

Status of Research on the Information Society

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UNESCO Publications for the World Summit
on the Information Society

Edited by Kwame Boafo

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GENERAL INTRODUCTION

UNESCO has fully supported the World Summit on the Information Society (WSIS) preparatory process from its beginning, and has succeeded in defining and promoting its positions while setting the ground for its contribution to the Declaration of Principles and the Plan of Action that the Summit is expected to adopt. UNESCO's proposed elements for inclusion in the Declaration of Principles and the Plan of Action are based on its mandate, which leads it to promote the concept of *knowledge societies*, rather than that of global *information society* since enhancing information flows alone is not sufficient to grasp the opportunities for development that is offered by knowledge. Therefore, a more complex, holistic and comprehensive vision and a clearly developmental perspective are needed.

The proposals are responses to the main challenges posed by the construction of knowledge societies: first, to narrow the digital divide that accentuates disparities in development, excluding entire groups and countries from the benefits of information and knowledge; second to guarantee the free flow of, and equitable access to, data, information, best practices and knowledge in the information society; and third to build international consensus on newly required norms and principles.

Knowledge societies should be firmly based on a commitment to human rights and fundamental freedoms, including freedom of expression. They should also ensure the full realization of the right to education and of all cultural rights. In knowledge societies, access to the public domain of information and knowledge for educational and cultural purposes should be as broad as possible providing high quality, diversified and reliable information. Particular emphasis should be given to diversity of cultures and languages.

In knowledge societies, the production and dissemination of educational, scientific and cultural materials, the preservation of the digital heri-

tage, the quality of teaching and learning should be regarded as crucial elements. Networks of specialists and of virtual interest groups should be developed, as they are key to efficient and effective exchanges and cooperation in knowledge societies. ICTs should be seen both as educational discipline and as pedagogical tools in developing effective educational services.

Lastly, these technologies are not merely tools, they inform and shape our modes of communication, and also the processes of our thinking and our creativity. How should we act so that this revolution of minds and instruments is not merely the privilege of a small number of economically highly developed countries? How can we ensure access for all can to these information and intellectual resources, and overcome the social, cultural and linguistic obstacles? How should we promote the publication on line of increasingly more diversified contents, potentially a source of enrichment for the whole of humanity? What teaching opportunities are offered by these new means of communication?

These are crucial questions to which answers must be found if knowledge societies are to become a reality, and offer a world-wide space for interaction and exchange. They are also questions which the actors of the development of these technologies – States, private enterprise and civil society – must answer together.

On the occasion of the World Summit on the Information Society, UNESCO intends to make available to all participants a series of documents summarizing some of the most worrying questions which have just been mentioned. These will help participants to take the measure of the upheavals brought about by the emergence of the new information and communication technologies (NICTs), and will deal with the potential for development, the difficulties encountered, possible solutions, and the various projects implemented by UNESCO and its many partners.

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Table of contents

GENERAL INTRODUCTION	5
INTRODUCTION	11
1 Information Communication Technologies (ICTs) and Gender	13
Introduction	13
Research methods	13
Overview of issues	14
Communication through use of computers	16
Education through use of ICTs	17
Access to and use of ICTs: gender differences	18
Gender inequality	19
Women's use of ICTs in developing countries	19
Key issues in gender and use of ICTs	22
<i>Women in ICT policy making and production skills</i>	22
<i>Women in science and technology education</i>	24
<i>Women and literacy</i>	25
<i>Lack of time</i>	25
<i>Cost of equipment and connectivity</i>	26
<i>The language problem</i>	26
Future prospects and areas of further research	27
2 Cultural and Linguistic Diversity in Media and Information Networks	33
Introduction	33
Research methods	33

General overview	34
<i>Cultural and linguistic diversity in information technologies</i>	36
Some key issues.....	37
<i>Entertainment Industry</i>	37
<i>Market economy</i>	38
English dominance on the Internet.....	39
<i>Access to information technology</i>	42
<i>Preservation of cultural and linguistic diversity and representation of ethnic minorities</i>	43
<i>Future prospects</i>	44
3 Press Freedom and Freedom of Expression in the Information Society: Selected Studies and Projects	49
Introduction	49
Overview of issues	49
Conclusions and recommendations	54
<i>Democracy and pluralism</i>	55
<i>Press freedom</i>	55
<i>Regulation issues</i>	56
<i>Global governance</i>	57
4 Information and Communication Technologies and Persons with Disabilities	59
Introduction	59
Research methods	60
Overview of issues	60
<i>Computers</i>	61
<i>Education and awareness</i>	63
<i>The media</i>	65
<i>Telecommunication</i>	67
Conclusions and recommendations	68
5 Info-ethics and Universal Access to Information and Knowledge	73
Introduction	73
Some ethical issues.....	74
<i>Privacy, confidentiality and security</i>	74

<i>Trust, ownership and validity of information</i>	75
<i>Public vs. private goods</i>	75
<i>Hate and violence on Internet</i>	76
<i>Universal access to information and knowledge</i>	77
<i>E-learning</i>	78
<i>E-governance</i>	79
<i>E-commerce</i>	80
Conclusions	80

INTRODUCTION

While it is true that "the information society" is a frequently heard concept and an expression in common use, the reality to which it refers is complex, and subject to many possible interpretations. What, then, can we say about the studies which attempt to define its outlines? Their immense diversity results not only from the variety of communication media in existence, but also from the multiplicity of issues for analysis, and finally, of course, from the research objectives and methods adopted.

However, it is precisely because this is a field in a perpetual state of flux that it seemed necessary to us to offer a progress report on the current state of research undertaken in the area of the information society. Clearly, we could not embark upon drawing up a bibliographical inventory with any claim to being exhaustive. As we have stated, the research subjects and reference sources are far too varied, and their number is constantly increasing. What we have undertaken is thus rather an exercise in methodology, the results of which we set forth in this publication. How should issues for analysis be defined? How should the sources of information available be classified and evaluated? How should the information thus gathered be used? Such are the main questions that we shall approach in the course of this work.

Pursuing further this line of thinking, we have selected five subjects for more detailed research. They are linked by one common characteristic: each of them represents one of the issues which UNESCO believes it is necessary to address if we are to build a information society which is just and universal. Thus, cultural and linguistic diversity, freedom of expression and Infoethics are essential components of the information society as envisaged by UNESCO. Two other issues, equality of the sexes and the situation of the people with disabilities, in our view possess symbolic value. Access for all to information technologies runs up against a number of pre-existing obstacles which we must address.

Simply to mention these issues gives a foretaste of the difficulty of the task. It is not simply a question of gathering technical information or finding the most precise figures possible. However, although much of the data on these issues cannot be quantified, it is by no means impossible to analyse the current state of research in these areas. Moreover, it requires a rigorous, ordered approach to sources and the information which they offer. The groundwork of the studies proposed respects certain essential requirements, from an initial effort to define the subject to be researched, to a typological classification of the studies consulted and the drawing up of general conclusions and proposed avenues for further thought.

And that is the ultimate goal of this collection. More than a simple overview of the current state of research, it aims to provide all researchers, academics and professionals who so wish with some ideas and suggestions to find their way around the vast mass of research undertaken and produced on various aspects of the use of information and communication technologies.

Chapter 1

Information Communication Technologies (ICTs) and Gender

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Introduction

This report focuses on research that has been conducted internationally on the topic of gender and the use of information and communication technologies (ICTs). The report presents a brief analysis of various research studies and scholarly publications examined, focusing on the main trends identified and some gaps in the body of literature consulted. The report also includes some recommendations for future investigations.

Research methods

Relevant information focusing on research that has been carried out in this particular field from 1998 to 2001 was gathered from a variety of sources. Books, journal articles, web documents, and library databases were used in order to compile as comprehensive a bibliography as possible of the research done in the subject area. Ability to scan the literature more broadly than this was constrained by the need to produce work against a tight time-frame. Given time and financial constraints, we relied heavily on the Web as a significant source of information for the compilation of relevant studies undertaken. Although the study may have benefited from additional access to libraries, we are confident that the final product represents reasonably well the range of research conducted in this area between 1998 and 2001. This is particularly so because that period correlates with a time of maturation of the Internet as a repository for serious academic research. In cases where we were unable to secure access to resources (mostly only a problem in relation to published books), we often managed to find book reviews and publishers' abstracts which gave a good sense of the focus of the publication.

Our literature scan did reveal a wealth of relevant reports that have not been examined because the research was not done between 1998 and 2001. In particular, the period between 1993 and 1996 appears to have been one in which many seminal documents on ICTs and gender were produced. In 2002, there also appears to have been a renewed interest in the field, particularly with respect to use of ICTs in developing countries.

Overview of issues

A scan of the World Wide Web and of bibliographic databases indicates that there is tremendous research interest in the field of ICTs and gender. The sources of research are widespread, but there appears to be two primary sources:

1. University departments, particularly universities in developed countries (although this observation may be skewed by relatively poorer quality access to the Internet in developing countries) and most often from Gender Studies Units and Departments; and
2. International donor agencies, including structures such as the World Bank, UNESCO, and the International Telecommunications Union.

Other secondary sources of research include non-governmental organizations (NGOs) and government departments.

Although the generalization does not hold in all instances, the research from university departments tends to focus more on generic issues relating to ICTs and gender, most often using case studies from developed countries. Research commissioned or funded by donor agencies tends to focus primarily on use of ICTs in developing countries, as does that of NGOs. Government research is usually commissioned to inform policy development. Quantitatively, significantly more research has been done in and focuses on ICT use in developed countries, although there is a steady growth since 1999 in research focusing on developing countries. It is notable that papers focusing on developing countries tend to be characterized by less rigorous research than those done in developed countries. A large percentage of papers on developing countries is a result of research processes funded by international donor agencies, which generally have less rigorous research requirements than academic processes. There are some case study research

projects based in developing countries, but it is clear from the scan that detailed, micro-level research on the dynamics of ICT use and gender tends to be far more rigorous when analyzing developed world case studies, and there are also significantly more developed case studies from developed than from the developing countries. Much of the information available and previous research done regarding ICTs and gender issues is fairly general and tends to focus primarily on access to ICTs by women and their experiences in the use of ICTs. There are also some cases that focus on the use of ICTs within specific sectors such as education or agriculture, but these are generally few. Our scan of the research, focusing on the period between 1998 and 2001, illustrated two main themes: (i) the extent to which women are able to access and use ICTs; and (ii) various ways in which women make use of ICTs, and their general experiences. More specific issues that are considered include the differences between males and females with regard to their access to and use of ICTs and gender equality as well as individuals' unequal social, legal, political, and cultural treatment as a result of their gender.

Regarding women's experiences when using ICTs, it is interesting to note that much research seeks to test the hypothesis that, because the Internet is a virtual environment, issues of gender will disappear and all users will be able to behave and interact as equals. However, in the research that we examined, there is little that proves this hypothesis after sustained case study analysis. On the contrary, most studies on this theme tends to confirm that males have dominated the Internet since its inception. Although use of the Internet by women has increased dramatically in the last few years, women and girls still use the Internet less and in different ways from men.

Low Internet use by females not only gives them less access to information and services online, but also can have negative economic and educational consequences. Historically, females have been less likely to embrace new technology than males. Negative attitudes towards new technology underlie females reporting less computer experience as well as less computer competence and less favourable attitudes towards computers than males. Gendered communication differences also affect Internet interactions and lead to male domination in Internet discussion groups. Research generally has shown that male online communication is status-enhancing and adversarial while female's online communication is supportive and tentative.

These communication styles may deter greater female participation online, and cause disparities between males and females with regard to their use of ICTs.

Issues such as the above tend to be a greater preoccupation in developed country contexts, where problems of physical access to ICTs are relatively minor compared to the developing countries. Consequently, in research into ICTs and gender in developing countries, the focus tends to be at a socio-political level, analysing factors that prevent women from being able to access and use ICTs at all. Unlike much of the research in developed countries, this kind of research usually has a pragmatic focus, often concluding by presenting models to make ICTs more accessible to women or recommendations to overcome barriers inhibiting such access. Analysis of ICTs and gender use in developing countries is often also integrated with analysis of poverty and ICTs access, based on the reality that poor women tend to be the most disadvantaged in developing societies.

The report, therefore, focuses on issues and studies relating to: (i) communication through the use of computers; (ii) education through the use of ICTs; (iii) differences between males and females access to ICTs; (iv) gender inequality in social, legal, political and cultural treatment; (v) women's use of ICTs in developing countries; (vi) some key issues in gender and use of ICTs; and (vii) future prospects and suggestions for further research.

Communication through use of computers

On examination of the research done in this field, it was found that two competing theories exist regarding computer-mediated communication (CMC). The first suggests that online communication is equal. Individuals that use the Internet are stripped of voice inflections, body language, and other common cues of conversation, allowing women to participate in online communications in the same way as men. The lack of these social cues and of hierarchy in the structure of the Internet provides the potential for equality in cyberspace. The second theory concerns the tendency for Internet users to display features of culturally learned gender styles in their messages, and for gender differences to work to the disadvantage of women. This theory suggests that online interaction is merely a reflection of real world conversation where men dominate and that the issues of power in

cyberspace are similar to the issues of power in physical space. The notion of freedom of speech has been used in order to defend online harassment as freedom of expression and to construct female resistance to such harassment as “censorship”. Based on this theory, it becomes clear that social parity can only exist in an environment of tolerance and respect for diversity amongs users. Most research we consulted tend to disprove the first theory, arguing through detailed case study analysis that ICTs do not actually serve to remove culturally learned gender styles (Barrett, 1999; Herring, 1998; Herring, 1999; Millar, 1998; Soukup, 2001).

Education through use of ICTs

In some case studies, contextual analysis of online dialogues was used to investigate socio-emotional behavior. In many ways, this type of research expands on the issues that have been discussed above, examining the different roles played by males and females in the online learning environment. Again the data analysed suggest that men and women assume distinctively different roles in online learning environments. The cognitive and “metacognitive” content of the online seminar contributions by men and women was found to be similar, but their social and interactive behaviour was significantly different. For example, in one research it was found that, within a formal online learning environment, men sent more messages than women, they wrote messages that were twice as long, and made more socio-emotional contributions. Male participants were also seen to be aggressive, argumentative, and power-oriented. Women, however, were found to contribute more “interactive” messages than men, sought relationships, and intimacy and were often dominated and over-powered by the aggressive discourse of the masculine members.

An additional gender disparity detected with regard to the use of ICTs for educational purposes was demonstrated by examining the physical interaction between males and females in computer science classes. It was found that the majority of girls in computer science classes were seen to be unhappy as a result of being picked on by the boys in their class, and feared interacting with the other girls. This is an example of a theme common in gender studies, which extend beyond the field of ICTs, relating to the extent

to which females in schools are “conditioned” or “encouraged” not to engage in particular learning areas such as mathematics, science, and technology.

This theme has very specific dimensions in developing countries, where girls face even more barriers to ICT access than in developed countries. For example, in these contexts, girls are often discouraged from attending secondary schools (where the largest percentage of ICT infrastructure investment tends to be located), and are expected to perform a range of domestic duties not expected of boys. In these contexts, research indicates that girls face great difficulties in accessing ICTs. Where they do access ICT, they face the kinds of problems outlined in the previous paragraph. Overarching all of this in research on developing countries is the reality that, for most children (girls and boys), any form of ICTs access is simply not possible (Barrett, 1999; Burka, 2001; Daly, 2000; Freeman, 1999).

Access to and use of ICTs: gender differences

Studies over the past two years have shown that males and females differ in terms of their access to and use of computers, and this tends to be confirmed in research conducted between 1998 and 2001. The disparities in which males and females use computers exist along various dimensions. Male students take more courses in which computers are used, they use computers more frequently in their recreational time; and stay on them for a greater length of time than female students. Several popular theories regarding gender differences in this field have been examined. Historically, there are three main hypotheses used in the research of gender differences: (i) genetic differences, (ii) different learning behaviours, and (iii) a combination of both. Most research indicates that males and females are not biologically different, but rather have different opinions about computers and their usage.

Research of this kind continues the themes outlined above. It adds to the debate by suggesting that differences in ICTs use are sociological in nature. Although this has some negative consequences (particularly in terms of discouraging females from using ICTs regularly), there are also some indications of potentially more constructive applications of ICTs implicit in these differences. The example of different kinds of interaction in the online learning environments cited above suggests that there may be broader social ben-

efits in trying to foster applications of ICTs based on interaction and relationship-building rather than confrontation and adversarial relationships (Green and Adam, 2000; Kirkpatrick, 1998; Martin, 1998).

Gender inequality

One of the key elements in discussing the “digital divide” is the uneven distribution of technologies within societies as well as across the world. Internet usage is often taken to be a standard indicator of the use of ICTs. The Academy for Educational Development’s LearnLink project in recent years carried out research regarding the use of ICTs and women in developing countries. The research found that women in developing countries face considerable obstacles in gaining access to ICTs. The study looked at data from nearly 30 countries and found that less than 1 per cent of the total population in all developing countries use the Internet. These users generally are from the urban, educated elite, and primarily use computers in the workplace for routine office work. According to this and other similar studies, among the obstacles to women’s access to ICTs are low levels of literacy and education, language, time, cost, geographical location of facilities, social and cultural norms, and insufficient computer and information management skills.

However, it is notable that most research of this kind is characterized by weak statistical data. This is not a criticism of the research itself, but rather an indication of the reality that gathering quantitative data in developing countries contexts is notoriously difficult. This is made more complicated in fields such as gender studies because very little quantitative data gathered differentiates between males and females. This does not mean that conclusions reached such as those outlined above are suspect. It does, however, point to a need to find mechanisms to define the extent of problems pertaining to ICTs use and gender more sharply by finding ways to improve the systematic gathering of quantitative data on male and female patterns of use of ICTs.

Women’s use of ICTs in developing countries

It is generally difficult to obtain data on Internet usage by gender by country, especially in developing countries. The International Telecommuni-

cation Union (ITU) gathers data on Internet use by countries, but the data is not sex-desegregated. The available sources of information include marketing surveys and ad hoc research projects that have sex-desegregated data. From these figures, that there does not appear to be any correlations between women's Internet usage and expected indicators such as female literacy rate, female GDP per capita, female representation in professional and technical jobs or even gender empowerment. Some of the countries with high percentages of women users are countries where overall users remain limited to a very small elite, especially in the less industrialized countries (Hafkin and Taggart, 2001).

According to regional statistics, more than 90 per cent of Internet users are in industrialized countries, with 57 per cent being in the U.S. and Canada alone. High current growth rates as well as potential growth are apparent in Asia, particularly in China and India. It has been observed that, just as the percentage of women users in the U.S. has been growing rapidly to the point where women are now a majority of users of the Internet, women's use has been growing in developing countries. However, while women's use is growing rapidly, in many cases it is not sufficiently captured due to inadequate statistics. As illustrated by data from the International Telecommunication Union, in the U.S. where 46 per cent of homes have Internet access, many women have become as connected as men and using the computer has become a home activity that takes up many hours of women's time each week.

In contrast, except in the upper income enclaves, home access to computers and to Internet is not a common phenomenon in developing countries. When women have access, they generally have it at work and they use it in their work places. As Bautista points out, in India all electronic media, ranging from satellite television to e-mail and the Internet are accessible only to the privileged classes and cater almost exclusively to the predominantly male information and entertainment needs and desires (Bautista, 1999). In Bangladesh, the cost of hooking up to the Internet could feed a family for a year. In the African setting, Morna and Khan state that the majority of women who can access information technology have it only at work (Morna and Khan, 2000). For the users at work, there are those women who use information technology largely as tools of production, namely, routine office work, data entry, programming and others, and those who use IT as tools of

communication, i.e. creating and exchanging information, especially those working in NGOs, academia as well as the public and private sector.

It should be noted that information technology has had a progressive social impact in developing countries and has become identified with the quest for democracy and environmental protection. Hafkin (2000) notes that the first linkages between gender information technology and developing countries started with the work of NGONet in the preparation for the 1992 U.N. Conference on Environment and Development held in Rio de Janeiro, Brazil. NGONeT's aim was to give women and other civil society groups from developing countries a chance to use electronic communication to express their views in 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 cases in developing countries (Hafkin, 2000). The Association for Progressive Communications (APC) women's programme has not only used the new media for information exchange, but also led efforts to get women access to training in the use of new technologies. The result has been a large surge in activities facilitated by information technology on the part of women's NGOs globally.

Brisco (2000) observed that some women in developing countries use electronic communication for networking to promote their business interests. Although this is an area which is far less developed than that of politically activist networking, it represents an interesting area with possibilities for further development. Federations of business and professional women from many countries were joined in a business-to-business network that was connecting with business women in North America as trade partners, suppliers, and contacts. Regrettably, the enterprise closed down at the end of 2000 (Brisco, 2000). Women entrepreneurs in small scale and medium scale business are using information technology in the operations and management of their businesses. Although not to the same extent as comparable groups of men are doing, women's NGOs and women's businesses are undoubtedly using information technology to make their organizations and enterprises more effective and efficient.

Gallagher (2000) adds that, with the news of women in the U.S. overtaking men as users of the Internet during the first quarter of 2000, more

dot.com retailers are directing their web presence towards women consumers. Commercial forces are exporting this approach to women in developing countries and commercial portals directed at women consumers have emerged, aimed at women in China, India and Latin America (Gallagher, 2000). Hafkin and Taggart (2001) point out that the 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 such countries, much of the choice of application is conditioned by the available bandwidth and speed of the connections. Where there are good telecommunication infrastructure and fair number of women connected, there is more use of the World Wide Web. Where there is less concentration, it is on e-mail and electronic discussion groups (Hafkin and Taggart, 2001).

Key issues in gender and use of ICTs

Women in ICT policy making and production skills

Although women's use of information technology has witnessed an increasing surge, available evidence indicates that women are conspicuously absent from decision-making structures. These structures include boards and senior management of private IT companies; senior management and advisors of policy and regulatory organizations such as the International Telecommunication Union, the World Trade Organization, the World Intellectual Property Organization, technical standards setting organizations, industry and professional organizations such as the Internet Society, national policy and regulatory organizations, line ministries responsible for the IT sector, and international development organizations and agencies. Yet, as Marcelle (2000) points out, empirical research confirms that policy making in technological fields often ignores the needs, requirements and aspirations of women, unless gender analysis is included. It is further noted that even when gender is introduced at a conceptual level, policy-makers often rely on poor, outdated, incomplete and inaccurate data.

Women are also few and far between as producers of Internet content, programmes, designs, inventions and fixers of computers. This particular

issue has generated considerable concern about women, especially in less industrialized countries who are passive consumers of ICTs rather than producers and lack the skills and opportunities to attain leadership roles in ICTs. Mitter (2000) is particularly concerned that, as the economies of the future are increasingly based around ICTs, women solely using information technology risk being disenfranchised from the positions of power related to ICTs and unable to develop ICTs that address women's needs, interests, and priorities that men who design and produce the technology may disregard.

Generally, women tend to be concentrated in end user, lower skilled ICTs jobs related to word processing or data entry and make up small percentages of managerial, maintenance and design personnel in networks, operating systems, or software. It is argued that the low representation in the production and design of ICTs is a result of reduced access to education, socio-cultural norms which discourage women from studying science and technology and feminization of the ICTs jobs that women hold. Mitter (2000) notes that the under- or non-representation in the decision making process in both developed and developing countries is particularly striking in the new ICTs industries which are relatively free of the historic gender-based division in labour, and where one might expect women to fare better. The issue seems to be that this disparity reflects the global division of labour with women generally relegated to lower level positions and unable to break through glass ceilings of arrangements.

Marcelle (2000) observes that until very recently no consideration was given to gender-differentiated impacts in ICT policy formulation. The landscape seems to be changing because of the intervention led by United Nations University Institute for New Technologies (UNU-INTECH) and the United Nation's Development Fund for Women. The ITU considered gender issues at the World Telecommunications Development Conference in March 1998 and, because of this policy advocacy, the ITU also established a task force in gender issues and mainstreaming gender into ITU work. The programme of work commits ITU to assisting Member States with the implementation of gender analysis in their national telecommunications policy planning, introduction of gender desegregation into statistical series, and integration of gender considerations into programmes such as the universal right to communicate, telemedicine, tele-education, telecommunications and the environment (Marcelle, 2000).

In the U.S., the number of women in telecommunications training institutes whose graduates often move into leadership positions in the information and communications technology field, has been increasing considerably. The institutes have an explicit objective to increase women's participation in telecommunication and reform or regulation. The Bureau of Telecommunications Development which has a very strong focus on information and communication technology routinely includes a gender focus in its major messages in development activities.

Women in science and technology education

Science and technology education is one of the key prerequisites for work in information technology, especially for computer programmers, engineers, system analysts and others. In the U.S., it is said that girls enrolment in college preparatory mathematics and science courses has been rising steadily in the last 30 years or so. For example, in California more girls than boys are taking college preparatory courses in maths and science. Rathgeber (2000), however, notes that girls still lag behind in physical and computer science. It is noted that American women are much more likely to study biological and health sciences than physical sciences, engineering or technology. There was much concern in the U.S. about the low number of women students majoring in computer science. In 1998, for example, women were only 15–20 per cent of undergraduates in computer science at leading universities. The percentage of women receiving bachelors degrees in this field actually decreased from 37 per cent in 1984 to 27 per cent in 1995, according to one study (Margolis *et. al.* 1999).

Women's enrolment rates in science are said to be lower than those of men globally. Even when more girls enroll in schools, poor schooling and negative attitudes towards girl students in general and especially as students of mathematics and science, frequently leave them without the necessary basic education to continue in scientific and technological studies. Girls in developing countries are much less likely than boys to enroll in science and technology courses, mathematics or computer science from the secondary school level onwards (Hafkin and Taggart, 2001). Research on academic programmes in science and technology worldwide suggests that certain notions of science and engineering contribute to women's low enrolment in tertiary level programmes in these fields. According to findings from a study

in 2000 by the American Association of University Women (AAUW), girls and women find technology related areas unappealing because they associate them with jobs that are “solitary”, “passive” and “sedentary” (AAUW, 2000). Another research found out that girls and women have the preconception that engineering is a “dirty”, heavy or manual occupation, and they seem to lack a clear understanding of what engineers do (Hersh, 2000). Women outside the U.S. also show an aversion to studying information technology.

Women and literacy

In more general terms, women and men need basic literary and numeracy in order to read and compose simple messages, navigate the Internet and execute commands in most software applications. Since women make up nearly two thirds of the world’s illiterate population and one out of every two women in developing countries is illiterate, women are more likely than men to lack the basic literacy and computer skills required to take advantage of the new global communication opportunities, as Fraser-Abder and Mehta (2000) point out. Women face greater challenges in pursuing education at all ages because of lack of time to attend school, familial and household duties, lack of control of funds to pay for education, and socio-cultural norms that give female education low priority. In developing countries in particular, while gender gaps in primary and secondary school enrolment have narrowed in recent years, girls still comprise two thirds of the school age children who have no access to basic education and they are much less likely than boys to enroll in mathematics and computer science courses.

Lack of time

Women in developing countries have multitudes of other problems in their participation in ICTs. Huyer (1999) sees time as a major barrier as children’s responsibilities rest on the shoulders of women and girls; hence they are less likely to have free time to spend using the Internet whether at home, at work or at the public Internet centers. Lack of time is repeatedly cited in many studies as a major obstacle to “seeking information”, becoming familiar with computer use, “getting help”, “preparing materials”, “upholding them and responding to e-mail”, “setting up a website”, “screen-

ing through information,” and many others. This issue of time is closely related to the geographic locations of public Internet centres which seriously affect women in developing countries. Most public Internet centres are generally located in big towns and at times they are long distances from residential areas. Since more women than men live in rural areas, the gender gap in Internet access runs parallel to the rural/urban divide. Rural areas where women constitute 60 per cent of the population often lack the resources and infrastructure for ICTs.

Cost of equipment and connectivity

Equipment and connection costs are generally excessive for most people in developing countries. As most homes lack computers, women are most unlikely to afford access to public sites. User fees charged for Internet access at public venues may not be within reach of women who generally have less access than men to resources to pay for fees. As women continue to join the labour force in greater numbers, access to ICTs offered through the work place is one possible avenue available to educated, middle class women with office jobs. However, in most developing countries, many women are far more likely to work in the informal sector, including domestic services and home-based working or in manufacturing than in offices.

Women who work in these sectors are unlikely to have access to computers.

The language problem

The Global Networking for Change cites language as a major obstacle to women’s participation in ICTs. The overwhelming dominance of English and, to a lesser extent, of other major international languages in the Internet excludes access to the majority of the world’s population who speak other languages. This factor significantly impacts on women and other marginalised groups without access to the formal schooling that would allow them to learn international languages. It is noted that even users with basic proficiency in English experience discomfort that discourages Internet use. The present dominance of English in the Internet also demonstrates the heavy flow of information from the U.S. and Western Europe to developing

countries and makes an exchange of information between the non-elites in the two spheres quite difficult.

Future prospects and areas of further research

ICTs could assist women to work more efficiently and productively in their present work as well as in new opportunities presented by the information economy. This section focuses on the potentialities for women's use of ICTs in agriculture, small scale business, championing their interests, the need for increased opportunities in their participation in technology innovation and areas of further research.

From the analysis, it is clear that women have entered high skilled jobs in information technology. This has largely taken place particularly in countries where national policies have promoted science and technology education.

There are some important areas where women have made significant gains in employment brought about by information technology. More young women are doing jobs previously done by men and venturing in new fields of work created by development in technology. More young women especially in developed countries are studying computer science and related subjects. As they do that, it will increasingly become easier for others to follow.

In order to retain and build upon the employment gains associated with globalisation and information technology, women need to move into more technically and cognitively oriented, better paying jobs. To do that requires accessing the educational and training opportunities necessary to equip them with the required skills. Such skill requirements must be in tandem with advanced technology. Women also need to confront gender based obstacles and greater demands made on them than men on the domestic front. As information technology becomes more closely linked with the development of knowledge economies, education for young women becomes more and more important. The low literacy rates of women, especially in Africa, are barriers to women's advancement in jobs associated with information technology as well as their use of the technology. African women are said to have the lowest participation rates in the world in science and technology education at all levels.

Efforts have to be made to explore areas of utilising more information technology not only to improve women's current economic activities but

also to reach a large proportion of women especially within the rural setting. As Munyua (2000) points out, although women play a key role in agriculture, the principal industry of most developing countries, they have very little access to information that would help them improve their productivity and increase their economic contribution. Considering the lack of information resources available to rural women farmers, ICTs have the great potential to assist rural women meet their needs as they can provide women farmers with guidance on where and when to sow, harvest and market their produce to avoid selling their produce at throw away prices. Women farmers certainly need information on improved farming technologies, access to credit, agricultural inputs, transportation systems, produce potential, new markets, storage and others. The radio is probably the communication technology most accessible to women farmers in less industrialized countries. The Union of National Radio and Television Broadcasting in Africa (URTNA) and the World Space Foundation are potential sources of content that could be useful for women farmers. Women's Net in South Africa runs a project that brings together women's organisations and community radio stations in developing relevant content for the local scene. It should, however, be stressed that the cost of radios and maintaining them remains a major constraint. Perhaps language, technology skills and cost could be addressed through the use of information intermediaries. These could include extension agents, community workers and other groups.

ICTs could also prove of high potential in providing support to women running small business. According to the National Foundation for Women Business Owners in the U.S., women own business comprising between one-quarter and one-third of the formal sector business population around the world. As with other women's economic activities, the most valuable application of ICTs for women's small business owners is information to facilitate their business. Although there are considerable start-up costs related to such factors as obtaining electricity and telephone, purchasing computers and sub scribing to an Internet service provider, the amount of information available from the Internet is colossal compared to the cost. Small-scale businesswomen need information about obtaining inputs, new markets, and the environment in which they are doing business and skills. They tend to rely for such information on informal sources which, in many cases, could be inaccurate. Besides information deficits, most women entrepreneurs need to improve technical and management skills.

Indeed there are numerous areas for women's need for ICTs. Women can use ICTs to work together, gain peer support, campaign effectively and share control and use of information to further their interests. In this regard, ICTs will enable women to be proactive and introduce their own perspectives when championing issues, opinions and experiences. In their isolation, women depend on traditional and local sources of political and civic information, which is often unreliable. Women's use of ICTs can bridge their geographic isolation and promote interaction, networking, sharing and formulation of common strategies and address their interests. It also allows women to communicate with each other locally and internationally, without having to travel and without time constraints. It could also assist in broadening women's vision from the local or national to a more international outlook. In many parts of the world women are putting ICTs to work in the movement for their rights and empowerment, communicating among dispersed networks, mobilising action in times of crisis, participating in policy debates and voicing new perspectives. This was well demonstrated during the Fourth World Conference on Women (Beijing, 1995) which proved to be a major watershed in realising the power of information technology as a tool women could use for mobilisation, information exchange and empowerment. A large number of women from all over the world worked together electronically to influence the work of the conference. The Internet was used to exchange information and prepare participation, to influence the formulation of the Platform for Action by governments and to shape strategies of NGOs at the forum. Women used and continue to use many different ICTs tools including e-mail, audio-conferencing, World Wide Web, CD-ROM and diskettes, information gateways and portals, fax servers and others.

Efforts are equally needed to ensure that women are among those who work in technology innovation. Scholarships and grant programmes for women in science and technology need to be created as well as research and training programmes. The objective is to ensure the presence of girls and women among the technologically trained. Girls and women should have equitable access to training at all levels, including system designs, software development and information management. The single most important factor in improving the ability of girls and women in developing countries to take full advantage of the opportunities offered by information technology is more education at all levels from literacy through scientific and technological education. Such improvement requires interventions at all levels of the

education system. Information technologies should be integrated into girl's education and women's literacy programme to expose them to new technologies at the early stages. There is also the need to effect changes in the way science and technology are taught which could help in attracting more women in these fields. Above all, is the need to engender ICTs policy not only at the national and international level but also at the level of the World Trade Organisation, the ITU and other inter-governmental bodies.

Such efforts in enhancing increased women participation in ICT programmes need to be complemented with continued and vigorous research activities into problems that hinder their utilisation of IT skills. Among others, research should be carried out into issues relating to:

1. Information resources available to rural and small scale business entrepreneurs and effective and cheap means of communication between women involved in such activities.
2. Knowledge and skill acquisition that would enable more women to participate in the various ICT programmes and activities.
3. Intervention strategies that are likely to enhance girls and women participation in education at all levels and scientific and technological education.
4. Engendering ICTs policy that would help to ensure the active participation of women in policy discussions and lead to increased contribution of IT to socio-economic development.

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Chapter 2

Cultural and Linguistic Diversity in Media and Information Networks

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Introduction

The report focuses on research that has been conducted internationally in cultural and linguistic diversity in media and information networks during the period of 1998-2001. It presents a brief analysis of various research studies and scholarly publications examined, focusing on the main trends identified in that research and identifying some gaps in the body of literature consulted.

Research methods

Relevant information on research carried out in the subject-area from 1998 to 2001 was gathered from various sources. Web documents, journal articles, books, masters and doctoral theses and library databases relating to the topic were scrutinized in order to present a comprehensive bibliography. An extensive search on the World Wide Web was carried out, though, due to time constraint, the ability to scan the literature was limited by the need to produce the report as per the timeframe stipulated by UNESCO. Extensive use of the Internet to access information for the compilation of relevant studies undertaken in this field was done, since most of the databases are online. Where full articles, dissertations or books could not be obtained online, the University of Natal interlibrary loan services were utilized and we often managed to find book reviews and publishers' abstracts which gave a good sense of the focus of the publication. The search revealed a wealth of relevant studies in this area, including many undertaken outside the period under study (i.e. before 1998 and after 2001). Since these periods were not the focus of the study, these materials were not included in the analysis.

General overview

There is great research interest in cultural and linguistic diversity in the media and information systems. Among the diverse sources, four primary sources of research stand out:

1. Non-governmental Organizations (NGOs) such as International Clearing House for Endangered Languages, British Film Institute, Cable News Network, the Internet Content Ratings Association and Summer Institute of Linguistics International;
2. Departments of universities in the developed and developing countries with greater part of the documents coming from developed countries and most of them from Communications, Information Services, Linguistics and Education departments;
3. Government departments (most of the documents in this category were brief reports from developing countries, particularly South Africa), including reports from ministers and presidents on broadcasting issues; and
4. International organizations including structures such as World Bank and UNESCO.

From the studies examined, the focus of research from university departments was on such issues as (i) promoting multiculturalism on the net; (ii) use of new online technologies in language revitalization and the study of linguistic and cultural diversity; (iii) effects of globalization on cultural and linguistic diversity; (iv) language disappearance; (v) rethinking language; (vi) culture and educational policies to enhance linguistic and cultural diversity; (vii) implementation of local languages as media of instruction; and (viii) how to address problems of access and linguistic diversity. Most often, these studies used case studies from developed and developing countries. Research commissioned or funded by donor agencies focused on (i) campaigns to protect cultural diversity in developed and developing countries; (ii) challenges of language diversity in the information society; (iii) the promotion and use of multilingualism and universal access to cyberspace; (iv) cultural diversity in the 21st Century; and (v) the role of indigenous knowledge in development.

Research from NGOs focused on themes similar to those in university departments; but the studies also dealt with (i) production of television pro-

gramming and content appealing to people from diverse cultures; (ii) inclusion of minorities in the newsrooms and actors who reflect the composition of the market; (iii) need to prepare effective teachers for the growing cultural and linguistic diversity in the classrooms; (iv) evolution of the non-English speaking online population; (v) nations' apprehension about the dominance of English in the Web; and (vi) the call for international co-operation to bridge the digital divide in developing countries. Government research put stress on (i) cultural diversity and nationhood; (ii) broadcasting regulations; (iii) dilemmas of minority languages in a globalized world; (iv) cultural diversity and affirmative action; and (v) recognition of and need for legislation on cultural diversity legislation.

Significantly more research has been done in and focuses on cultural and linguistic diversity in the media and information networks in developed countries, although there is some research focusing on developing countries. A good percentage of papers on developing countries were commissioned research funded by NGOs and by international development agencies, which generally have less rigorous research requirements than academic processes. An analysis of the research shows two main themes:

1. Apprehension about the extent to which global culture and homogenization, dominated by the United States and Western values and life-styles, and driven by a consumer-based, free market ideology and transnational entertainment-industrial complex, has infiltrated every corner of the earth and the fact that it may lead to erosion of cultural and linguistic diversity; and
2. Calls for protection of cultural and linguistic diversity in the information society and the promotion and use of multilingualism and universal access to cyberspace.

Pertaining to the homogenization of global culture, dominated by the United States, research focuses, for example, on how in Asia, Latin America, the Pacific region, Africa and the industrialized world, young people want Nike sneakers, Gap clothes, Michael Jordan T-shirts, the latest CDs, Hollywood blockbuster movies, American television programmes and mass-market books. There is the apprehension that, around the world, North American corporate culture is destroying local traditions, craftsmanship knowledge, skills, artisanat and values. Artisans' groups trying to sell their

products locally have been wiped out by global fashions, thus eroding the world's cultural diversity with little notice. Coupled with the global American culture is the dominant use of the English language as the *lingua franca* for international transactions. Research in this area stresses how English has become the dominant online language and how, due to the influence of English, minority languages are undermined and may disappear and thus lead to the erosion of the world's linguistic diversity. Little research focuses on how global culture and the use of English as the *lingua franca* for international transactions may be of benefit to communities.

Regarding the issue of protecting cultural and linguistic diversity in the information society and the promotion and use of multilingualism and universal access to cyberspace, research puts emphasis on such strategies as:

1. calls for governments to establish policies to safeguard their cultural and linguistic diversity;
2. formulation of education policies and curricula which enhance the teaching of cultural and linguistic diversity;
3. call for the use of minority languages for Internet content;
4. development of Internet software which supports multilingualism and can be used to teach people from diverse cultures;
5. call for campaigns to help save the number of languages that are disappearing around the world through research, documentation and raising public awareness; and
6. call for international cooperation to bridge the digital divide, especially in developing countries.

Cultural and linguistic diversity in information technologies

In analysing the research done in this area, it was found that there are three main positions on the cultural aspect of technology. One position, generally called the substantive or determinist view (Ebersole, 1995) argues that technology constitutes a new type of cultural system that restructures the entire social world (Pacey, 1992). Many proponents of this theory point out what they see as the negative consequences of technological developments for cultural pluralism, diverse cultures and languages destroyed in the

wake of the inexorable march of technology (Ellul, 1990; Heidegger, 1977). A second position, instrumental or neutralist view (Ebersole, 1995) regards technology as devoid of any particular content or values and thus indifferent to the variety of ends it can be used to achieve (Freenberg, 1991). In this view, it is not technology *per se* which creates problems or solutions, but rather the way in which it is used. Criticising both of these positions, Freenberg (1991) puts forward an alternative critical theory of technology in which technology is neither deterministic nor completely neutral, but rather ambivalent. The ambivalence of technology is distinguished from neutrality by the role it attributes to value in the design, not merely the use, of technical systems. Yet the values inherent in particular technologies do not mean that their impact is pre-determined; technology is not a destiny but a scene of struggle. The critical perspective is useful for interpreting the uses of new online technologies by indigenous and other non-western people, particularly when it is borne in mind that machines require a social organisation to become technologies (Hodas, 1993). If people accept technology uncritically as culturally neutral and as the latest expression of modern progress, they may not recognize how their interactions with technology are changing them (Bowers, 2001). What must be evaluated for its neutrality or non-neutrality, then, is not merely the bytes and bits of the Internet, but its social organization. The research publications analysed supported all three theories. However, most of the consulted studies tended to apply the first theory, foregrounding negative consequences of technological developments.

Some key issues

Entertainment Industry

Many societies, particularly indigenous people, view culture as their richest heritage, without which they have no roots, history or soul. Its value goes beyond money and to “commodify” it is to destroy it. However, the entertainment-industrial complex sees culture as a business that should be advanced through international trade agreements including the World Trade Organisation (WTO). A huge, well-organized coalition links the U.S. entertainment media and information technology sectors in a “common front” to oppose cultural protectionism, and players in these sectors such as American Online/Time-Warner and Disney work closely with the government to pro-

tect their own interests. In recent years, the WTO has enforced free-trade rules on behalf of powerful transnational organizations (Barlow, 2001). This in turn profoundly affects every culture in the world, enforcing a for-profit model on every aspect of the society and denigrating any activity that is not, at its core, commercial (Barlow, 2001). Furthermore, while the American market remains largely closed to imports, the big American studios can offer lower rates, maintain higher production values and spend more in marketing than local competition, making it cheaper for countries such as South Africa to buy English-language programming from the United States, Britain, Canada or Australia, hence limiting their ability to support local production (Jenkins, 2001).

Market economy

According to the champions of corporate-led globalization, culture in all its manifestations and related domains should be deregulated; presumably this would revalue culture, make it better known and understood and accessible to a world audience (William, 2000). The opponents of economic globalization argue that culture is not a commodity like any other. To treat it as such is to risk the destruction of cultural diversity, and the creation of a uniform world ruled by the logic of the market. As media systems open, the ability of national policy makers to regulate the forms of culture disseminated is likely to diminish further. This has consequences for the conceptualization of cultural policies aimed at promoting cultural diversity in fragmented and unequal societies. A market-based choice and competition are likely to facilitate a skewed representation of interests and preferences. For example, the South African Advertising Research Foundation, a barometer on media and consumption practices, continues to collect data using racial and ethnic categories inherited from the apartheid era which indicates the entrenched reality of social divisions that apartheid policies actively cultivated and reproduced. As a result, the market-nexus between advertisers and broadcasters in South Africa tends to register the tastes of only a very small minority, made up of English and Afrikaans language speakers (Barnett, 2000).

English dominance on the Internet

Technology is also advancing one culture and one language. English is used in 80 per cent of the websites, yet fewer than one in ten people worldwide speak the language. The Global Networking for Change argues that the overwhelming dominance of English and, to a lesser extent, of other major international languages in the Internet, excludes access to the majority of the world's population. This factor significantly impacts on marginalized groups without access to formal schooling that would allow them to learn international languages. Even users with basic proficiency in English experience discomfort that discourages Internet use.

Monke (1999) suggests that half of the world's 6,000 languages will become extinct in the next century, and 2,000 of the remaining 3,000 languages will be threatened during the century after; while Watson (1999) posits that 80 per cent of the world's languages could disappear during the next century. The spread of the Internet, which has increased the demand for the use of regional, national and global languages like English, German and Japanese to conduct its business, will contribute to the extinction of these local languages, and with it, their cultures (Monke, 1999).

As English and the encroachment of American culture continue to dominate the cyberspace, global resistance appears to grow. For example, the director of a Russian Internet service provider described the Web as "the ultimate act of intellectual colonialism". For these ideological reasons, there is some opposition to the use of English as the *lingua franca* for commerce and trade, crisis management, and scholarly and intellectual discourse on the Internet. The French president Jacques Chirac has described the prevalence of English on the Internet as a "major risk for humanity". The threat of linguistic and cultural uniformity on the world has led the French government to mandate all Web sites in France to provide their content in French (Nunberg, 2000).

Although interest in language preservation is on the rise, contrary movements work towards stamping out minority tongues (Ostler, 2000). For example, in East Africa some governments actively encourage citizens to abandon local languages in favor of Swahili or another "unifying" common language as a way of promoting loyalty to the state, while in Serbia, Koso-

vars struggle to continue speaking Albanian against government policies. Furthermore, formal language policies are not necessarily the most influential factors in shaping the development of language use in multilingual societies (Astroff, 1992). In South Africa, for example, the use of 11 discrete “home” languages as the basis for allocation of programmes in broadcasting has favoured cognate language groups which are able to be consolidated into threshold populations large enough to constitute viable advertising market segments. Thus, the South African Broadcasting Corporation has implicitly adopted a distinction between major and minor African languages, with Xhosa, Zulu, Sesotho and Tswana belonging to the first group, and Tsonga, Venda, Ndebele and Swati to the latter (Barnett, 2000).

Harmonious development of the information society is possible only by encouraging the availability of multilingual information. The absence of multilingual information may lead to a loss of local cultures. Even in technologically developed countries where access to computers is relatively common, the level of training is high, and traditions seem to live in harmony with technological innovations, language barriers can limit communications with the rest of the world. UNESCO has suggested that electronic translation and the development of norms, standards, legal instruments, principles and codes of conduct are appropriate to permit a broader scope of knowledge; promote respectful use of all languages; broaden cyberspace language diversity, and to promote access to cultural and scientific information through the creation of multilingual web sites.

The defense of languages, their variety and pluralism has also won increasing international support from non-governmental organizations such as Terralingua, Lingualsphere Observatory, Summer Institute for Linguistics International, the International Federation of Teachers of Living Languages and Language Rights. The creation of the Bureau of Lesser Used Languages and the European Charter for Regional or Minority Languages drawn up by the Council of Europe in 1992 recognize the need for the protection of minority languages by demanding provision for languages traditionally used within a given territory by citizens who form a numerically smaller group than the rest of the state’s population. States have to give official recognition to a minority or regional language and provide for education through that language, at all levels, from pre-school to adult and continuing education. In Africa, UNESCO, through the Linguapax project launched in 1986, pro-

vides guides and manuals for teachers and policy makers in countries wanting to incorporate local languages into their educational system. The Alaska State legislature made one of the earliest organised language preservation efforts when it established the Alaska Native Language Centre in 1972. The Centre concentrates on documentation and supports bilingual education (Ostler, 2000).

Ultimately, the survival of a language depends on a series of decisions by individuals to learn and use a language and on the state to embark on teacher education so as to be able to teach the language (Sutherland, 2000). Multicultural language policies, in the sense of promoting a recognized participation of minority languages in the public sphere, are most likely to respond to the structural dilemmas of contemporary nation-states while respecting international standards of human rights (Koning, 1999). When dealing with linguistic diversity as a human right in education, Skutnabb-Kangas (2000) argues that a multilingual education policy creates greater mobility and employment opportunity; engenders innovative, creative expressions of plural societies in order to combat illiteracy; encourages respect for other points of view; is conducive to national integration; promotes greater participation in the democratic process; and is necessary to protect minority languages and cultures.

The dominance of English has been strengthened partly by the difficulties of multilingual computing. There is nothing inherently difficult about computing in a variety of alphabets and scripts, and a number of potential script systems are available, but the original designers of personal computers and the Internet did not see multilingual computing as a priority. Thus, the American Standard Code for Information Interchange (ASCII) has limited capacity to handle non-English languages. However, Internet offers a great opportunity for all minority languages in the world to get a worldwide audience (Felix, 1999). Progress continues to be made in text processing, in the development of hardware and software, from seven-bit ASCII to ISO-Latin. More recently, Unicode (ISO 10646), a coding scheme for characters of most of the world's scripts, is a significant breakthrough in electronic communication. Problems remain, however: when Unicode is used in a global search-engine context, Chinese, Japanese, and Korean ideographs share the same code space (Nippon Telegraph and Telephone Corporation [NTT]). Automated translation software has also been developed. Altavista's

Babelfish translates phrases or an entire web page, to or from English, and supports several major European languages, including Spanish, German and Portuguese (Lebert, 1999). Babylon, another downloadable tool, supports languages such as Dutch, Japanese and Hebrew, in addition to the common European languages.

A challenge closely related to access to multilingual information is the development of public domain information, including works on which intellectual property rights have elapsed, anonymous works, and folk knowledge not considered the property of indigenous communities. An enormous body of knowledge exists in every country, every culture and every language; therefore, the facilitation of its preservation and dissemination on the global information networks will contribute substantially to universal access and multilingualism.

Access to information technology

The availability of publicly accessible telematics networks and services is an essential prerequisite for ensuring that all citizens have access to information contents, in whatever language, on the Internet. However, there is an absence or insufficiency of national policies on the implementation and use of information technologies, and administrative constraints to public service institutions wishing to participate in the information society. For true globalization in terms of cultural diversity to become a reality, the Internet need to be considered as a public information utility service and not only a commercial product. The development and application of appropriate technologies, policies and regulations at the national, regional and international levels are needed. Internet costs and rates in public institutions must be considered in facilitating universal access to the Internet and its multilingual contents. Encouraging collaboration among institutions will reduce the cost of access to telematics networks and services. The G-15 member countries, for example, have urged the international community to promote digital opportunities for all through innovative approaches and partnerships between governments, the private sector, civil society and non-governmental organizations (see New Straits Times-Management Times, 6 January 2001).

Preservation of cultural and linguistic diversity and representation of ethnic minorities

In pursuit of preserving traditions and local languages, Canada has introduced rules requiring that 30 per cent of programmes on English-speaking radio must be Canadian and 65 per cent output on French radio service must be in the French language. In the UK, both the International Television Network (ITN) and the BBC promote greater balance in ethnic minority representation across their workforces and, together with a number of other television broadcasters, have formed the Cultural Diversity Network (CDN) to set objectives for ethnic minority employment; establish an online database of ethnic minority talent; modernise the casting and portrayal of ethnic minorities in programming; share non-commercially sensitive research on cultural diversity; and allow official monitoring of progress.

In South Africa, existing state-controlled institutions have been restructured, made formally independent of the state, and provided with clear public interests and mandates (Teer-Tomaselli, 1996; Teer-Tomaselli and Tomaselli, 1996). In addition, a range of new, independent public agencies have been established such as Pan South African Language Board, a Gender Commission, a Human Rights Commission, an Independent Broadcasting Authority (IBA), all of which oversee the revitalisation of conditions for the exercise of specified rights of “cultural citizenship” enshrined in the South Africa constitution (Barnett, 2000). This has fostered the development of a vibrant independent production sector in television, music and film-making. The main lobbying group for this sector, the Independent Producers Organisation (IPOSA), argues that independent local production companies should provide the main source for locally produced programming to contribute programming to the broadcasting sector’s statutory requirement to promote South African cultures. Sourcing programming through independent producers ensures a wide reflection of a diversity of viewpoints from the social and historical perspectives of young, ambitious and creative individuals. In India, localization is not likely to be taken by major firms in the US or India but rather by small, “back-street” operators. The problem is that they lack venture capital and that the solutions each proposes are incompatible with the solutions of its neighbour. But the inventiveness is there and it is from these “back alley” operators that eventually localization may come (Kensington, 1998).

Future prospects

Many developing and developed countries agree on the danger of a global, covertly American monoculture, relegating all other cultures to inferiority, antiquity, or second place. To maintain the free flow of intellectual creations and art, while promoting diversity in the face of giant, centralized, monolithic corporate and cultural juggernauts backed by international trade regimes, there is need to provide choice, so that in the deluge of cultural products available, citizens can choose to watch, listen to, or read books, magazines, films or sound recordings that reflect their own local reality. Current imbalances in global flows and exchanges of cultural goods and services make it necessary to reinforce international cooperation and solidarity aimed at enabling competitiveness at international and national level. Partnerships are required between the public sector, private sector and civil society. Market forces alone cannot guarantee the preservation and promotion of cultural diversity, the key to sustainable human development (UNESCO, 2001). Thus, active intervention of political, corporate and business leaders is needed to moderate market-forces as to achieve goals beyond the pursuit of profit such as elimination of poverty, universalisation of education, political freedom and democracy, and the preservation and deepening of cultural diversity.

Although citizens and their governments are still very likely to want the export of their cultural products promoted, and must always retain the right to set fair-trade conditions in order to protect and promote their own stories, history and cultures, culture must be carved out of free trade agreements, particularly, the World Trade Organization. New international instrument to deal with these issues are needed. To succeed, such an instrument must have a status equivalent to that of trade agreements, recognising the importance of maintaining cultural diversity and setting out rules that, over time, can be changed, since we cannot know today what form cultural expression may take in the future. To preserve cultural diversity, creators of Internet content should build on indigenous knowledge and values; empower and enable local communities by promoting their culture (Gorjestani, 2000) and mother languages on the Internet; focus on local issues and create local networks connected with global issues of common concern. In this way, social capital can be built, cultural integrity preserved and diversity facilitated. The Internet can facilitate cross-cultural communication in English, but it can also

allow users from other languages scattered around the world to communicate in their own languages.

While ensuring the free circulation of ideas and works, cultural policies must create conditions conducive to the production and dissemination of diversified cultural goods and services through cultural industries that have the means to assert themselves at the local and global level, while upholding human rights and dignity. To achieve this, the policy advisers need to reflect the culturally diverse nature of the community in the development and review of policies. This could be done through direct participation or via consultation and involve people from a variety of cultural and linguistic backgrounds.

There is also a need to establish linguistic rights in both developed and developing countries. Linguistic human rights are necessary rights to maintain linguistic diversity and to prevent linguistic genocide (Skutnabb-Kangas, 2000). Compared with the Universal Declaration of Linguistic Rights pronounced in Barcelona, Linguistic Human Rights are situated both on individual and collective levels, supporting free identification with the mother tongue and allowing a group to exist and to reproduce its language and culture. In education, Linguistic Human Rights should guarantee the preservation of language-related identity by learning through the medium of the mother tongue. These rights should be focused on individual right to make choices with regard to changes in languages. No difference should be made between immigrants in foreign countries and people in their native country, since, in Linguistic Human Rights framework, multilingualism is always a cultural and personal fortune, and in many countries it is necessary for reasons of democracy (Skutnabb-Kangas, 2000).

Though many countries are opposed to the globalization of culture, they could learn from the example of India, where, in the last half century, it has been convenient for Indians to use English as a link language for the diverse people of that subcontinent. It has been possible to conduct business in the diverse nation, and linkages of India with the rest of the world have been aided by India having the second largest English-speaking population in the world. Yet, India has managed to retain her own particular culture (Keniston, 1998). To overcome the belief that computer culture (which the Internet has only accelerated) represents a threat to traditional ways of life (Bowers,

2001; Postman, 1993), communities need to use aspects of the Internet most compatible with their own traditional patterns of communication and knowledge. As Agre (1997) notes, machinery does not reform society, repair institutions, build social networks, or produce a democratic culture. People do, and the Internet is simply one tool among many that can enhance social networks.

It is imperative for all countries to know that education in its fullest sense (including digital literacy and, importantly, the development of a new sense of civil behaviour where the principles of equality, justice and mutual respect prevail for all) is the ultimate answer to the universal access to information, knowledge sharing and multilingualism. National decisions on the issues discussed above will determine whether each nation becomes a part of the globalization process or out of it. Nations' active participation is needed to develop cultural diversity and multilingualism in cyberspace. But what is needed most is the political will to adopt the measures we have proposed here.

Searching through the literature one comes across few insightful analyses of the cultural implications of the new information technologies, and particularly in preserving cultural diversity in an era of global networks. There is extensive literature on language extinctions in Western countries, especially Europe, yet little is done on language extinctions in developing countries, particularly in Africa. These are some of the areas which require some attention from the international research community.

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Chapter 3

Press Freedom and Freedom of Expression in the Information Society: Selected Studies and Projects

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Introduction

This report presents a brief review and commentary on freedom of expression and press freedom issues in the information society based on an examination of some selected examples of research and publications. The report touches on some key questions dealing with the impact of the information society on freedom of expression with a particular focus on the press freedom dimension of free expression. There is an assessment of the selected research and, in the conclusions, a number of recommendations are made for further research work in the subject-area. The choice of research studies and projects has been based on the three main principles: (i) relevance: to the key themes of freedom of expression and press freedom; (ii) contemporaneity: the work has been carried out since 1999; and (iii) general interest: the work is of significant interest to the rights of citizens/and or the work of journalists.

The report assesses 20 examples of research and projects covering more than 50 countries in all parts of the world. In each case, the authors examined the project by reviewing hard-copy written and published works as well as material available in electronic form. Additional information has been collated from interviews and observations concerning the first draft of this report, which was presented to a special forum of experts convened by UNESCO and the International Association of Media and Communication Research in July 2002.

Overview of issues

The information society has come a long way since the days of technological triumphalism in the mid-1990s. Economic downturn, the collapse

of many high-profile dot com business ventures and the political uncertainties following the events of 11 September 2001 in the United States have transformed the communications landscape raising new questions and reinforcing existing concerns. Fundamental questions related to the rights of citizens in the virtual world – access to services, reliability and quality of content, the rules by which information is produced and disseminated – remain at the core of the debate about the future of the information society. Freedom of expression cannot be disentangled from these citizen rights.

Freedom of expression, in theory at least, permits the expression of any opinion without restraint. But this freedom, exercised in whatever form, whether speech, visual and performing arts, academic and public life, literature, music, or journalism, is in practice limited by regulatory frameworks in national and, to a limited extent, international law. Freedom of expression is not an abstraction – it concerns practical acts of public communication, of which the work of mass communication media is a prime example. What distinguishes press freedom from freedom of expression at large is that it is in large measure defined by ethical, moral and economic criteria established by media professionals and the media industry. It is, essentially, the freedom to publish and to gather, prepare and disseminate information without restraint, save that imposed by the voluntary application of ethical standards which are established by professional consent. Press freedom is exercised within society through the free circulation of information via traditional modes of dissemination – text publishing (newspapers, periodicals and magazines), audiovisual services (radio and television) and electronic networks (news agencies). This process, along with the work of journalists, is unquestionably altered by the information society.

The role of journalism is to uncover and publish information that is accurate and reliable. At its best, journalism helps people to understand themselves and the world around them, and takes precedence over rumour and speculation in the public mind. Journalism is normally carried out in the framework of a specific narrative style – the media “story”. The publication of “stories” by newspaper reporters is a method of filtering information to suit the political, social and moral parameters of society. This process, adapted to suit all forms of journalism, provides the basis for press freedom in society. The information society has broadened the scope of reporting and expanded the constituency of journalism. Reporting has become more than

newsgathering and analysis. It has given press freedom a scope beyond the conventions hitherto applied to journalistic work, with the introduction of new sources and dialogues, ideas and opinions that have been, until recently, beyond the horizons of traditional media.

As readers and viewers become more accessible to the producers of information, there is an apparent shift of power towards them from traditional media structures. It is a potentially momentous shift. Media consumers are more directly engaged in the press freedom process than ever before. Journalism is adjusting to “web news” and so is the way media operate. News media now routinely use web sites and subscription services to gain access to new markets. Everywhere there is more direct participation in the journalistic process by media consumers. There are more on-line debates and discussion forums on specialist topics or major news items. E-mail messages from far beyond the newsroom percolate into mainstream news reporting in real time. People of all generations, interested in a kaleidoscope of topics, in a community without known borders, are increasingly brought into the media picture.

It is an open question whether these changes are the beginnings of a genuine shift of power. There is precious little industry-based research or analysis to pass judgement on whether this process is leading to a significant realignment of media structures in favour of consumers. What can be said, based on sound anecdotal evidence and experience, is that this expansion of journalism is not useful unless it is accompanied by sophisticated judgement of how to mix and monitor the ebb and flow of information from diverse sources. It is also helpful to have in-depth knowledge of ethical considerations, audience preferences and skills of presentation. When these conditions apply, journalism can make sense of the “information overload” that plagues the information society. While the scope of traditional “press freedom” appears to be broadening, the information society, particularly through the use of the Internet and E-mail communication, is exposing the weakness of national legal jurisdiction to deal with the expansion of free expression beyond national boundaries. Much of the research into the impact of the information society is focussed on this problem.

Globalisation is a key factor in the development of freedom of expression. New technologies are expanding dramatically the information horizons

of individuals and communities. Access to information from virtually all over the world makes it increasingly difficult to keep societies closed and to exercise strong control of the media. Difficult, but not impossible, as some of the research findings here reveal. The findings illustrate that new forms of censorship – whether in the name of security, taste, decency, or political correctness – may undermine the benefits of the information society. Freedom of expression is endangered when either political or economic imperatives are given priority over the cultural and democratic imperatives of individual freedom and freedom of speech. Nevertheless, the Internet inevitably handicaps governments that want to control information. Censorship is still exercised – through control of Internet Service Providers, for instance, or, as happened in September 2002, when the Chinese government outlawed major international Internet search engines because they allowed users access to external information about their political leaders. But the days of direct political oppression, if not quite over, are certainly numbered.

However, big threats remain. Perhaps the biggest threat over the next generation may come from more subtle and complex forces, those concerned with economic interests in particular. And when economic and political interests converge the results are damaging for both press freedom and free expression. In 2001, for instance, two of the world's leading media corporations – AOL Time Warner and News Corporation – negotiated arrangements with the Chinese Government for access to terrestrial television networks for their programmes, but only on the basis of a prohibition on news and current affairs programming.

Not surprisingly, then, much research and monitoring work, particularly by press freedom groups, is targeting the problem of censorship – direct intervention to suppress or prohibit the use of satellite technology or to control content. Many civil libertarians regard censorship as the most singular threat to press freedom and freedom of expression in the information society. Monitoring of developments in this area is a prime focus of media professionals and press freedom groups in membership of the International Freedom of Expression Exchange (IFEX) network. A number of detailed reports, at regional and international level, examine the impact of official censorship, particularly through regulation and control of the Internet and technological resources, all of which threaten citizen's access to information as well as interfering directly in the work of journalists.

In addition, protection of the individual in the information society means that special attention is paid to privacy and the right of citizens to remain anonymous. But is that really possible? The information society is not a private domain. Indeed, its success is built upon the capacity for widest possible circulation of information. That is both strength and a weakness. Few people have confidence in the anonymity of electronic communications via the Internet. The price to be paid for the increase in comfort, speed and range of services available in the information society is a loss of anonymity. A number of research projects are seeking to enhance privacy protection, while others reveal that, in the name of security, there is more monitoring and surveillance of Internet communications traffic than ever.

The urge to collect personal information is strong within both the public and private sectors. The authorities, whether for reasons of law enforcement or for other reasons of public safety have an interest in access to information about citizens. The expansion of free expression for malevolent purposes, particularly across borders, worries legislators and the guardians of national constitutional rights. Nevertheless, protection of the individual requires that official access to private information must be strictly monitored and subject to public, accountable and transparent rules. How that is done is an enigmatic chapter in the evolution of the information society.

Rules, in particular, are sought to deal with the problem of *harmful content*, whether it involves violent images, on-line pornography, racism and extremist political propaganda. The studies here reflect two views; one that leans towards the positive side of *regulation and cultural values*, another strongly reinforcing the notion of free speech and advocating the most minimal restraint. Because regulation of communications is an established and legitimate aspect of social and cultural policy – the questions raised by the information society often have more to do with methods and responsibilities than with principles.

Many governments seek new technical mechanisms, including filtering systems, to maintain standards of regulation concerning content and quality of information in the new digital environment. Freedom of choice and freedom of expression require flexible and non-intrusive systems of content control. There are, however, differences of approach arising from research in this area. At the same time, nations demand safeguards against the use of

information and communication technology to undermine the fundamental civil rights and liberties of their citizens. The events of 11 September 2001 led to a sudden shift of policy towards the measures that limit the capacity for free communications in the name of *security*. This has important implications for the use of information technologies, civil liberties and press freedom.

Of major concern is the global reality of economic disparities that still exist between geographical areas and between sections of the population, which cause serious problems over *access*, both to technology and to information and raise fears of greater *social exclusion*. Technological change can deepen existing geographical and social disparities, and further disadvantage people already in a weaker position relative to other sections of society. On the other hand, people's lives can be enhanced through improved access to new information and communications services.

The value of alternative information-sharing networks and discussion forums to the process of *cross-border communication*, as well as how that is regulated internationally, are also considerations when examining the free flow of information and information technologies. Equally vital to the future information society is *pluralism* and the range of different opinions, ideas and forms of information available. How well equipped is the market to create genuinely pluralistic opportunities for consumers, and what are the prospects for public service media? There is some doubt about the capacity of market forces alone to deliver the services and structures whereby the information society will provide the platter of information that truly reflects the rich diversity of global society

Conclusions and recommendations

The research projects and activities examined in this report illustrate the challenges facing the information society. New information and communications technologies have the potential to reinvigorate the quality of freedom of expression enjoyed around the world. During the 1990s there was a furious, optimistic rush of enthusiasm about the information society. But many crucial questions about the future of communications – whether regulation, governance, rights of access and civil liberties – remain unanswered

and require fresh examination. Central is the debate over viable international accords that balance demands for the widest possible free expression and press freedom with protection of national cultural imperatives.

Everyone would agree that the information society – particularly the use of the Internet – provides remarkable opportunities for the promotion of free expression and diversity of opinion and the expansion of press freedom. But the research does not indicate whether this potential is being realized. Much of the work carried out so far has focused on the commercial development of new information and communication technology. Much more focus is needed on the social, democratic and cultural implications of change – particularly related to creating democratic conditions for communications, obtaining equitable and effective access, and underpinning the principles of plurality and diversity and the implications of the information society for traditional notions of press freedom. Some of the issues and questions that require more attention, both from a global and regional perspective, are:

Democracy and pluralism

1. What is the impact of new media on the political process. Are these media inherently more democratic than traditional media?; Do they give voice to critical and independent voices?; Does lowering barriers to entry into a medium necessarily mean a diminution of quality?
2. What are the threats to plurality from media concentration? Is the local and regional democratic process improved by takeovers and the introduction of the editorial, commercial and political imperatives of global corporations, such as News Corporation, Independent Newspapers, Time Warner or Bertelsmann, for instance?

Press freedom

1. What is the impact of the information society on traditional media? What changes in journalism are taking place and what is the impact on readers, listeners, viewers and consumers of information?
2. What are the consequences of abuse of press freedom (for instance, when a newspaper or broadcaster oversteps the cultural/religious/political boundaries of taste, decency or ethical conduct in public life)?

3. What mechanisms are currently in place to support press freedom? How do they work and how might they be adapted to cope with new media?
4. How does press freedom suffer when there is governmental action to monitor and restrict communications?
5. How does press freedom contribute to creating equality in issues related to gender, race and disability and what is its effect in promoting anti-discrimination? How do new media affect these issues? (For instance, are new media more or less neutral with regard to social inequalities than traditional media)?
6. What needs to be done with journalism training to equip journalists to work with new media? Can we develop a 'standards based' approach to journalism training? Do we focus on new entrants or should journalism training be lifelong and, inevitably, who pays for journalism training?

Regulation issues

1. What regulation, if any, is needed, of content of information services and how should it be implemented? Are existing laws sufficient? What international agreements would be appropriate? Are forms of licensing, or voluntary complaints procedures (international press councils, for instance) viable? Should there be a combination of approaches? What funding arrangements are needed?
2. Should rules be introduced that police the creation of 'meaning'? For instance, should it be harder to start a political web site than a literary one or a personal one?
3. *Content*: How do we regulate for libel, privacy, copyright, liability, the representation of sexual images, the representation of violence, political comment, and hate speech? Should we rely on post hoc regulation, professional self-regulation or take 'pre-emptive' measures involving the training and licensing of media operators?
4. *Public service media*: What is the future of public service media in the context of the information society? What are the prospects for funding public service media and, on balance, is the fact that the Internet is not politically regulated having a positive or negative effect on political discourse?

Global governance

1. What process for international regulation and supervision of the information society is needed?
2. Who should be responsible for the monitoring and implementation of regulation and policy issues within the United Nations system? Is a new international body needed?

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Chapter 4

Information and Communication Technologies and Persons with Disabilities

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Introduction

This report presents an analysis of selected research and publications carried out in the area of information and communication technologies (ICT) and its use by persons with disabilities (PWDs). The selected research studies and publications have been examined with a view to understanding current trends and priorities for future research. Based on the research trends and gaps which exist in the subject area, some recommendations have been suggested that may be relevant in creating an accessible, affordable and acceptable information society that is inclusive of persons with disabilities.

According to the World Health Organization, about 10 per cent of the world's population has disability of one form or another. By this estimation, the number of PWDs is approximately 600 million. Over two-thirds of them live in developing countries and it is estimated that only 1-2 per cent PWDs have access to education, training and employment (UN ESCAP, 1996). There is a high correlation between disability and poverty and their social exclusion is direct and evident throughout the world. The traditional approach towards disability has been based on a model of charity and care and on an assumption that disability is an individual pathology – a condition grounded in the psychological, biological or cognitive impairment of an individual. Although all points of access to the structures of everyday life – the world of education, of work, of information and communication are designed with reference to the dominant norm of the able-bodied, efforts have been focused on tutoring disabled individuals without addressing the various structures that lack the capacity to accommodate the difference of ability (Quinn and Degener, 2002).

A major shift in perception has taken place over the past two decades – from an approach motivated by charity to one based on human rights. In

essence, human rights perspective on disability means viewing people as subjects and not as objects. It means locating problems outside the individual and addressing the manner in which various structures are constructed and the method in which they operate. The thrust of all the research projects carried out in 1998 to 2001 is on redefining the norms and standards of information and communication systems so that PWDs are not further marginalized.

Research methods

The analysis presented in this report regarding use of ICTs by the disabled is based on research carried out in this area between 1998 and 2001. Various sources were used to access findings of studies carried out and those still under process. Within the available time and resources, it was possible to explore some websites as a good number of studies have been compiled by disability NGOs, UN and its regional bodies and academic institutions can be accessed on the Internet. Reports of international disability NGOs, IT and media conferences, inter-governmental bodies and UN agencies were analysed to identify contemporary research issues in the subject area. Libraries in India and other countries extended their cooperation. However, the literature scanned was frustrating as very little has been written and documented on ICTs and their use by PWDs.

Overview of issues

The web search and review of literature reveal that documenting pattern of use of ICTs by PWDs is not an area of interest and priority for research institutions. Precious little has been invested to encourage academic research in this area. The primary sources of research are the disability NGOs and universities. The studies are generally commissioned at the initiative of pressure groups and instances of corporate-sponsored research studies are also not uncommon. Governments in Europe, the United States, some Asian and South American countries have also sponsored research mainly with an aim to identify issues of priority for research and development projects and policy matters. So far, the main thrust of studies examined has been on accessibility aspects of IT infrastructure.

A handful of universities in developed countries have established departments of disability studies. Traditionally, department of education, health and humanities offer courses in disability related areas. Therefore, the focus of research, by and large, has been in these disciplines or in interdisciplinary studies in these selected disciplines. Schools of engineering and architecture tend to take up R&D projects with the aim to engineer a new product or an additional feature to make existing ICT products and service and environment accessible for PWDs. As a result, the research undertaken so far remains inadequate in terms of finding disabled users' pattern of behaviour and the impact of ICTs in their lives. Disability studies as a concept has yet to gain momentum and consequently large gaps in knowledge still exist.

Computers

Accessibility has been the overriding concern in the disability rights debate throughout the world. "Accessibility" can be defined as "the measure or condition of things and services that can readily be reached or used (at the physical, visual, auditory and/or cognitive levels) by people including those with disabilities, which could be achieved through design and/or by adaptation of any existing system". The modern instruments of communication and information processing presuppose the user's ability to see, hear, and use hands. As a result, persons with physical, sensory and cognitive impairments could not use and access computers due to inflexible design. Therefore, the primary focus of research in the area of ICTs has been on providing a design solution so that alternative to text representation mode and keyboard operation could be afforded. Consequently, speech output devices, screen-reading softwares, voice recognition systems, screen magnifiers, self-voicing browsers got developed. However, most of these systems are expensive and are only compatible with English, Spanish, Japanese and languages of Western Europe. PWDs familiar with these languages are carrying out electronic banking, on-line shopping, e-mailing, etc. In the office setting via electronic document processing, visually impaired employees have access to information equal in some cases to their sighted colleagues.

These developments have opened up new avenues of work, education and socialization beyond estimation for PWDs in the affluent countries. Even in the absence of a well-coordinated and well-planned infrastructure, a small

minority of the PWDs in the developing countries can also use computers and Internet. They are generally from the urban, educated class and use computers primarily in the work places (Deependra, 2000). However, overall improvement on the accessibility of computer to people with disabilities in the developing countries has been dismal on several counts –i.e. the speech engines for local languages needed for effective operation of screen readers are not available for most of the languages of developing countries. Electronic lexicon for various sign languages needed to render audio or textual content into sign language for display in electronic media and voice recognition algorithm for conversion of text to voice have yet to be developed (UNESCAP, 2002). To enable flexibility in the design of computer hardware and software, these technologies are a prerequisite.

The extent to which the PWDs can have access to and benefit from the computer-based technologies also depends on the overall political and economic environment. The studies on ICTs and PWDs confirm that enactment of anti-discrimination legislation and disability-inclusive IT policies and their effective implementation have been instrumental in creating accessible information environment in many countries. *UN Standard Rules on Equalization of Opportunities for PWDs* (1993) is the first international instrument that recognizes the right of PWDs to accessible information system in Rule 5 Part II of the Rules.

Many governments in the world have enacted and amended their laws and policies in the light of parameters set out in the Standard Rules. For example, the Government of Sweden, in its policy document, “IT for Disabled and Elderly People, 1998”, states *inter alia* that Swedish Government and Parliament are committed to UN Standard Rules that lay down preconditions for creating an accessible society in which PWDs have equal opportunities. Similarly, the U.S. Government, in the preamble of National Information Infrastructure policy, notes: “a broad, modern concept of universal service that emphasizes giving all Americans who desire easy and affordable access to advanced communications and information services, regardless of income, disability, or location.”

These legislation and policies not only lay down the foundation for an accessible IT infrastructure but they have also proved equally effective in addressing the affordability concerns of PWDs. Some people find them-

selves on the wrong side of the “digital divide” between the technology “haves” and “have-nots”. Computer-based information, communication, services and instruction are less available to those who are poor, live in rural areas, are members of minority racial/ethnic groups, and/or have disabilities. Often the cost of modern communication facilities is beyond the capacity of most of disabled people and most governments in developing countries are reluctant to invest financial resources in modifying the already existing infrastructure for a small segment of their populations.

UN Standard Rules in Rule 4 calls upon the States to ensure the development and supply of support services, including devices for persons with disabilities to assist them to increase their level of independence in their daily living and to exercise their rights. The data analysed confirm that most of the developed countries and a good number of developing countries have introduced schemes for affording “assistive” technology and special devices to PWDs. However, computer hardware and software for accessibility are included in the list of “assistive” devices of a few affluent countries.

Education and awareness

The use of information technology in education is gaining momentum throughout the world, both in traditional classroom environments and in distance education. It is assumed that ICTs can enhance the opportunity for disabled students in education at all levels. Adequate research and data are, however, needed to assess the effectiveness of technology for enhancing learning and to demonstrate how people who have been marginalized by social, economic, and physical disabilities respond to ICTs.

It is relatively easy to assess the effects of ICTs from an accessibility standpoint, but it is much harder to gauge the impact of ICTs with reference to other considerations. The fact that research and related literature concerned with educational accessibility focus mainly on technological issues confirms that accessibility is still a central issue. For example, Schmetzke (2001) investigated the degree to which distance education sites were accessible using Bobby, a web-site accessibility evaluation tool. He also reviewed the literature that examines the obstacles that people with disabilities encounter in an online distance education environment. Only a few articles treated the issue, and they had a primarily technological perspective. Harri-

son (1999) asserted that web-based educational resources must have a universal and barrier-free design.

It is often assumed that greater use of ICTs in teaching and learning will solve many problems, including those of accessibility for people with disabilities. However, there are also a number of drawbacks and new issues that need to be considered as technology becomes a more integral and essential part of the teaching and learning process. For example, web pages divided into segments or frames can confuse software programs that translate text to voice. Graphics with text will be read only as "image" by the software reading the text on the screen and would, thus, deprive blind students of valuable content. Web pages with a long list of hyperlinks crowded together can confuse a student with visual, cognitive, or motor disabilities (Cook and Gladhart, 2001).

Today, multiple modes of delivery blur the lines between different types of distance learning. For example, the content of a course may be delivered using printed material and television; course discussion may occur using e-mail; a weekend session may bring participants together face-to-face, and resources may be provided on the World Wide Web (Burgstahler, 2001).

These options have created new opportunities and generated new demands from both learners and teachers. In the regular system of education, students with disabilities may feel excluded on account of inadequate knowledge of the teachers about special devices to aid learning by using ICTs. Even selection of a right communication tool for learners with disabilities is a demanding task, as there are a number of hardware and software options available in the market either with identical functions or with marginal to substantial variations. Diversity of disabilities necessitates a wide range of options, therefore, instructor's orientation to special devices is an imperative.

The overall low level of literacy which is as low as 2 per cent among PWDs in developing countries is a factor that has placed them on the wrong side of the "digital divide" (Quinn and Degener, 2002). The capacity of education system and the instruments of its delivery need review and detailed investigation as education of PWDs in general and computer education in particular are being imparted by specialized institutions outside the mainstream educational infrastructure, especially in developing countries.

The ON-NET project covering 14 South-East Asian countries is a good case study which presents the range of gaps that exist and the measures that need to be deployed to ensure equal access to ICTs by PWDs. The analysis of the activities of this project illustrates the range of unmet needs vital to integration of PWDs in the information society. The activities are: (i) training-of-trainers in special application; (ii) development of Thai version of Jaws; (iii) development of local language Braille conversion software; (iv) development of linkages with mainstream computer schools for smooth integration of disabled students; (v) technology training; (vi) upgradation of computer learning centres of the mainstream secondary schools; and (vi) development of training materials and their translation in multiple languages.

The media

Within the parameters of mainstream media research, although many scholars have become much more aware of gender and other development issues, disability has remained a largely neglected subject. For the mainstream institutions engaged in media research, disability is not a subject of great interest. The studies analysed in this report have been carried out mostly by national, regional and international organizations of the PWDs with an objective of reviewing media habits of the PWDs, analyzing factors causing their exclusion, and evolving designs for an accessible media.

Studies carried out in Asia, Europe and America suggest that disabled and non-disabled persons have similar programming tastes and preferences. Relevance of television in the lives of PWDs is quite significant and they watch television at least for 2-3 hours a day (Sujata, 2001). Rigorous media research initiatives from a disability perspective have been undertaken through a multidisciplinary approach in Europe and the United States. The studies generally analyze user's concerns, information and broadcasting laws, design of existing media products and their delivery mechanism and, most often, the researches offer design solution based on accessibility standards. For example, the Netherlands Federation of the Blind and Partially Sighted, the Public Broadcasting Corporation, and Dutch Federation of Libraries for the Blind jointly worked on a comprehensive research project for a period of four years between 1998 and 2001. The research investigated barriers to television viewing, its causes, and its demographic implications

with reference to disabilities. It was found that 30 per cent of programmes on Dutch television were in foreign language and were broadcast with text subtitles. Consequently, blind, print impaired and elderly persons with visual impairment were unable to access the content of programme because of inflexible user presentation standard. The study provided a design solution which involves the integration of speech synthesis and broadcasting software. To encourage the uptake of this new approach, a decoder has been developed which unpacks the sound signal without interfering with the programme. All the three public broadcasting networks in the Netherlands now offer audio caption service with foreign language programmes. The evaluation of the project suggests improved access to foreign language programmes by elderly, blind and print impaired persons.

Television is important not only because of the role it plays in society, but it also provides company, particularly to those disabled who are housebound. However, TV viewing remains an incomplete experience for a large segment of the PWDs as user interface standards, user presentation standards, and terminal equipment standards often do not conform to accessibility norms (Wall, 2002).

In a rapidly changing era of media technology, the transition from one system to another always brings new opportunities as well as challenges. To accommodate the challenge of technology switchover, parallel changes in the related laws become imperative. But the process of rapid changes can leave inadequacies in the body of law due to lack of experiential evidence. The United Kingdom presents a good case study, where in 1996 the government adopted a new Broadcasting Act which coincided with broadcast technology switch from analogue to digital. The Act mandates broadcast of at least 10 per cent programme with narration or verbal description of key visual elements of the programme. However, the Act does not contain any provision for audio description transmission and reception standards. Thus, when digital terrestrial television started in the U.K. in November 1999, no provision was made for transmission of verbal description of visual elements because the digital terrestrial set top boxes were not configured to download audio description feature (Wall, 2002). As a result, the blind and elderly persons got deprived of the accessibility feature, which was available on analogue television.

Since digital television can open up a world of interactive services beyond broadcasting, it will increasingly be used to do on-line Internet browsing, shopping, banking and e-mailing. In Europe, governments plan to provide much of their information and services via digital television. Therefore, incorporation of accessible features in the design of digital broadcasting and its delivery system is important; otherwise, people would be set further apart.

Telecommunication

When Alexander Graham Bell invented the telephone, he was attempting to convert speech into a visual representation to accommodate a greater choice of information modality for his wife who had a hearing defect. Unfortunately, Bell's invention failed to accommodate conversion of information from auditory to visual mode as intended. Instead, the long distance communication scenario was transformed completely allowing communication in real time for persons who can speak and hear. The intended benefits of telecommunication for the hearing impaired and deaf came about much later and that too with limitation of choice and its availability. Teletypewriter (TTY) service became available in the mid-1970s that enabled communication for the deaf with other TTY users. The tele-relay service is a second milestone that widened the communication choice as the deaf callers through a relay centre could communicate with hearing persons. Certainly, these technologies have their own limitations and are inadequate in providing freedom of long distance communication in sign language.

Videophones were originally developed for companies to hold meetings involving people based at different locations, using Integrated Services Digital Network (ISDN). Videophones allow the user to see and talk at the same time, irrespective of the distance between the callers. The development of videophones has benefited hearing-impaired people beyond estimation. This means that deaf people can use videophones to communicate in sign language in the same way as hearing people use telephones. In 1998-2001, the Finnish Association of the Deaf (FAD) launched a multimedia project to study whether videophone links and distance interpretation would improve the use of interpreting services, intensify use of the interpreter's working time and reduce expenses by cutting down interpreter's total travel cost. The findings of the study confirmed that videophone enhance the freedom of

socialization of deaf people and also reduce the cost of interpreter's services and travel. In addition, the quality of life improved as many services such as medical consultation, family counseling, distance education and legal advice became possible using videophones linked to interpreter's service.

Studies in the area of telecommunication also tend to analyze the efficacy of laws and policies with reference to PWDs. For example, text telephones and relay phones got installed in all public places in the U.S. over a period between 1998 and 2001 as an outcome of effective enforcement of the Americans with Disabilities Act (ADA). ADA states, "one text telephone must be provided inside any building that has four or more public pay phones. In addition, one text telephone must be provided wherever there is an interior public pay phone in a stadium, hotel, convention center, etc." Similarly, in Sweden and Finland some local governments have included videophones in the list of assistive devices for the PWDs to enable hearing impaired and deaf persons to access videophones with State support.

However, PWDs in developing countries face the "second digital divide" on account of telecommunication laws, policies and infrastructure which are not sensitive to their needs as well as the non-availability of accessible models of telecom systems. Low level of awareness and literacy and poverty are additional factors. For instance, SMS service is being used more frequently by hearing persons than by the hearing impaired and the deaf in countries of the SAARC region. Investigations into reasons reveal that deaf persons usually learn one spoken language which is generally their own national language whereas SMS on mobile is available in English. The second most common reason is the low level of literacy among deaf people, which does not permit them to use SMS, pagers and regular phones which are also out of their reach as voice amplification technology is often not available in developing countries.

Conclusions and recommendations

Rapid ICT development has opened up unanticipated avenues of employment, education and socialization for PWDs in the developed countries and for a small minority of the disabled in developing countries. The challenge lies in the equitable expansion of these gains to every part of the globe. The uneven development has increased the disparity between devel-

oped and developing countries and between the ICT “haves” and “have-nots”. Many concerned organizations at the national, regional and international levels have taken up positive measures to support ICT accessibility for PWDs. Effort has been made to integrate disability perspective in IT laws, policies and regulatory mechanism. Countries like Sweden and the U.S. have also adopted ICT policies with the aim to ensure sustainable development. These international policies and legislative measures have evoked wide interest among PWDs, service providers in the area of ICTs, research and development professionals and social, private and corporate bodies. However, parallel developments in developing countries in Asia, Africa and elsewhere are not visible. Based on anecdotal evidence and analysis of some case studies about the use of ICTs by PWDs in developing countries, some conclusions have been made. However, the full magnitude and complexity of the accessibility issue cannot be appreciated in the absence of adequate and reliable data. Therefore, investment in the research and capacity building of academic and disability organisations need to be increased. ICTs are enabling technologies but if they are not properly planned, designed and delivered, they could widen the social and knowledge gap and would further deepen the “digital divide.”

How the design needs of PWDs should be accommodated in the research and development initiatives, regulatory mechanism and in ICT policies – are some of the critical questions that need to be addressed. Involvement of PWDs in research and development, product development, standardisation and policy formulation has the potential to bridge the critical knowledge gap. The ICT infrastructure is relatively disabled-friendly in those countries which have mandated PWDs’ involvement and have adopted a multi-sectoral approach to IT policy planning. In this context, we have provided the following recommendations:

1. Governments should enact, amend and enforce laws, policies and programmes that protect the right to information and freedom of communication of PWDs.
2. Governments should adopt and support ICT development based on international standards which are universal, open, non-proprietary and have accessible features.
3. Participation of disabled users needs to be made mandatory from research to product development, policy planning and monitoring.

4. All technology development, replacement and upgradation initiatives should be regulated to ensure access to PWDs and uninterrupted access to ICT utilities should continue as the technologies advance.
5. All Governments should endeavor to adopt an ICT disability plan for action through a multi-sectoral approach so that accessibility agenda with clear targets and budgetary provisions are worked out for every Government department to ensure equal access and full usability of ICTs by persons with disabilities.
6. Telecommunication policy and laws be so modified that people are able to hold long distance communication independently and in their preferred medium of communication such as sign language and local languages.
7. User Interface Standards, User Presentation Standards and Terminal Equipment Standards need to be developed and redefined so that all analogue and digital broadcasting services can be delivered on accessibility standards.
8. Funds for research and development be provided for the development of (i) speech engines for local languages needed for effective operation of screen readers; (ii) electronics lexicons for local sign language needed for digitized conversion of audio and text to sign; (iii) voice algorithms for local language voice to text; and (iv) conversion softwares from native language to Braille.
9. For equity and equal distribution of ICT resources, international and national institutions engaged in primary and secondary data collection, collation and dissemination should incorporate a disability dimension in all their studies.
10. Inter-governmental, regional and all other development organizations should undertake and promote research studies in the area of ICTs and their use by PWDs, particularly in developing countries.
11. Governments should promote the establishment of Department of Disability Studies in major state-sponsored universities.

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Chapter 5

Info-ethics and Universal Access to Information and Knowledge

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Introduction

The objective of this report was to survey existing literature on information ethics and universal access to information and knowledge published from 1998 to 2002. The survey located about 260 studies and scholarly publications dealing with one or more of the issues which were analysed for the report. The studies and publications were identified from books and journals from local libraries and online network of libraries as well as studies available on the Internet.

Information ethics consist of the general principles of access, justice and mutual respect relating to the development and application of information technologies (Cummings, 2000). The ethical issues highly debated and focused on include: trust, ownership and validity of information; privacy, confidentiality and security; hate and violence in media and Internet; as well as access to information and knowledge.

The new European Data Protection Directive provides a foundation for a global privacy regime. Privacy is enforced at an individual level by the Internet users through new privacy-friendly technologies. This development is likely to influence business in the coming decade (Davies, 1998). Similarly, the legal restrictions may not bring the desired result, especially in developing countries where the technological solution sought to restrict “fair use” can give a better result. This has an added advantage, that of not affecting the issue of access to information. The private sector and NGOs are moving quickly to develop counter measures that will build privacy systems into the architecture of communications. The inevitable result is that the state machinery will be confronted by an adaptable infrastructure of power-

ful privacy protection (Correa, 2000). However, the concern of governments can be seen in the example of India and Iran. As a step towards becoming a global information technology power, India has formulated cyber laws protecting proprietary and security rights in cyberspace. The key areas are digital signature law and laws for computer related crimes (Chakravarti, 1998). Iran is to establish new laws in protecting proprietary and security of digital communication and information software (Nejad, 1998). In the Russian Federation and Jordan, while establishing information system, difficulty was experienced in drawing the line between protection and accessibility (Nusseir, 1998, Genieva, 2000).

An encouraging approach can be seen in the case of Portugal case where information professionals recognise the importance and singularity of each of the users of their services and respect their privacy as a right. Information professionals consider that it is their duty to respect Article 12 of the Universal Declaration of Human Rights (BAD/INCITE/APDIS 2002). Garstka (2000) has come out with detailed suggestions on the necessary conditions to be imposed by self-discipline for protecting privacy in cyber world.

Some ethical issues

Privacy, confidentiality and security

The right to privacy remains a central concern for democratic nations and is well established in national laws and international norms. The value of this right of human dignity, personal autonomy and democratic self-governance is clear. However, technologies have created new threats as well as new opportunities (Rotenberg, 1998). Samarjiva (1998) discusses the different complexions of “virtual space” and related issues in a different world. The trust, privacy and security issues are embedded in most trusted institutions by the society in the United States of America but government-owned inefficient telecommunications in most of Asia do not have that legacy. Building trust in electronic information transactions remains one of the major challenges in promoting economic growth and in meeting the social and educational opportunities offered by cyberspace. The privacy and security rights of individuals and the proprietary rights of businesses need to be protected against unwarranted data mining. Protection of privacy and trans-

border flows of personal data across insecure global networks are political issues at national and international levels (Cummings, 2000).

Trust, ownership and validity of information

Information provided by government and non-governmental organisations or by corporate bodies, whether on paper or on the web, has the advantage of acceptable authorship and is, hence, verifiable. This is of particular significance at present when an enormous glut of information has become available with the rapid development of e-information. If the Internet is rapidly developing into an accessible source of information, it is also often anonymous and demands a high degree of critical thinking to sift through the vast amounts of disinformation and misinformation for facts and valid information. Branding of information in the service of politics or big business is a form of disinformation. The information technology has greatly enhanced the potential value of most information that is in the public domain. How government bodies, public and private sector business will exploit this potential and what effect this will have on unhindered flow of information is unclear.

Public vs. private goods

While industry and business are providing the infrastructure for access to information resources as well as contents, the challenge is to define the concepts of “public domain” and “universal access” in a global context to promote common public welfare while encouraging private initiatives and protecting rightful economic interests (UNESCO, 2000). In the past it was important to have access to official government information which is stated in the laws of many developed countries. These laws have contributed to increased government accountability. But the rise of Internet has created new expectations and the citizens are beginning to demand accountability from private sector organisations as well. Thus, governments have a role in providing better access to government information and also contemplating necessary legislation towards more accountability of private organisations (Riley, 2000). The European Union has published a paper in which both legislative and practical initiatives are envisaged. The issues of public domain and copyright fair use, as well as the protection of human

dignity in the digital era are the subject of a number of EU initiatives (Papupavlou, 2000).

Hate and violence on Internet

Crime, violence and obscenity in media have remained a prime concern of most countries. However, it requires constant alert as in many cases considerable economic interest is involved. The victims of violence and obscenity tend to be the weaker sections of the society such as children, women and other powerless people. Smith *et al.* (2002) studied 23 broadcast and cable channels in the U.S. and found that, regardless of the time of the day, viewers are likely to encounter violence in roughly two out of three programmes when they view television. A study by Wilson *et al.* (2002) suggests that younger perpetrators of violence on American television are more often portrayed as attractive and less likely to be punished for aggression. The development of Internet has posed even more serious problems than other mass media. It is interactive and attracts younger generation as they can relate to newer technologies better than the older generation. They end up becoming subjects of pornography or as viewers of harmful material like sexually explicit photos, videos, aggressive marketing and advertising by commercial sites. The Indian court has summoned directors of two major Indian websites and filed a criminal complaint and all eyes are on India's first cyber porno trial (Sridhar, 2001).

Legal protection and law enforcement form only a part of the solution. Cyber laws remain limited, especially given the jurisdictional question posed by the transactional nature of cyber crime. As it is, law enforcement in many countries is even hampered by inadequacies in investigative skills, especially in digital detective work and computer forensics (Pabico, 2001). Although children's exposure to pornography and sexually explicit content on the Internet seems to be the most widely shared concern of parents and teachers, the danger that this may have caused is far less than meeting a new friend via the Internet. It is so suggested by the National Information Technology Committee (NITC) in a study of 600 Thai children under the age of 18. It revealed Thai children users are not ignorant about the dangers that lurk behind their surfing the net, as 93 per cent of the respondents felt that there were certain dangers (Pirongrong, 2001).

Universal access to information and knowledge

New information and communication technologies (ICTs) have given rise to a phenomenal growth in global electronic commerce, improved quality of life, health care, emergency interventions, and international understandings and are ushering in a knowledge-based society with the potential for more conscious, humane and better informed citizens. At the same time, the technologies also tend to pull the sections of the societies apart as “have-nots” and “haves” in what is termed as the digital divide. The National Telecommunications and Information Administration of the U.S. coined the term “digital divide” in “falling through the Net” reports prepared by the U.S. Department of Commerce. It notes that: (i) better educated Americans are more likely to be connected; (ii) the gap between high and low income Americans is increasing; (iii) whites are more likely to be connected than African Americans or Hispanics; (iv) rural areas are less likely to be connected than urban ones; and (v) two parent households are nearly twice as likely to have Internet access as single parent households (Bowie, 2001).

The international issues that emerge from the digital divide are more or less the same. *The World Development Report 2000-2001* shows a clear gap between the developed and the developing countries by using a number of indicators such as daily newspapers, radios, television sets, telephone main lines, mobile telephones, personal computers, Internet hosts, scientists and engineers, high technology experts and patent applications filed. For example, developed countries like Norway and New Zealand possess 899.48 and 703.33 Internet hosts per 10,000 people while Nigeria, Niger and Ghana have .01, .03 and .06 hosts respectively (World Bank, 2000). In Asian countries such as Singapore, Malaysia, Indonesia, Thailand and the Philippines, there is a greater development of computer networks, and India, Pakistan, Sri Lanka and China have provided greater access to media technologies to their people. Bangladesh and Japan present classic cases of digital divide as one lacks most of the facilities whilst the other has them all (Joshi, 1998). Less developed countries without the requisite infrastructure or means to educate people would not benefit as much from these technologies. Therefore, there is a need to identify which kinds of the technological access deliver the best value for money in developing countries and how limited resources can be made to best suit the particular needs of the poor.

Within developing countries, digital divide exists as well between urban and rural communities. A study in Thailand indicates that 70 per cent of Internet users who have been surveyed by the National Information Technology Committee reside in urban areas such as Bangkok and the suburbs (Pirongrong, 2001). The influence of technology has often been less than neutral with regard to gender equality. Communication technologies, especially mass media, have portrayed women in stereotypical ways over the years. There are clear prejudices regarding women being comfortable with acquiring the required skills for controlling the technology (Joshi, 1998). A study conducted in a medium sized town in India clearly shows the male domination. It found that over 80 per cent of cyber cafe users are men. Most of them are young (15-35 years), highly educated and have obtained their education through English as the medium of education. They belong to middle and upper socio-economic strata of the Indian society (Joshi, 2001). Similarly Dareth (2001) states that in Cambodia 50 per cent of women are illiterate, poor in the society and, hence, are bound to be information poor.

One more factor which is contributing in separating world population apart is the dominance of English language on the Internet. Pimienta (2002) notes that only 10.5 per cent of the world population knows English as a language, either official, spoken or through education, but the availability of Internet material in English is about 75 per cent. Compared with this, material in French, Spanish and Italian is only nearly 2 per cent while that in Portuguese is approximately 1 per cent only. Another study by Kyung-Ja (2001) gives a similar picture, that is 80 per cent of websites are in English and the operation languages are also in English. The other side of the discussion on universal access to information and knowledge is to encourage the spread and positive use of ICTs. Some of the areas where there is high potentiality of applications of information technologies are e-learning, e-governance, e-commerce, tele-health and other social issues.

E-learning

The Commonwealth of Learning has been dedicated to increasing access to education since it began operating in 1989. It is operating in all forms, from conventional print to e-learning covering 54 countries of the Commonwealth. Great strides have been made over the past few years in

enhancing the capacity of e-learning and finding ways to broaden the exposure. Recently, an announcement was made by the Massachusetts Institute of Technology that it would make most of its course material available to the public through the Internet. As a result, the university, where the annual tuition is about \$39,000, anticipates that not only individuals but universities all over the world will take advantage of its course lists, lecture notes and even video-taped lectures (MacDonald, 2001). E-education systems are being implemented in schools in different parts of the world. In England, about 10,000 schools have been linked up to Internet on the “National Grid for Learning”. Similar efforts have been made in France through the launch of the government’s “Information Society Policy” (Tronc, 2002). In India, the government has announced “Operation Knowledge” through which Internet connectivity in all schools will convert them into smart schools where the emphasis is not only on IT but also on the use of skills and values (*Manorama Year Book*, 2002).

E-governance

The global agenda of good governance and civil society is gathering momentum also spurred on by growing demands for transparency and accountability. Information technologies are a key factor in achieving the goal of good governance by (i) enhancing freedom of expression; (ii) encouraging the inter-change of questions and answers on non-governmental or governmental issues and policies; and (iii) educating the public through access to information and knowledge assimilation (Akhtar, *et. al.* 2002). National governments throughout the world have significantly improved their online service delivery. Canada outperforms the rest of the world in the area of e-governance; it plans to provide electronic access to all federal programmes and services by 2004. The other countries with such plans include Singapore, U.S.A, Australia, Denmark, U.K., Finland, Hong Kong, Germany and Ireland (AMIC, 2002). The European Union has launched e-governance as part of e-Europe initiative with the aim of having e-governments throughout Europe by 2003 (Papupavlou, 2000). In India, the National Informatics Centres Network (NICNET) connects district level and rural level government offices to government secretariats in the state capitals. The State Government of Kerala has opened computerized centres

called “Friends” where one can pay taxes, dues, etc. to various government departments and university fees (*Manorama Year Book*, 2002). The chief minister of Andhra Pradesh gained political popularity and power because of his achievements in introducing information technology in the state administration (Agrawal, 2001).

E-commerce

Globalisation seems to be not only inevitable and irreversible, but also a key to future economic development. It is evident that primary beneficiaries are the “big players”; however, smaller businesses have also managed to take the opportunities of informatisation as can be seen in some Asian countries. India’s role in the world market of IT software industry is quite impressive and South Korea is known as an important player in the world trade of communication equipments and parts (Kyung-Ja, 2001). The private sector, academia, civil society organisations are cooperating in shaping up the new economy and new approaches in virtually every sector, to strengthen small and medium-sized businesses leading them to e-commerce.

Conclusions

The principal concerns seen in the studies and publications examined can be summarized as follows:

1. There is an urgent need to formulate national and international policies to encourage the spread and the optimum use of ICTs and to minimize their negative social and cultural impact.
2. There are some attempts to widen access to ICTs, monitor their negative effects, and maximize their positive use.

With regard to further research, we propose that international surveys be undertaken to determine the present status of ICTs and needs assessment studies be carried out to determine the type of information required in different social, economic, political and cultural ambience. We would also suggest research studies on the perception of info-ethics and its impact on various cultures and groups of users.

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Proposal for advancing the information society

In the area of research on the information society, UNESCO proposes that the following principle be adopted and action be implemented

Disseminating knowledge about research studies and publications on the information society, especially regarding ICTs and gender; cultural and linguistic diversity in media and information networks, press freedom and freedom of expression in the information society; ICTs and persons with disabilities and infoethics and universal access to information and knowledge.