



GLOBAL KNOWLEDGE 97: KNOWLEDGE FOR DEVELOPMENT IN THE INFORMATION AGE **22-25 JUNE 1997**

The Global Knowledge 97: Knowledge for Development in the Information Age Conference took place from 22-25 June 1997 in Toronto, Canada. The conference, co-hosted by the World Bank and the Government of Canada and sponsored by 47 other public and private organizations, was attended by more than 2000 participants, including over 500 from developing countries. Participants came from 124 countries and included representatives from government, academia, science and technology, business, the media, multilateral institutions and non-governmental organizations (NGOs).

Global Knowledge 97 (GK97) focused on harnessing the information revolution for economic development, social cohesion and poverty alleviation in the 21st century. The goal of the conference was to explore the vital role of knowledge and information in sustainable development and the ways in which the information revolution transforms the development process. The conference's three major themes were: understanding the role of knowledge and information in economic and social development; sharing strategies for harnessing knowledge; and building partnerships to empower the poor and foster international dialogues about development.

The Global Knowledge 97 conference succeeded in fostering dialogue and partnerships to address the opportunities and challenges posed by the information revolution. Participants engaged in productive dialogue on innovative initiatives and exchanged experiences about successful strategies for using information and communications technology to advance development goals. However, many participants expressed concern that there was an overemphasis on technology and an underemphasis on underlying development concerns. Many participants highlighted that the challenges and possibilities posed by the information age make it even more pressing to address the fundamental concerns of poverty, illiteracy, gender inequality and lack of access to resources. Overall, GK97 generated considerable momentum and will likely serve as a launching pad for future efforts to address the vital roles of knowledge and information in sustainable development.

A BRIEF HISTORY OF GLOBAL KNOWLEDGE 97

As new technologies and new patterns of communication and interaction create hitherto-unimagined opportunities for access to information and knowledge and new ways for individuals, communities and nations to learn and work together, they also pose new challenges for developing countries and the international community. GK97 was one of a number of international initiatives attempting to grapple with the challenges posed by new technologies and to take advantage of the ways in which information and knowledge can serve as tools for economic development and social empowerment.

Building on what began at the 1995 G-7 Global Information Society meeting in Brussels and continued in 1996 at the Information Society and Development conference in South Africa, GK97 was part of a learning process of collecting questions and observations in order to nurture and guide the knowledge revolution.

REPORT OF THE MEETING

During the four-day conference, delegates attended nine Plenary sessions and 116 working sessions clustered around seven conference tracks: empowering the poor with information and knowledge; policy and regulatory frameworks for the information economy; infrastructure and capacity-building; fostering science and technology in developing countries; knowledge flows, civic dialogue and the informed citizen; distance education and technology for learning; and partnerships. A number of virtual conferences took place in the lead-up to GK97, and interactive global links, including video-conferencing and real-time Internet discussions, were in operation at the conference in an effort to stimulate a truly global dialogue on the role of knowledge and information technology (IT) in development. Following is a summary of the virtual conferences, Plenary sessions and a number of working sessions.

SUMMARY OF VIRTUAL CONFERENCE ACTIVITIES

The virtual conferences provided those with access to the Internet opportunities to participate in the debates surrounding the conference issues, to connect with other interested groups and to interact electronically with conference participants. The on-line discussions took place in: the Global Knowledge 97 (GKD97) List; the Canadian International Development Agency's (CIDA) Village Well Gathering Site; and the Association for Progressive Communications (APC) Virtual Conference Project, which facilitated three distinct online conferences on gender, the "Storyline," and lessons learned in information technology and development. These virtual discussions will continue after GK97 to encourage ongoing dialogue.

GKD97 LIST: Run by the Education Development Centre and hosted by UNDP, this conference (at <http://www.globalknowledge.org/>) revolves around the question of how the information revolution transforms the development process. The dialogue centres around several themes, including: control over and access to information and technology; equity concerns; indigenous and local knowledge; women and technology; distance education; capacity-building; and donor priorities. Participants have provided numerous examples of innovative initiatives underway to address these issues and have shared information regarding relevant conferences, publications, web sites and networks.

Questions such as whether technology may actually widen gaps between rich and poor, what effect the introduction of information and communications technology (ICT) has on social and cultural elements in developing countries, and how to use technology for development, have been addressed. Recommendations include: ensuring access to ICT, particularly for women and the poor, and strengthening their ability to package and disseminate the valuable information they possess; encouraging Southern governments to develop national information policies; installing infrastructure, telecommunications capacity and access to information networks to lower Internet costs in the South; building networks to connect development agencies globally; and providing citizens with greater access to government information.

Concerns regarding the direction of information flow from North to South were expressed, and the need for further development of South to South information exchange was highlighted. The need for multilateral organizations to provide support for building information production capacity in the South and for enhancing local IT organizations' capacity has been underscored.

The benefits of community computer networks, community radio and local information and media programmes were highlighted. Many emphasized that representation and consideration of indigenous needs and knowledge systems are crucial to the success of ICT implementation efforts, and proposals include: using local school libraries as venues for meeting local development needs; establishing a communications network to connect indigenous populations and promote the use of local knowledge in sustainable development planning; and developing a database of indigenous knowledge. Several participants have solicited a model for best practices in helping communities learn how to select appropriate technological solutions for local problems.

VILLAGE WELL GATHERING SITE: This virtual initiative (at <http://www.villagewell.gk97>), operated by CIDA on behalf of the World Bank, allows people worldwide to share their ideas on the conference themes, establish networks and interact with conference participants. It aims to ensure that dialogue is ongoing and continues after the conference. The discussion recalls the basic principles of community development, such as the need to establish multi-directional communication between people and the need to take full advantage of all available media.

The site's "guest book" and "threaded dialogue" structure allows contributions to be entered directly from the web site and through e-mail and fax. Participants have posted text, drawings, photos and audio files as well as links to other sites. Professionals, NGOs, academics and students from around the world have contributed case studies, practical considerations and philosophical debates. Inputs have tackled questions such as: how IT may transform educational and pedagogical concerns; the lack of incentive to participate fully in international partnerships due to budget cuts; requests for assistance in the uses of satellite technology for distance learning; how to empower the poor with knowledge and information; and how to protect people's cultural identity.

Suggestions for the physical GK97 conference were also proposed. A professor from Ghana suggested examining the theme of helping universities in developing countries set up their communications networks, and a professor from Jamaica proposed that the conference focus on trying to utilize the remote capabilities of the Internet to address traditional geographic and economic constraints to development.

Several contributions have been made to the following guest books: Understanding the Role of Knowledge; Building New Partnerships; Sharing Strategies; and Schools. In Building New Partnerships, for example, a legal scholar from Estonia pointed out how useful the Internet could be for supporting information-sharing to facilitate legal

and constitutional reforms in emerging democracies around the world. It has also been noted that IT should not be used "for its own sake" but for tangible goals that can be shared by entire communities.

Extensive dialogue has occurred in the threaded dialogue on schools, which encourages children, teachers and parents to join the global knowledge discussion. A threaded dialogue geared towards university students fosters interaction between academia and the private sector, and another threaded dialogue, "Dialogo en Castellano," facilitates discussions among Spanish speakers. "Looking for Assistance" posts requests from visitors looking for assistance and information, and in "Stories from the Well," participants share knowledge on practical experiences.

APC VIRTUAL CONFERENCE PROJECT: The three on-line discussions hosted by APC can be found at <http://www.community.web.net/gk97>.

Gender And Information Technology Conference: The "gk97.gender" conference focuses on the role of women in IT and development. Discussions have centred around: gender considerations in IT programme and policy development; gender-sensitive training and support; problems of access; privacy and security for women on the Internet; and making IT a priority for women.

Participants have exchanged information about innovative uses of IT, such as a community women's networking access initiative in Tver, Russia, operating out of a university professor's home, where one e-mail account is shared among 30 women who then act as information bridges to those not on-line by making presentations of their findings. A host of practical suggestions have been aired, including the need for: greater emphasis on grassroots access to new technologies such as women's microbanking, IT applications to deal with illiteracy and development of solar-based IT technologies for use by rural women; gender sensitization programmes for policy makers; the use of IT to improve gender monitoring of organizations; and care to ensure that application of IT conforms to the beneficiaries' concepts of development.

Many participants have addressed the need to lobby decision-makers and to take the World Bank and others to task for the under-representation of women in high-level IT circles. The need to build bridges between connected and non-connected women and to create means to ensure that non-connected groups are not excluded from knowledge and information exchange has been underscored. Suggestions regarding how to get women to use networks have highlighted the importance of: getting women more involved in the development of information technology so that IT tools will meet women's needs; using other communication tools, such as video, as a way of reaching non-literate people; increasing technical training for women; and developing community outreach programmes for women to learn new IT skills.

GK97 Storyline: The "gk97.storyline" is a "living document" that asks the question: "what is knowledge for development?" This discussion is based on the original Storyline document, prepared for GK97 conference organizers to frame ideas and debates, raise questions and present challenges in advance of the conference. The key ideas in the Storyline include: access to information, knowledge and technology; uses of the Internet, both positive and negative; democratization of the Internet and of government; decentralization of power; coalition-building through the Internet; the role of various actors in IT; how funding decisions are made; and how the Internet can redefine "development."

Contributors to the discussion have examined the potential implications of the information revolution in traditional native cultures. One participant expressed concern that the Storyline paper is based on the assumption that economic and political globalization will change the life of traditional cultures and wipe out their heritage. Another partici-

part responded that human history is the history of great migrations, peoples mixing, disappearing and emerging with new identities. It was suggested that perhaps there should be a conference on Global Wisdom rather than Global Knowledge.

Information Technology And Development: Lessons Learned:

The purpose of the "gk97.lessons" conference is to share the experiences of APC users and others who have triumphed, struggled or been by-passed during the information revolution. This list invites examples of APC network successes or failures and ideas, strategies and projects that take advantage of information technology. Many examples of the successful use of IT for development purposes have been described, including: the use of IT and telecommunications technology by an NGO to support agrarian reform in Brazil; the use of an "InterRave" to raise funds to supply modems to the indigenous people of Sarawak; the establishment of an on-line women's discussion forum during the Fourth World Conference on Women; and the use of e-mail to free a jailed democracy activist in Russia. Other examples of IT-based initiatives have also been outlined, such as the use of e-mail to support international campaigns for human rights and freedom of expression and to publicize the plight of the rainforests of New Guinea; the establishment of an e-mail network in the former Yugoslavia dedicated to improving peace-oriented communications possibilities; the activities of a women's media association in Tanzania; and the establishment and activities of an electronic conference for Francophone African women. One participant raised the question of how "success" and "failure" in the field of electronic communication for development should be framed and noted that the "connection" of people does not automatically induce active communication. Another participant reminded the discussion that the existence of telecommunications infrastructure should not be taken for granted, especially in developing countries.

PLENARY SESSIONS

WELCOMING PRESENTATIONS: The Global Knowledge 97 conference opened on Sunday, 22 June 1997 in an evening Plenary session. Following a traditional dance performance by the Kenata Native Dance Theatre, Elder Shannon Thunderbird of the Tsimshian Nation of British Columbia presented a talking stick, a time-honored tradition of the First Nations people. She described the ethics of the talking stick, highlighting those of non-interference and not showing anger. She stressed that all people should be heard and hear others.

Roméo LeBlanc, Governor General and Commander-in-Chief of Canada, compared the great Canadian railroad of a century ago with the growing information highway, which will play a critical role in the future development of Canadian society. He described GK97 as part of an ongoing voyage of discovery and dialogue on the global information society. He stated that the information age carries opportunities as well as risks. Opportunities include: fostering economic growth, job creation and poverty reduction; promoting international solidarity; and creating a better-informed citizenry. Threats include: the undermining of existing social institutions; the fragmentation of society; and the deepening of fault lines between rich and poor. He stressed the importance of equitable access to ICT. He pointed out that the new technologies offer hope but are not a panacea: they are only "tools" and require close linkage to progress in the economic, social and political sectors. He pointed out that exciting changes are taking place which signal hope and progress for society, and urged participants to seize the extraordinary momentum of the information revolution by sharing knowledge and experience and by forming partnerships to enable all to participate in the global information society.

James D. Wolfensohn, President of the World Bank, remarked that it is appropriate for this conference to meet in Canada, as Canada has been ranked highest on the UNDP Human Development Index for the fourth year in a row. He stated that while the world is constantly growing and changing, the World Bank is committed to the use of

information and technology for development. However, success requires not only money but also partnerships and people who will listen and learn from each other. He emphasized that the wide range of participants in attendance, particularly the 30% that are women, is central to making the conference a success.

Kofi Annan, United Nations Secretary-General, stated that participants have convened at this conference because all share a concern about poverty and are convinced that poverty can be reversed. He stated that, in the coming days, delegates will begin a global conversation to discover new ways to make information an agent for change and a tool for prosperity, and he called on participants to make information and technology their partners for progress and to form a global partnership for information. He stressed that knowledge is power, information is liberating and education is the premise of progress in every society and family. Information and freedom are indivisible: the information revolution is unthinkable without democracy and true democracy is unimaginable without freedom of information, and he stated that the UN pledges its commitment to this as information's new frontier. He noted that the spread of information is making transparency and accountability a fact of life for all free governments. The challenge now is to make information available to all. Access is crucial, and the ability to publish newspapers without censorship and to communicate freely across national boundaries must become fundamental freedoms for all people. Communications and information technology have enormous potential for sustainable development, but the information gap has become the new dividing line between the "haves" and the "have nots."

He outlined what GK97 delegates can do to foster an enabling environment for development and democracy, which are the conditions for global knowledge: promote greater, freer and fairer access to information for developing countries through infrastructure improvement and technological advances; advance liberalization of government control and censorship where it exists; foster environments of growth and communication between developed and developing countries so that technology transfer becomes faster and more effective; initiate innovative approaches to education and learning at all levels; welcome foreign investment and make it an agent for knowledge; provide for pilot projects in interactive long-distance learning, telemedicine, telebanking, micro-credit schemes and environmental protection and management; and ensure that the young will be the first to gain this knowledge and make it their partner in the pursuit of a better world.

THE GLOBAL KNOWLEDGE AGENDA: Diane Marleau, Canadian Minister for International Cooperation and Minister responsible for La Francophonie, emphasized the importance of equitable access for all and productive partnerships. She stressed that information must be practical and adaptable to local needs. She highlighted the importance of education for girls, particularly in Africa, and emphasized that partnerships can facilitate equitable access. She said governments should guarantee that all citizens have access to information and foster an enabling environment for private sector investment in ICT.

James D. Wolfensohn, President of the World Bank, stressed the need to overcome the gap between rich and poor. The major challenge is to increase people's ability to access new technology, and success must be measured by impacts on poverty and development. He remarked that governments and institutions should be guided by the wishes of their citizens. He recalled Secretary-General Annan's observation that it is ignorance, not knowledge, that constrains society, and he urged participants to strive for a better world.

José María Figueres, President of Costa Rica, stressed that the purpose of this conference is to discuss knowledge in the information age in the context of furthering the well-being of people. He outlined Costa Rica's experience and investments in health, infrastructure development, education, communications and institution-building. He

stressed that of all these areas, education is the most important. He outlined many indicators of improvement, including: increased life expectancy; improved environmental indicators; and greater economic liberty. He suggested that sustainable development is a way of taking decisions that encompass all areas of action in society. He called for greater efforts to provide access to ICT in order to ensure equality for all.

Yoweri K. Museveni, President of Uganda, stated that in the past, man has been oppressed by nature and by fellow men. He said science and technology enabled humanity to overcome the former, and only the universalization of knowledge will create an equilibrium where none will use knowledge to the detriment of others. He outlined the obstacles to access to knowledge in Uganda: illiteracy; archaic curricula; difficulties in the transmission of knowledge to farmers; and dormancy of ancient knowledge. He stressed that as knowledge spreads across the globe and becomes more democratically owned, an adjustment in the world system will be essential, and all will have to find a niche where they can contribute to this knowledge.

INVESTING IN KNOWLEDGE: Maurice Strong, Special Advisor to the UN Secretary-General, stressed that although GK97 is focusing on knowledge, civilizational changes driven by the knowledge revolution are also at issue.

Joy Male, Administrator, Mengo Senior School, Kampala, Uganda, spoke of the pioneering school-to-school initiative (SSI) underway in Uganda. The SSI, a one-year pilot project started in 1996, has made computers, printers and for the first time in Uganda, access to the Internet available to three schools. The SSI is very popular in schools and local communities and is being used to network, share best practices and increase skills. She outlined challenges for the future: to ensure that the programme continues beyond the pilot project, and to carry the programme forward into other schools.

Joseph E. Stiglitz, Senior Vice President and Chief Economist of the World Bank, emphasized that knowledge is the driving force behind economic development. He listed prerequisites of the telecommunications revolution, including: continued investment in human capital; an enabling environment for investments in new technologies; policies to ensure that the benefits of economic growth are shared widely; creation of knowledge infrastructure; and democratic development. He stressed the importance of: effective competition leading to low prices and allowing the poor to participate; a regulatory structure to protect consumers; and political and regulatory stability.

John Manley, Canadian Minister of Industry, observed that advances in information technology are transforming industrial economies into knowledge-based economies. He emphasized that this state of "connectedness" provides new opportunities and has the potential to level the playing field between developed and developing nations. Developing countries can "leapfrog" old technologies and avoid regulatory and policy pitfalls. He stressed, however, that we must not lose sight of basic human values. He outlined several programmes that Canada will initiate at home and abroad to improve access to IT tools and skills.

Fawzi Al-Sultan, President of the International Fund for Agricultural Development (IFAD), stated that the millions of poor farmers, herders and fisherman possess valuable knowledge. However, for knowledge to become a force for poverty alleviation, the poor require access to experiences of comparable communities, and their knowledge must be sharpened by access to outside knowledge in ways that enable them to select those elements most relevant to their needs. He said information is the cornerstone of sustainable development, and modern technologies must be made available to the poor. He outlined efforts by IFAD in this regard. He stressed that investment in knowledge represents a commitment to people and a better future for all.

INVESTING IN KNOWLEDGE INFRASTRUCTURE:

Michael Dell, Founder and Chair of the Dell Computer Corporation, spoke of recent and rapid technological changes. He noted the opportunities that emerging economies have to "leapfrog" stages of development and take full advantage of technology to assist their development. He advised emerging economies to accelerate their development by maintaining open telecommunications markets in order to drive down costs for users. This is an instance of how emerging economies may develop and avoid the mistakes of the North.

Claude Forget, Special Adviser to the Chair of the Board and CEO of Teleglobe, Inc., reflected upon the enormous changes currently underway in ICT. He observed that the global information infrastructure is a neutral tool that requires government action to ensure that it is a force for good. Governments should work to ensure that: policy frameworks are optimal; training and education are maximized; and the global information infrastructure is interactive rather than one-way. Above all, governments must ensure that the gap between the information rich and poor is reduced so that the enormous potential of the information society may be realized fully.

Jean Monty, Vice Chair and CEO of Nortel, spoke of the growth of the information infrastructure, or "infostructure." He also noted differences in access to ICT services, or "teledensity." Nonetheless, ICT is drawing the world closer together and changing the relationships between citizens, governments and corporations. Nortel, for example, now operates in a truly internationalized network. Governments must play a role, in strengthening research and education, facilitating innovation and promoting on-line access. He called on development agencies to fund telecommunications infrastructure as an agent of development and equality.

GLOBAL KNOWLEDGE: A PARTNERSHIP FOR WOMEN

AND MEN: Huguette Labelle, President of CIDA, noted that CIDA has been working to integrate women into the mainstream of development for many years. She stated that women's efforts in development were not recognized and that the key is participation in decision-making that leads to the process of development. She observed that few women become interested in computers until there is a clear practical benefit for themselves and their families. She outlined the challenges for the future: to ensure appreciation of women's methods of communication; to reduce social and economic barriers for women who want to use IT; and to create better access to these technologies.

Shirley Malcolm, Director of the American Association for the Advancement of Science Educational Programme, emphasized that education in science and technology is crucial to realizing sustainable human development and that ICT must be available to support education and development. She stressed that women must have access to the education and technologies essential for development. She noted that while women comprise the overwhelming proportion of the poor, they bear primary responsibility for food security, reproduction and family maintenance. A substantial amount of local traditional knowledge is held by women, especially in the areas of agriculture, environmental resource management and health. She stressed that discussions and strategies about development have been undertaken without women's involvement and without an understanding of their effects on women or of the need to consider women's roles and responsibilities in the family and the community. Getting knowledge to women will contribute to improving women's situation, and efforts to build on local practices and utilize ICTs should be mounted on a larger scale. An enhanced vision of inclusive development strategies can only be realized if: access to technology is provided to close the gap between information "haves" and "have nots;" women acquire the means to access the knowledge necessary to be actors rather than objects of development; women and their concerns are present at all levels of development; and gender dimensions and consequences are considered in all decisions.

Kathryn White, President of Black & White Communications, stressed that science and technology are gendered. She said the World Bank should invest in computers and telecommunications that are designed, developed and produced for and by women, and she highlighted that women are using networks in creative and astounding ways. She informed participants that the Independent Committee on Women and Global Knowledge had established an award for women contributing to the development of global knowledge through ICTs. She presented the Canon on Gender, Partnerships and ICT Development, which outlines three basic principles essential to sound planning for ICT development and design: the impact of ICTs on development must consider the needs of men and women; the design of ICT systems must ensure that men and women are equitably involved in every facet of ICT development; and evaluations of ICT development must take into account the distinct situations and resources of women and men to ensure that all have continuous learning.

James D. Wolfensohn, World Bank President, stated that there can be no development without women. He noted that women have been transmitting culture and education long before computers. He said communication via the Internet is gender-neutral and can be conducted with equality. He urged women to grasp the opportunities offered by the new technologies.

KNOWLEDGE FOR GOOD GOVERNANCE: Katherine Hagen, Deputy Director General of the International Labor Organization (ILO), stated that social justice and development require good governance, which can be supported by widespread access to knowledge. She highlighted the ILO's role in disseminating human rights information via ICT. She noted the rise of democratic regimes due to the creation of informed citizens. She called for a reduction of the gap between the information poor and rich and for universal access to ICT.

Pepi Patron, Professor of Philosophy at the Catholic University of Peru, discussed the relationships between knowledge, women and good governance. She said women are changing the traditional conception of knowledge, even when they are not in contact with formal information networks. She suggested that the Internet and computers can provide a public space for women's voices but cautioned that the number of women with access to this technology is limited. She also noted that women must learn to speak with all segments of society.

Lloyd Axworthy, Canadian Minister of Foreign Affairs, spoke of the need for information technology to work for people. He anticipated that the day is coming when "the mouse will be mightier than the sword." Democratization is crucial and requires not simply elections, but the fortification of civil society and the empowerment of citizens. Information can aid this powersharing, becoming "the Colt 45 for the grassroots." He spoke also of the need to beware of the dark sides of the information revolution, such as pornography, monopoly and elite control of information and hate propaganda. To avoid such problems, there is an urgent need to create policy frameworks to shape technology and balance privacy issues, freedom of speech and human rights. He stated that Canada is working to promote an international information strategy that would guarantee equality of access and the shaping of technology to human needs.

GLOBAL KNOWLEDGE AND LOCAL CULTURE: Huguette Labelle, President of CIDA, discussed access to and use of ICTs. She stated that ICTs have the power to wipe out traditional societies and flatten local cultures and languages. But the information revolution need not impoverish life. ICTs can open up new interactions between humans, enriching and vitalizing local cultures. Local cultures are alternative information banks, vital to the world and embodying information others have not yet discovered. She spoke of the Inuit people, who, by using ICTs in local languages to link scattered settlements, have become an effective political voice.

Federico Mayor, Director General of UNESCO, stressed the need to reach the unreached and include the excluded. In the past, development has failed when it was presumed that development was an external issue. On the contrary, development is internal to countries and to individuals. Optimum development is not merely an economic process but draws upon values, vision and wisdom. He noted the need to respect individual and cultural diversity and to learn from the wisdom of those whom we would help to develop. Knowledge is increasingly central to economic growth, but more important still is imagination and the courage to share the gains.

Jennifer Makunike-Sibanda, Zimbabwe Broadcasting Corporation, reminded participants of the hardships of African life, particularly for women. At her broadcasting organization, the globalization of culture is overwhelmingly evident in the predominantly imported programming. She spoke of the centrality of culture to humanity and individuality and highlighted the danger that the information revolution will continue to exacerbate differences in wealth and opportunity, a process that is already visible in access to telephones and computers.

THE CHALLENGES AHEAD: Carla O'Dell, President of the American Productivity and Quality Centre, shared her experience in promoting best practices in companies. Like societies, companies have problems with internal information flow and with ensuring that knowledge leads to action. She observed that best practices may not easily be transferred, even where they are understood. But knowledge is crucial, and ICT can help overcome ignorance. The spread of best practices can be enhanced by: access to information and to those who know how to explain information; trusting and credible relationships between teachers and learners; and the use of facilitators. She noted that those most in need of advice on best practices often have the least time to learn.

Anders Wijkman, Assistant Administrator of UNDP, emphasized the need to learn more about the information revolution and to build partnerships. He highlighted opportunities to harness the gains of the information revolution for basic development aims. He stated that ICT can assist in reducing global environmental problems, but it can also divert attention away from basic needs. He asserted that "a computer chip does not fill an empty stomach." He highlighted the risk of exclusion and marginalization and said ICT cannot be seen as the solution to everything. He emphasized the need to build capacity, increase literacy and respect cultural diversity. He stated that key outcomes from this conference have been dialogues, networks and inspirations.

Vivienne Wee, Executive Director of ENGENDER, highlighted the gaps between the global village and the real world, particularly the gender gap. She noted that if a systemic approach to closing the development gap is to be taken, then the gender gap must be addressed. She emphasized that women lack access, ownership and control over their livelihood resources. She asserted that ICTs have not entered into a gender-neutral context but into a long chain of gender inequities. She suggested that ICT be used: as an information and advocacy tool for women's knowledge; to lessen the distance between policy-makers and the beneficiaries of development; to document women's indigenous knowledge; and as a financial tool to help women market their products.

PARTNERS FOR THE FUTURE: Abdulaziz Othman Altwaijiri, Director General of the Islamic Educational, Scientific and Cultural Organization, discussed the importance of cultural development and cooperation. He stated that the consolidation of international peace and the strengthening of human rights and democracy is based on the free circulation of information and its dissemination on a more balanced scale. He suggested that cultural partnership is the means to achieve this. He expressed hope that partnerships will promote the principle of equal rights and the achievement of international cooperation.

tion and understanding. He said any concept of development must be based on international understanding and cooperation, and this conference has paved the way for future partnership in this regard.

Jay Naidoo, South African Minister of Post, Telecoms and Broadcasting, emphasized the critical role of the state in ICT development. He said that privatization, deregulation, free markets and competition are the "new holy grails." He spoke of the need to address these imposed models head-on and for sovereign national governments to determine their own goals in the telecommunications sector. Future conferences like this must: have a stronger concern with human development; examine the relationship between where we want to go and where we are heading; and focus on debt. He stressed the need for a comprehensive strategy to bring the developing world into the information society. Developing countries must not become the "battle-ground for the knights of the development round table," and information colonialism must be avoided. He called for a transformation of the Internet from a hobby of the rich to a tool for the masses and for a shift from illiteracy to computer literacy.

Martha Davies, President of Quipunet, said the conference has been an exploratory experience. She noted that she, along with hundreds of people from developing countries, has been participating in UNDP's GKD97 virtual conference, and she highlighted the rich interaction that has been evolving. She expressed the importance of keeping this productive line of communication open and ongoing, to allow people to continue to tap one another's knowledge and share solutions to common problems.

Keynote Address: Arno Penzias, Nobel Laureate, Vice President and Chief Scientist of Lucent Technologies, Bell Labs Innovations, delivered the keynote address. He presented a number of predictions regarding the changes that will be wrought by technological advances in the next generation. He suggested that there will be a million-fold increase in the power of microelectronics and a thousand-fold drop in the cost of public data communications. He stated that instead of the "last mile," the last meter will pace communication costs: the access bottleneck will be broken and a new generation of small-scale low-cost data networks will become widespread.

He predicted that networked products and services will cost less than stand-alone products and services and that the Internet will surpass our present-day expectations, with "killer" combinations of communication, transactions and information and entertainment, as the primary transaction pathway within and between businesses, and as an important aid to, but not replacement for, education. He said targeted marketing will spur the use of agent technology. He anticipated that: privacy as we now know it will disappear for all but a few; "truly personal" computers will become a part of future clothing; and vertical integration will play a shrinking role in future business. He predicted that biotechnology will give us more power than we can handle: the full ability to map, simulate and modify biological molecules, atom by atom, to repair or replace worn-out or defective components in the human life support chain, and to extend the human genome project to other living systems.

He predicted that in most respects, society will continue to work as it does now, as we habitually underestimate technology's pace and overestimate its impact. He said computers help us with speed but not with direction - we have to steer them ourselves.

Closing Statements: Jean-Louis Sarbib, Vice President of the World Bank's Africa Division, stated that knowledge multiplies when shared, and we can all continue the exchanges initiated at the conference. He stated that governments must implement policies and infrastructure and educate their populations, the private sector should lead in developing technological opportunities, and civil society has an ongoing role in reducing poverty and preserving the environment. The challenge for the international sector is to ensure that these groups interact and cooperate. If knowledge is to be truly global, it is essential

that "geography does not become destiny" and that the disadvantaged are not left behind by the information revolution. He noted that many challenges remain, such as intellectual property issues and access to technology. He stressed that communications need to go in all directions, and all kinds of knowledge need to be shared. He called for a global partnership for action, strengthening existing relationships and fostering those that were made at this conference. The conference has reminded the World Bank of four fundamental issues: the importance of listening, participation and empowerment; the centrality of continuous learning, in recognition of which the Bank is transforming itself into a "knowledge bank;" the importance of linking people and organizations in partnerships; and the role of the Bank in helping "level the knowledge playing field." Several future directions have become clear: the virtual conference will continue; further meetings, including a global knowledge conference in Africa, are being discussed; and an international corps of knowledge volunteers, charged with developing protocols for cyber conversations, is being considered.

Diane Marleau, Canadian Minister for International Cooperation and Minister responsible for La Francophonie, encouraged participants to continue the virtual dialogue on the conference topics. She announced that Canada has decided to support the African Virtual University. She noted that the conference has provided opportunities as well as challenges, and summarized the outcomes of the conference: mutual learning; the creation of partnerships; and shared understanding at the dawn of the information age. She recalled Secretary-General Annan's statement that this conference was convened to help eradicate poverty and to employ ICT to strengthen development. She stressed that universal access to ICT should be a guiding principle and that knowledge should be shared in ways that respect cultural diversity, include women as equals and minorities as full participants, and most importantly, encourage people to listen to each other. She urged participants to seize the opportunity of the conference and take action now.

WORKING SESSIONS

Delegates attended a total of 116 working sessions over the course of three days. The sessions were organized around the seven conference tracks: empowering the poor with information and knowledge; the role of the state: policy and regulatory frameworks for the information economy; infrastructure and capacity-building; fostering science and technology in developing countries; knowledge flows, civic dialogue and the informed citizen; distance education and technology for learning; and partnerships. A number of these sessions are summarized below.

EMPOWERING THE POOR WITH INFORMATION AND KNOWLEDGE

In addition to the sessions summarized below, delegates attended sessions on: Information Technologies for Population and Development Programmes, Including Reproductive Health and Reproductive Rights; Promoting Grassroots Women's Entrepreneurship in Developing Countries: Three Tools; Meeting the Information Needs of Front-line Health Workers; Managing Health Risks with Information: Emerging Diseases and Natural Disasters; Knowledge Generation for and by the Rural Poor: Four Initiatives; and Telemedicine: Tools, Strategies and Controversies.

Partnership for Knowledge Sharing and Connectivity: Special Challenges in Africa: In this session, it was noted that Africa was the last continent to be connected to the Internet. The Africa Information Society Initiative, which aims to enhance information infrastructure and ensure that every African has the information necessary to build economic capacity and exercise democratic rights, was described. Panelists addressed a range of social and technological issues, often noting that despite difficulties with costs, content and connectivity, there are numerous local success stories.

Voices for Choices: Participatory Innovations in Knowledge

Creation: This session highlighted innovations in knowledge-building and participation in public policy deliberations by research, non-governmental and social action groups. Participants emphasized: why citizens do and do not participate in policy dialogue; successful uses of modern technology to spread information on human rights issues; the need for interaction between human rights and environmental movements; experiences of information training in Hungary and Peru; the North-South Institute's projects for women in Africa; and "gendered" information. Participants debated gender, equity and structural adjustment in Africa.

Tools and Technologies for Crisis Prevention and Disaster

Relief: Panelists emphasized that humanitarian agencies are increasingly judged by their capacity to provide and use information, although some are falling behind in this respect. It was highlighted that agencies need to systematize and professionalize their information operations while simultaneously increasing the capacity of local organizations.

Empowering Information Tools for Grassroots Women: Panelists highlighted the importance of: women's involvement in shaping ICT as it evolves; building bridges between women and men in government and media; training in technical skills and strategic use of ICT; using multiple channels for disseminating information; women's time constraints and the need for efficiency in ICTs; and finding ways to connect with e-mail-only users. Participants called for new search engines catering to women's needs and stressed that Internet communication should not eclipse human interaction.

Use of Communication Technology by Grassroots Women:

Best Practices: Panelists outlined initiatives that: make market, price and labor information available to women; provide training for marginalized people to master technology and information; teach computer literacy; explore social and economic impacts of ICT on women's lives; and examine how trade can expand opportunities for women. Discussion highlighted: the primacy of economic problems and information needs; the demand for new skills arising from ICT development; differential impacts of ICT on different types of women; and the need to document women's indigenous knowledge.

Broadcast Radio for Development: This session heard presentations on: radio and distance education; portable broadcasting stations and low-tech radios; a network of NGOs that provides radio scripts on agricultural issues based on grassroots knowledge in developing countries; interactive radio in India; and educational broadcasting by the BBC. It was suggested that radio is superior to ICT because: it remains the best means of mass communication; it can reach the illiterate; and it can be provided at reasonable cost. However, it was emphasized that these technologies should be produced in developing countries rather than imported and that government regulations can hinder free media and creation of community broadcasters.

Multisectoral Rural Development Through Telematics and

Telecentres: Panelists described multipurpose community telecentres (MCTs) that provide telecommunications and other services to communities in rural areas. To be effective and sustainable, telecentres must: be locally defined and appropriate; involve women and youth; meet real community needs; have strong community, horizontal and vertical partnerships; and have regionally or nationally administered funding. Panelists also: noted that access to information through MCTs is crucial to the development of other social sectors; stressed the importance of equitable access to these services; and highlighted that MCTs can have positive multiplier effects in areas such as agriculture, health, education and environment. Participants examined community-based examples from Africa and Latin America, showcasing telecentres which: use distance health diagnosis and organize more

efficient medical supply in rural areas; use distance education; and empower local information brokers, such as community radio broadcasters.

Using Information Technology to Improve Natural Resource Management: Panelists described USAID's initiatives using information technology tools for assessing and sharing natural resource information for sustainable development, and sought feedback and advice on developing partnerships to apply these tools. Participants expressed particular interest in training modules for managing international waters and discussed technology transfer, distance learning and remote sensing.

New Approaches to Rural Energy and Sustainable Development: Participants explored approaches to improving access to energy for people dependent on traditional fuels. Discussion revolved around: the real costs of bio-mass fuel due to time spent on fuel-wood collection; the importance of local control over bio-fuel resources and of increased energy efficiency; the need to shift to modern fuel use; the underestimation of available wind resources and adverse policies such as import duties on alternative technologies; and micro-finance for energy in rural areas. Examples included: local forest management in Niger; a micro-hydro project in Nepal; wind power in China, Russia and Brazil; and photo-voltaic systems in Kenya. Challenges identified included inequalities in access to energy and difficulties in financing access to energy.

Sustainable Livelihoods in the Information Age: The debate focused on sustainable livelihoods as an overarching concept, proposed in Agenda 21, as a means to link social, economic and environmental issues. Presentations showed how IT can be a positive force supporting development and how IT's negative consequences can be avoided. Participants stressed: the role of radio, which reaches more people than the Internet; how IT expresses Western values and destroys native cultural values; and the conference's lack of scrutiny of the problems of the poor who are starving, illiterate and living without the most basic technologies.

Traditional Knowledge in the Information Age: This session heard from First Nations elders and experts on: the nature, content, role of and changes in knowledge in traditional societies; the challenges faced by those who have been termed "technopeasants;" and the stresses upon traditional societies. The problems of incorporating traditional wisdom into contemporary policy development were discussed, and guidelines to educate governments and business on indigenous issues were outlined. William Commanda, a First Nations Elder, shared the wealth of his 85 years of knowledge and experience.

THE ROLE OF THE STATE: POLICY AND REGULATORY FRAMEWORKS FOR THE INFORMATION ECONOMY

Delegates also attended working sessions in this track that are not summarized below, on: Telecommunications Deregulation and the Issue of Universal Access; and Practical Experiences in Financing Infrastructure and Services: Case Studies.

Role of the State in Creating an Enabling Environment for Private Investment and Access: Policy and Regulatory Frameworks: This session centred on: telecommunications liberalization and investment needs; the residual role of the state in providing universal access; the role of international organizations; and the domains (education, medicine, government) and channels (Internet, telephony, software) of the information economy. Participants explored questions relating to capacity-building, the importance of legal frameworks and the regulation of content.

The Importance of Intellectual Property Rights to the Information Economy: Panelists: stressed the need to protect industry's intellectual property rights (IPR) while sharing knowledge and information for education and scientific development; described work to assist developing countries in developing their own intellectual prop-

erty and in utilizing "free" information to this end; emphasized cost implications of IPR for developing countries; called for transparency from corporations; and suggested that industry invest in legal infrastructure for enforcement of IPR and subsidize access to ICT in developing countries. Participants highlighted the implications of biotechnology patenting and the high costs of enforcing IPR.

Case Studies in Telecommunication Liberalization and Capacity-Building: Chile, Colombia, Estonia and Mozambique:

Participants heard four presentations on: the Chilean programme "Enlaces: Towards a Community of Learners;" the challenges facing further telecommunications development in Estonia; an IT collaboration between a Mozambiquan university and the national telephone company; and the results of a report from Colombia that analyzed access to IT and its economic and social impact for both developing countries and countries with economies in transition. Several concerns were raised regarding the policy environment that governments should create and the role of the private sector.

Evaluating and Implementing ICT Strategies for the Information Age: This session was targeted at policy makers, programme implementers and funders. Strategies for assessing the effectiveness of ICTs were presented. Issues discussed included: direct versus indirect results of ICT use; the importance of face-to-face contacts; the enabling, but not determining, role of ICTs; the need to de-mystify ICTs; and the importance of tailoring development strategies to the technology and the needs of those it is to serve.

Launching the World Bank's 1997 World Development

Report: The State in a Changing World: The Report's key message was summarized: an "effective state" is the cornerstone of successful economies, and without it, economic and social development is impossible. Participants heard that: an "effective state" allows markets to flourish and people to lead better lives; states' roles must match their capacities; re-invigorating public institutions can improve states' capacities; and markets and governments are complementary as the state provides the institutional foundations for markets.

INFRASTRUCTURE AND CAPACITY-BUILDING

Additional sessions in this track addressed: Institutional Capacity-Building in the Information Age; Working with the Global Investor: Financial Information and Emerging Markets; National Information Infrastructure Strategies: Lessons from Several Cases; Supporting National Management and Coordination of Development through Internet Technology: The Ethiopia Pilot; Frontiers in Information Infrastructure Project Finance; Capacity-Building in Information Technology and Connectivity; RADARSAT Applications for Global Sustainable Development; The Development Impact of the Internet: How and Why to Measure It; Innovation, Market Formation and New Strategies; Creating and Supporting New User Networks; Creation and Dissemination of Knowledge and Information: Best Practices; Enhancing Knowledge Sources for Innovation: Practices and New Tools; Building a Generic Strategic Framework for Information Technology; Community Owned Telephone Systems: An Alternative Way to Serve the Unserved; Impact of Information Technology on Jobs and Work: Good, Bad or Both?; Commercially Sustainable Information Networks for Business in Developing Countries; Building International Research Networks; Sustaining Knowledge Partnerships for Development; and Information Technology Networks for Promotion of Cross-Border Trade and Investment.

Building Knowledge Economies in Asia: Lessons from Experience and Challenges Ahead: Discussions focused on: drawing lessons from the Asian experience; forging links between industry, information and society; and investing in education. Some participants underscored making knowledge and ICT available and affordable, while others cautioned that income and knowledge gaps could increase if these changes are not made properly. Many new opportunities were

presented, such as the use of telecommunications for disaster and emergency relief. It was also highlighted that the roles of the various players need to be more clearly defined.

Learning Organizations and Knowledge Management: Participants explored how private and public sector organizations create contexts for continuous learning and build shared knowledge resources. Discussions included: the World Bank's management of its knowledge resources; the social dimension of learning and the social management of knowledge; augmenting intellectual capital to sustain competitive advantage; connecting NGOs to exchange knowledge and experience; and networks created by African women.

Community Information Service Centres: Providing Affordable Access to the Poor and Rural Communities: Participants heard presentations on: the establishment of community information networks; how Costa Rica can take advantage of the information revolution; the experiences of non-profit organizations in Latin America such as "Internet Peru;" and the Inter-American Development Bank's Informatics 2000 initiative. Participants noted that access to IT is a political issue and that the conditions required to create a culture that needs IT, such as access to telephones and electricity and health and education infrastructures, must be addressed.

Knowledge for Development: Learning and Using Policy Lessons: Participants discussed the means by which policy advice is given, made credible, internalized and implemented. They also considered the roles of policy providers, intermediaries and users, and noted problems with the transmission, reception and credibility of policy advice.

Designing Partnerships for Learning: This session considered two partnerships for teaching and learning: the Korean Development Institute and the Joint Vienna Institute, a regional institution serving economies in transition. Participants discussed: advantages of partnership-based training in comparison with more traditional training models; the concern that both models emphasized economic development to the exclusion of social and cultural progress; and how to establish similar ventures elsewhere.

IMF Surveillance in a World of Increasingly Integrated Capital Markets: This session focused on the need to provide timely and accurate data about domestic and international capital markets in order to enhance the stability and effectiveness of the global economic system. IMF representatives noted that the IMF provides a number of services to achieve this, including its new website which offers current data on economic growth, government debt, national inflation and other key financial indicators (at <http://dsbb.imf.org>).

FOSTERING SCIENCE AND TECHNOLOGY IN DEVELOPING COUNTRIES

In addition to those summarized below, sessions took place on: The Role of Science and Technology in Small and Medium Enterprise Development; Challenges and Opportunities in the Health Sector; Science and Technology Advances in Agriculture; Global Climate Change and Biodiversity; Global Cooperation and Knowledge Dissemination; New Methods for International Collaboration in Science, Technology and Innovation Policy; The IDRC-IFIAS Knowledge Brokering Initiative; and Knowledge Assessment for Development Planning: Preparing for Technological Change and Creating a Learning Society.

Knowledge, Science and Engineering for Sustainable Development: Presentations were made on: the role of academic research in industrial and economic growth; global environmental issues; health; and agriculture. Participants stressed the importance of partnerships and suggested that science and technology, while facing challenges in the next century, will be key in addressing these issues. It was also noted that science and technology must be combined with appropriate policies and institutions to achieve sustainable development.

Environment: The Challenge of Sustainable Development:

Participants discussed the relationship between knowledge, the economy and the environment. Some participants outlined the positive aspects of the relationship between the physical environment and human development, while others suggested that sustainable development is an unachievable oxymoron. Others stressed the importance of: the appropriate application of knowledge for sustainable development; local-level implementation of technology; and viewing science and technology within their social and political contexts.

Scientific Knowledge: Making the Most Out of the Best: Participants heard presentations on: genetic information; industry; access to and dissemination of scientific knowledge; and policies to foster science and technology in developing countries. It was noted that research skills are not immediately created nor always transferable. Others suggested that science and technology practitioners have not accounted for the knowledge of ancient cultures and that the possession of knowledge is not the prerogative of rich societies. One participant noted that developing countries have little access to existing knowledge and while there may be wind-up radio, there is no wind-up computer. Participants highlighted the potential of virtual universities and the importance of UNESCO and the private sector in the development process.

Role of Foundations in Science and Technology for Development: Participants discussed foundations' experience with international cooperation and schemes for mobilizing the scientific, technological and policy communities to focus on development problems. Presentations were made on the experiences of French, British and Chilean foundations and on the work of the International Science Foundation with University Internet Centres in Russia. It was noted that foundations can be more flexible than governments or international organizations and thus there should be scope for cooperation between them.

Harnessing Information Technology for Development: Participants heard presentations on: Internet-related policies in Brazil; investments required for IT infrastructure development in developing countries; and the challenge of education in the information age. It was suggested that the Internet is the first truly global telecom system. Participants noted that while there is a need for a competitive environment for IT investment, there may be limits to deregulation. It was also emphasized that IT exists in economic, political and regulatory contexts.

Pilot Projects in Information for Development: This session considered lessons learned from the 14 projects supported by the World Bank's infoDev programme on harnessing IT to address specific development challenges. It demonstrated the need for a flexible approach which adapts to local needs. Presentations showcased projects on: distance education in Africa; conference support in Russia; environmental database training in Mexico; and technical assistance to developing countries through WTO and ITU-related infoDev projects.

Putting Scientific Knowledge to Use in Participatory Formulation of Development Policies: Participants discussed the use of computer-based tools for sustainable policy development. A presentation on development policy assessment used a live computer simulation of future population, energy, water and agriculture management policies in Nile River basin countries. The need to build bridges between the science and policy cultures was stressed. Challenges for the future were identified: globalization; the magnitude and rate of global change; and the need to employ long-term perspectives.

KNOWLEDGE FLOWS, CIVIC DIALOGUE AND THE INFORMED CITIZEN

Working sessions not summarized below were held on: State of the Art in Environment Education, Training and Communication: Lessons Learned and Best Practices from Country Experiences; Electronic

Publishing and Access to Electronic Information; Institution-Building for Sustainable Environment Education Programmes: Best Practices and Future Challenges; Creating Informed Citizens: The Role of Schools in Education for Sustainable Development; Women and the Media: Case Studies from the Middle East; Innovative Strategies and Methods in Environment Education and Communication: Applications of Computers and Information Technologies; and Measuring a Country's Capacity to Absorb and Use Information.

Mainstreaming Environment into Development Programmes: Policies and Strategies for Education, Training and Communication: This session focused on the importance of integrating education, training and communication components into environment programmes. Case studies from the Philippines, Thailand and Sri Lanka were presented. Recommendations were made on the importance of mutual learning and technology as an effective means of reaching the local level.

Narrowing the Development Know-How Gap: How New Communication Technologies Can Help Educate the Information Poor: This session enabled policy makers and academics to communicate successes in addressing information poverty. Panelists emphasized: the range of technologies at the disposal of educators; how ICT may aid distance education; the cost-effectiveness of ICT; and how to assist people who are unfamiliar with ICT. Discussion raised concerns over costs, access and the areas where ICT can best help education.

The Informed Citizen: Setting the Agenda: Participants explored the notion that the information revolution will not only enhance the supply of information but will substantially alter the structures in which public problems are addressed. Informed citizenship entails not only providing information to citizens, but also receiving information from and exchanging information between citizens. Discussions of case studies considered: social impacts of the information revolution; the interaction between the Internet and other communication technologies; local successes involving access to high technology; the representative role of citizen groups; and the reluctance of politicians to cede control as ICT use spreads.

Electronic Media: Reflecting Diversity: Participants heard presentations on: WETV, a satellite broadcaster that acts as a platform for global issues; the Canadian Heritage Information Network and their work with "virtual" exhibits; the Canadian Museum of Civilization's virtual museum on New France; and the idea of cultural repatriation through electronic means. Some participants stressed that this is an unprecedented moment in history when all cultures are in contact and that cultural diversity is as important as biodiversity. It was recommended that ways in which new technologies can create art and new forms of expression be considered.

Parliamentary Learning and International Cooperation: The Cases of South Africa and Cambodia: Panelists: highlighted the intensive information demands of parliaments and the development of inter-parliamentary cooperation programmes; described the Canadian Virtual Conference System pilot project which uses computer-based conferencing to enhance legislative development and training programmes in South Africa; and outlined efforts in Cambodia to rebuild information infrastructure by strengthening the National Assembly Secretariat, developing research and information services and training parliamentary staff to access, process and manage information. One participant outlined efforts to foster democratic governance by creating a network for dialogue about African issues among African leaders.

DISTANCE EDUCATION AND TECHNOLOGY FOR LEARNING

Additional sessions not outlined below discussed: Restructuring National Education Systems Using ICTs; Internet-Based Learning: Practical Examples from the Classroom; Technology-Supported Distance and Open Education for Development in the Information

Age: The Role of Open Universities; Use of Technology to Improve the Quality of Instruction in the Classroom; Distance Education for Economic Development; Distance Education in Francophone Africa; Collaborative On-line Learning Environments; and The Opportunities and Challenges of On-line Higher Education.

Colloquium on Distance Education for Teacher Development:

Participants shared experiences on the challenges facing teacher development and how distance education solutions can address them.

Examples of innovative approaches in Senegal and India were presented. An e-mail discussion group preparing for the colloquium identified difficulties, including educating policy makers about the benefits of distance education and linking distance education to social development and community concerns. Themes and questions included: how technology provides opportunities for distance education; how to manage distance education on a large scale while adapting it to different local systems; and curriculum issues. Panelists presented case studies of distance teacher education in Israel, Mexico and the UK. Participants: asked about fallback plans when technology fails; discussed the advantages of using video-conferencing, radio, tutors and print to train teachers; and raised concerns regarding the costs of new technologies for distance education. Participants also raised questions regarding: quality assessment and the criteria by which to measure it; equity; and the outreach potential of distance education.

Classrooms Without Borders: Internet and Education: Participants discussed how to improve educational outcomes and global understanding through Internet-based distance learning activities.

Four programmes were presented, including the World Bank's "World Links for Development," which links students and teachers in developing countries with peers in industrialized countries for collaborative research, teaching and learning via the Internet. Discussions highlighted the importance of: content over technology; self-learning and student-centred interactive learning; partnerships to facilitate Internet access; training teachers to integrate Internet into the classroom; and developing tools to assess the value of Internet use on the quality of education.

PARTNERSHIPS

Working sessions in this track not summarized below included: Regional Partnerships for Training: Lessons from the Mediterranean Development Forum; Pan-Asia Networking: Connecting the Asian Voices; Building Better Communities Through Better Understanding of Human Learning; Training Partnerships for Telecommunications in the Developing World; Innovative Approaches to Development Partnering; and Extending the Reach: The GK97 Virtual Conferences.

Knowledge for Development: A Consultation: The World Bank sought feedback on a draft outline of its 1998 World Development Report, which focuses on Information and Knowledge for Development. The draft outlines the emerging economic information environment and considers its significance for developing countries.

Participants suggested that: education be more strongly emphasized; the politics of information be considered more fully; and market failures and government roles be examined in greater detail.

Partnerships for Designing and Delivering Web-based

Training: Participants heard presentations on: the Morozov Project, a regional network for electronic distance learning in Russia; the African research consortium project on distance education in economics; Project Aya, a partnership between universities in Indonesia and Canada that provides an Internet-based English Technical Writing instruction course; and a website, based on collaboration between Moscow State University and the World Bank, for interactive distance learning in Russia. It was noted that these pilot projects should also use formats such as CD-Rom and print.

Building New Partnerships for Policies and Action in the Information Society: Panelists assessed the impact of information policies on social development and emphasized the contribution that partnerships can make. Impediments to development were identified: censorship; inadequate infrastructure; the fragility of developing societies and the need for social cohesion; and existing inequalities. Discussion highlighted that civil society must not wait to be consulted but must lose no time in forming partnerships to seize the agenda for the information age.

Continuing Conversations: Linking Toronto to other International Dialogues: Discussion covered recent international dialogues on knowledge and technology for development. Panelists introduced projects, conducted by organizations such as the South African National Information Technology Forum and the Society for International Development, which held forums and conferences in South Africa, Spain, Morocco and elsewhere. Discussion explored: the importance of focusing on the quality of education; local- and global-level networks; empowering people, particularly women, with knowledge; and balancing virtual and face-to-face dialogues.

Spinning the Web: Linking the Voices of the South to a Global Sustainable Development Gateway: The International Institute for Sustainable Development (IISD) brought together its regional and international partners to present their work on building a new gateway to sustainable development information on the Internet. Challenges facing organizations in developing countries in delivering their information electronically, as well as solutions to issues of telecommunications access, reliability and costs, were addressed. Discussion centred on CD-Rom production, low-end e-mail networks and diskette products. IISD explained how the diverse research and experience of these organizations are being brought to international attention at <http://sdgateway.iisd.ca/>.

No Real Change Without Women: Networking for Development: Participants provided examples of: community access strategies; a partnership of women in academia, business and policy who formulated a women's declaration at APEC; and a workshop parallel to the World Food Summit where women strategized to develop a more people-centred notion of security. Participants stressed the need to: create models for partnerships for the underprivileged; use technology to package, convey and share the valuable knowledge that women possess; focus more on people and less on technology; use information to assist those disempowered by the consequences of the information age; use distance learning to increase girls' education; and question the underlying assumption that access to knowledge will eliminate poverty. Participants were reminded that women are employing numerous strategies to foster their development without the Internet.

Global Knowledge 97 On-Line

The official Web Site for GK97 can be found at:

<http://www.globalknowledge.org/>

The International Institute for Sustainable Development (IISD) has created an on-line archive from GK97 including RealAudio recordings of the Plenary speeches, photos, daily reports and links to other on-line resources:

<http://www.iisd.ca/linkages/sd/gk97/>