connectivity among colleges, teachers, parents, and students. When students, teachers, parents, administrators, and even legislators can communicate via the Internet and begin to collaborate electronically on issues, the traditional educational process may see a fundamental transformation, with decisions about a student's learning being resolved in new and hopefully better ways. Traditionally, colleges and classrooms have tended to discourage many forms of collaboration. Globalization has been sweeping across the world.⁶⁴⁴

The traditional education system, being more evolutionary than revolutionary, is unlikely to transform itself any time soon into an environment that teaches and

encourages collaboration as a part of learning; emerging technologies, however, can catalyze this change much sooner than it would happen otherwise. Using electronic mail and ‘surfing’ for information with a browser, such as Mosaic, involve communicating with others and locating information, but the real power of the Web will come from people being better able to accomplish their “work,” regardless of its focus.

Desktop video teleconferencing, on the other hand, allows real-time, synchronous collaboration, although bandwidth is consumed quickly with this technology. Chat sessions are a text-based version of synchronous collaboration, as are Multi-User Dungeons (MUDs), Object-Oriented MUDs (MOMs), or Multi-User Shared Hallucinations (MUSHes), where a number of people participate simultaneously in a shared conversation or activity. The real power of digital technologies is not yet tapped; other applications on the desktop for doing exciting and robust synchronous and asynchronous collaboration are just now emerging. Gender Sensitization is a challenge in the new millennium; we have to go through the learning process of gender sensitization in order to build up a new society.645

Females are far behind males in terms of educational attainments, as elsewhere in the country. This is not a surprise given the cultural taboos that come in the way of educating females and the son is given preference that is so glaring in our society. However, as time passed by, females made rapid progress especially in school education, the Constitutional provisions and special efforts at the State level coming in handy. A process has set in motion where by the gap between males and females in literacy rate is getting reduced, the growth rate of enrollment of girls at the school level is exceeding that of boys, the gender disparity index is fast decreasing and, more importantly, more and more females are taking to teaching in schools. There are favourable trends and need to be nurtured. Attempts to promote female education should be given greater priority than ever and there’ can be no better way to raise to self-respect of females than to employ them in schools and make them shape the careers of future citizens of India.