

Gender-based Issues and Trends in ICT Applications in Education in Asia and the Pacific

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Introduction

Gender is a factor in every aspect of formal, non-formal and informal education, and has an impact on all participants: learners, teachers and administrators. The issues examined here are drawn from all facets of the educational system, and the strategies have relevance across sectors. In particular, formal education has a great deal to learn from strategies being used in the non-formal sector, and some of the initiatives being undertaken in the Asia-Pacific region, as described below, are leading the way in putting information and communication technologies (ICTs) to work for gender equality.

The emphasis is on ICT applications and models that hold promise in assisting with the achievement of Education for All (EFA) goals, specifically Goal 3, to “promote gender equality and empower women.” The focus is on Asia and the Pacific; however, examples are included from other regions where they suggest models that lend themselves to broader application.

One of the strongest messages that emerges from research on the effective use of ICTs in the education of women is the need to use appropriate technology. The examples below look at the newer ICTs, computers and related services such as e-mail and the web, and also include the use of broadcast technologies, such as radio and television, as well as audio and videotapes.

Along with an endorsement for the more traditional ICTs, there is an equally strong message that women and girls must not be left behind in the digital revolution. The digital divide includes a gender divide, especially for rural and marginalised women, and the newer ICTs have the capacity to allow us to benefit from the full contribution of women.

Gender issues

Can ICTs Improve Access to Education for Girls and Women?

Conditions that prevent girls and women from accessing educational opportunities include illiteracy, poverty, time famine, socio-cultural factors, mobility and relevancy. ICTs have the potential to ease or remove some of these barriers, but they may also create additional barriers including restricted access to the technology, and factors inhibiting usage such as high costs and lack of skills and information.¹

Interactive radio instruction (IRI) has been used successfully to improve access to primary education, and in the case of an IRI project run by the Zambian Ministry of Education, analysis of enrolment figures demonstrates that girls have a high participation rate. Children from eight to 10 years of age are organised into listening groups at IRI centres and follow lessons broadcast over the radio under the guidance of a mentor. For 2001, girls comprised 48.68 per cent of the total IRI enrolment, while in the same year in the other primary education programmes girls represented 45.2 per cent of the total. This is deemed to be a significant achievement for a programme that was only fully implemented two years ago. One of the incentives for parents to enrol their children in IRI is that, unlike in the formal education system, there is no requirement to pay user fees or buy uniforms.²

ICTs also have the potential to mediate some of the problems currently facing women who wish to further their education through open and distance learning (ODL). Dr. Edith Mhehe, who has researched difficulties faced by Tanzanian women considering or participating in higher education through the Open University of Tanzania (OUT), argues that ICTs could alleviate the constraints that women currently face. The barriers are operational (including physical and social isolation) and personal (relating to juggling of social demands and lack of support). They include lack of time, cultural expectations that are incompatible with education and inadequate financial resources.³

However, if the benefits of ICTs to ODL are to be realised, careful attention needs to be paid to student support. Research conducted on the impact of ICTs on ODL in the South Pacific concluded that because ODL courses require a high degree of organisation and commitment, support services in the Pacific need to be improved, especially in the regional centres. It was determined that the use of ICTs allowed Samoan women studying at the master's level at Australian universities to continue to fulfil vital family and community obligations; however, the burden was heavy. Research done at Indira Gandhi National Open University (IGNOU) also found the need for more support for female students. Researchers concluded that many problems

experienced by ODL students are common to both genders, but they become more acute in the case of women. The most severe problems were irregular and unsystematic tutorial help, inadequate supply of reading material and lack of study centres.⁴

An interesting finding is that access to the newer ICTs may have a role to play in encouraging participation in the formal educational system. This was the conclusion from the Information Village project in Pondicherry. It found that parents and students accessed databases at the "knowledge centres" to choose courses from information about what was available in the educational institutions. And the school dropout rate declined considerably after children started using the computers and CD-ROM educational materials. "There is a greater awareness among the community of the value of education."⁵

Can ICTs Improve the Learning Experience for Girls and Women?

There is evidence that under the proper conditions ICTs may increase the quality of basic and secondary education for women and girls. An example is provided by World Links (www.world-links.org), which links students and teachers around the world via the Internet for collaborative projects and integration of technology into learning. World Links commissioned a gender assessment study in 2001 to determine whether girls and boys are being impacted differently by their educational programmes in Senegal, Mauritania, Uganda and Ghana. They concluded that the learning outcomes seem to be greater for girls because when girls connect to the Internet, they focus more on academic-related issues than on leisure. The findings suggest that there was more impact on girls' communication and reasoning skills than boys', and that female students also expressed increased self-esteem. The students felt that the quality of teaching improved because they became more knowledgeable and active learners.⁶

There are also successful examples of using interactive radio to enhance the quality of the educational experience. Papua New Guinea gained an enthusiastic response from teachers and headmasters because of the difference it was able to make in the classroom. Improvements in exam results were attributed to the radio science methodology, which resulted in more active teachers and students, better linkages between follow-up exercises and local knowledge and improvements in thinking rather than rote knowledge.⁷

Also, when ICTs use local languages and incorporate a strong visual component, they have the potential to be an effective educational tool to reach women with limited literacy. The International Women's Tribunal Centre worked with the International Development Research Centre (IDRC) to develop a CD-ROM for poor rural women farmers in Uganda with little or no reading ability. The tool addressed their needs as farmers and small businesswomen

to earn more money.⁸ SEWA (Self-Employed Women's Association) uses video to support their goals of organising women workers for full employment and self-reliance. They have conducted educational programmes on themes such as organising, leadership building, forestry, water conservation, health education and financial services, and they estimate they have reached 20,000 women viewers. "When literacy became a hindrance, SEWA members found a solution. They learnt video vocabulary. To be functionally literate they had to master fewer than 20 Western words."⁹

However there is ample evidence that without gender-sensitive programme design, ICT-enabled education is unlikely to result in an equitable learning environment. Research conducted on students attending a US-based higher education distance organisation using primarily online instruction compared differences in male and female preferred learning styles, communication patterns and participation barriers. The conclusion was that the women experienced a less equitable environment because the medium requires some technical skills and a degree of confidence about distance education, and because the learning environment supported a male domination in online communication patterns that effectively silenced female students.¹⁰

Lack of computer skills is a severe barrier for women and girls in accessing the new ICTs.¹¹ In the classroom, unless fair use policies are put in place, girls are likely to receive less hands-on computer experience. The World Links gender research found that girls had inequitable access to the computer labs in some schools as a result of several conditions: high student-to-computer ratios and first-come, first-served policies did not favour the girls; girls' access time was limited by earlier curfew hours and domestic chore responsibilities; and local patriarchal beliefs allowed boys to dominate the computer lab environment.¹²

The role of women as role models is extremely important in improving the quality of the educational experience for girls and women,¹³ and women educators need to have a degree of comfort with ICTs if they are to be effective role models for their female students. This is not always the situation, as Dr. Suri found when she measured the attitudes to computers of teachers in distance teaching institutions in India. The female teachers were less positive regarding interest in and personal importance attached to computers, they were less secure about their computer skills, and they knew less about computers. They also viewed computing as an abstract science. The male teachers, in contrast, were more interested in computing, had higher self-confidence in their ability to use computers, and viewed the computer as a masculine technology. The female teachers said that it was hard for them to learn how to programme a computer, or they expressed a fear of using computers.¹⁴

Can ICTs Help Women and Girls Access Non-formal Education?

The most compelling case for the potential for ICTs to improve access to education for girls and women is found in cases of formal and informal learning. Here are some examples:

- **Mothers4Mothers** (www.mom4mom.com), based in Malaysia, uses ICTs to build cyber communities and networking opportunities for homemakers, homeworkers and teleworkers. One of their projects, eHomemakers, provides resources on how to get started on work at home projects and advice on how to become a successful "homepreneur." Homebased Xchange allows people to post their products and services online, and share their opinions on a forum. Other projects include an online grief support group and an online breastfeeding support group. Mothers4Mothers also provides computer training to women.¹⁵
- **The Information Village project in Pondicherry** cites significant educational results from their project including support to women's small business development. Women's self-help groups use the system to contact other women's groups with which to share their experiences. One innovative use of ICTs is the development of a multimedia presentation and multimedia flash cards to provide gynecological information to reach women who are prevented by cultural attitudes from discussing their health problems with male doctors and younger females.¹⁶
- **Horn of Africa Regional Women's Knowledge Network (HAWKNet)** is a regional network of women and women's organisations in the East and Horn of Africa regions with a web portal that provides a forum for women and girls. The website contains information on key issues affecting women in the region including conflict and peace-building processes, food insecurity, HIV/AIDS and other health-related issues, poverty, education, and ICT policies. The website includes an events calendar, bulletin/advertisement boards, chat rooms, and online meeting and working spaces. An e-commerce portal provides an opportunity for women in the region to access distant markets for their goods and products.¹⁷
- **Women of Uganda Network (WOUGNET)** uses ICTs as tools among women's organisations to share information and address issues collectively. Their emphasis is on the use of e-mail and the web and how these technologies can be integrated with traditional communications tools. Their website, www.wougn.net, profiles the work of 41 Ugandan women's organisations. They administer an

electronic mailing list, produce a monthly electronic newsletter and host online discussions. They also offer a web design programme to develop websites for WOUNET members.¹⁸

- ➔ The **Japanese Government** is launching a number of online initiatives to support women's networking including e-business support for women entrepreneurs with an "upward mobile site" providing information for women who want to find jobs, start a business, enter an international field or participate in community-building. Regional centres provide access to the network for rural women and serve as counselling centres for women faced with problems such as domestic violence. Since May 2003, there has been a site providing information for women in agricultural and fishing communities who want to start fishery, farming or forestry businesses. The site includes information on starting a business and borrowing money, and links to a simulated farming experience. Part of the long-term strategy is to establish distribution systems for the products through the use of ICTs.¹⁹
- ➔ In **China**, a substantial number of websites have been uploaded by women's organisations to disseminate information.²⁰

Women as ICT Professionals

One of the major concerns regarding women, ICTs and education is that women are not equitably participating as professionals in the ICT sector. Women are not pursuing the field of computer science in adequate numbers, and when they enter the profession they are more likely to be employed in word processing and data entry positions, rather than in programming and decision-making. There is concern that if women are not active participants in the field of ICTs, they will not be in a position to ensure gender-sensitive design and implementation. Also, the potential for establishing women as role models will be lost.

The research conducted by Asian Pacific Women's Information Network Center (APWINC) found gender differences in enrolment in ICT in universities and colleges in the Pacific region. The closest to parity in enrolment was found in the Philippines, whereas there was a marked gender difference in enrolment in the other five countries (ranging from 20 per cent female enrolment in Korea to 33 per cent in Sri Lanka). A similar gender gap is seen in graduates. In the Philippines, despite near parity enrolment at university and college levels, the gender gap widens with each higher level of qualification.²¹

The representation of women in ICT faculties mirrors the marked gender differences in graduate and postgraduate output, with the exception of the Philippines where there are more women than men. In the other two countries for

which data were available, women did not exceed 25 per cent of the faculty.²² The importance of female ICT faculty in attracting women to the field has been well documented. For example, one research project found that the major reason for girls' lack of interest in ICT at a higher education stage was the male-orientated atmosphere of computer science courses.²³

It is interesting to note that ICTs themselves may assist in encouraging women to pursue ICT professions. The Institute for Distance Education (IDEAL) at Universiti Putra Malaysia offers a Bachelor of Computer Science via distance learning. This was the first programme in the country to be delivered entirely via the Internet and, according to 1998 research, 37 per cent of the students were female.²⁴

Trends in strategies

Much of the analysis about the impact of the trends in strategies being undertaken to address the issues highlighted above is still at the anecdotal stage, but some research findings are available. Since the potential for crossover application appears to be high, each strategy discussion below includes examples from all facets of the educational system: formal, non-formal and informal. The importance of gender-focused ICT research is beginning to be recognised and hopefully the results will be available to inform future work.

Gender Mainstreaming

The accepted wisdom for ensuring gender equity is referred to as "mainstreaming."²⁵ Gender mainstreaming ensures that an organisation's programmes and policies include gender analysis from inception, and that strategies to ensure gender equity are implemented in all facets of the organization's operations. Gender mainstreaming acknowledges that there are no "gender neutral" decisions.²⁶

SchoolNet Africa, a network of schoolnet organisations and practitioners promoting ICTs and education in 31 African countries, has a policy of gender mainstreaming. Implementation strategies include the placement of gender on agendas, encouraging website content that is gender responsive, encouraging gender balance in learner teams, and providing an award for gender responsiveness. For example, a recent workshop held in Botswana incorporated gender in all speakers' notes and, in addition, a dedicated session was held on the topic.²⁷

Research has found that the closer the responsibilities for addressing gender issues to daily operations are brought, the greater the chances of success. The Open University of Tanzania (OUT) is considering initiating a gender unit at their headquarters to be responsible for finding effective

and sustainable solutions to the barriers facing women students.²⁸

Gender mainstreaming is an all-encompassing matter for Sookmyung Women's University, Republic of Korea's first private college for women. Sookmyung has been offering computer education to undergraduates since 1987 and, in an effort to bolster computer knowledge, is increasing the supply of PCs to the student body and providing both students and teachers with Internet IDs. The university's experience with women's use of ICTs has led Sookmyung to establish the Asia-Pacific Women's Information and Communication Center (APWINC), which has been involved in many pioneering projects on ICTs and gender in the region including research, training and information dissemination.²⁹

Gender-sensitive Programme Design

Gender mainstreaming leads to gender-sensitive programme design, which takes deliberate steps to remove barriers to women's participation and actively encourages women's involvement. The requirement for gender-sensitive programme design applies to all facets of the educational system: in the case of the formal system from curriculum to admissions to student-support strategies, and in the case of the non-formal and informal systems, from access to training to relevant content.³⁰

- **World Links** responded to their gender assessment study by introducing special action to encourage women and girls to apply and participate in their programme. They offer awareness sessions on gender and development and have developed new policies including one to relieve girls from household chores that they perform during evenings in boarding schools while male students are enjoying more lab time. They also encourage schools to develop fair-use policies for their computer labs to ensure girls' access is proportional to their representation in the overall student body.³¹
- **The Open University of Sri Lanka** trains primary and secondary school teachers in the use of gender-sensitive materials in the school and teacher education curricula, and offers a number of computer programmes and courses that use gender-sensitive language.³²
- In the **Information Village** project in Pondicherry, because of a deliberate decision to give priority to women, more than half the volunteers operating the knowledge centres are female. A 2001–02 survey of users and non-users in five villages found that the use of women operators was linked to an increase in the number of women users.³³

Other examples of gender-sensitive programme design include female-focused programmes and programmes with a financial incentive to encourage women's participation. In Bangladesh, Lever Brothers Bangladesh Limited is sponsoring computer courses for 1,500 female students who wrote secondary school exams and are awaiting their results.³⁴ In Cambodia, female students are being offered a 50 per cent discounted fee to attend Cisco system training. The e-learning programme is being offered through the Royal University of Phnom Penh, and the National Information Communications Technology Development Authority (NiDa) is offering the financial incentive to encourage women to join the IT field.³⁵

Engendering ICT and Education Policies

Research on how to ensure that women and girls benefit from ICTs in education emphasises the importance of engendering policies at all levels – regional, national, local and sectoral. Policy initiatives range from the global level (e.g., efforts to include gender equity in the World Summit on the Information Society (WSIS) process) to the classroom level (e.g., fair-use policies to ensure equal time on the computers for girls). Research has found that developing policy at one level only is not effective. If initiatives are to be successful, multilevel policies need to be developed in tandem.³⁶

- The **South Pacific** provides a case study of developing an ICT policy and action plan that makes explicit reference to women, ensuring that there will be a systematic effort to develop strategies and activities that focus on the needs of women. Evaluation activities, including data collection, will also be mandated to have a deliberate focus on the impact on women.³⁷
- **APWINC** examined the national policies for the advancement of women's "informatisation" in six countries. Republic of Korea was the only country to have formulated a plan and a budget for this purpose. China approaches women's informatisation through the overall development of women. Indonesia has mainstreamed the use of ICT by women in its overall development plan for women. The Philippines and Sri Lanka have no specific plans or programmes for women's informatisation, while India has some programmes to encourage women to use ICT in different sectors.³⁸
- To encourage the development of gender-equal ICT policies, **APWINC** held a two-week programme in July 2003 for 22 government women from 14 countries. The goal of the Asia Pacific Latin America Government Women's ICT Training (APLAW-IT) is to activate partnerships in network building so that more women can benefit through ICT capacity-building and to promote gender equality in ICT

policies. APLAW-IT shared information through country reports on gender and ICT, conducted e-business training and carried out ICT field trips.

Providing Girls and Women with Access to Equipment

Strategies for enabling girls and women to use ICTs for education emphasise the need for access to equipment in welcoming and supportive environments. The use of telecentres is one model that is finding support.³⁹ However, research on the effectiveness of telecentres in reaching women and girls shows mixed results, and great care must be taken to ensure gender-sensitive programme design.

- Research conducted by the **Acacia project**, which has been involved with 35 telecentres in six African countries, concluded that most groups, other than young males, will not use telecentre services optimally unless they are assisted or supported by a range of sensitive strategies. Women are particularly disfavoured because of cultural norms, costs and other administrative and structural characteristics associated with telecentre use. Also, most information products currently available in the telecentres are not made for or attractive to women.⁴⁰
- In **Sri Lanka**, teacher education programmes used regional study centres equipped with audiocassettes, videocassettes and computers. Surveys found that use of the technology by the women students was poor for a variety of reasons: non-availability of transport facilities, the nature of the terrain which made even walking difficult, and cultural inhibitions and household chores that prohibited long hours away from home. Researchers felt that mindset and gender-based socialisation may also have been contributing factors.⁴¹
- Research into barriers to the use of ICTs faced by women students of the **University of the South Pacific** found the major barrier to be equipment access at study centres. The small number of computers was aggravated by staff use of the computers for their own work, the centres' restricted hours and a lack of maintenance skills. As well, costs of transport to the centres were prohibitive.⁴²
- The **Malaysian government** has opened 15 telecentres, with another 119 in the implementation stage. One of the aims of the Community Communications Development Program (CCDP) is to enable rural communities to acquire skills, knowledge and experience through the use of communication and multimedia facilities. Four groups are being targeted for training: operator, village committee, teachers and youth. To ensure the

involvement of girls and women they are partnering with the Foundation for Women's Education and Vocational Training.⁴³

- The **Government of Bangladesh** aims to ensure that high school girls are provided with computer access in an ICTs and Education programme announced in July 2002. Girls' schools are to be given priority in a programme that will provide 10,000 computers, along with Internet connections, to schools at the secondary level.⁴⁴
- Placing equipment in women's homes has the potential to remove their access problem. This approach is being tried in New Zealand where **Computers in Homes (CIH)** is providing all socially and economically disadvantaged families with a computer, an Internet connection, training and technical support. Tutoring has been offered in one-on-one learning at home. The project is new and research results are preliminary, but it has been noted that mothers are the most reliable attendees at the training and the family meetings at the school. They are using the PC during the day while the children are at school.⁴⁵
- The **University of the South Pacific** has recognised that lack of computers at home also acts as a barrier to the teachers' acceptance of distance learning programmes. To encourage computer ownership, the university allows staff to purchase computers on time payment at the university book centre, and many have taken advantage of the programme.⁴⁶

Providing Gender-sensitive Training

Training is an essential component of any effort to support the education of girls and women through ICTs, and to be effective the training must be gender-sensitive and provide ongoing support.⁴⁷ The requirement for gender-sensitive training applies to all facets of the educational system: from educators to curriculum developers, from administrators to admissions officers. Arguably the most effective strategy is to have training begin in the early school years with teachers actively encouraging girls to become computer literate.⁴⁸

Dr. Suri of the University of Delhi examined the attitudinal barriers of women teachers towards ICTs (as discussed above), and has a number of recommendations to increase the skill and confidence level of both teachers and students. She proposes computer skill training workshops provided in single-sex settings, with female instructors.⁴⁹ This should be coupled with supportive policies and programmes such as educational leave, scholarships and preferential access to equipment. She also recommends recruiting computer professionals to help teachers prepare material for courses

and tutorial support. The training should be conducted as part of a collaborative task.⁵⁰

This technique of “learning through doing” has found success with female learners. Research recommends imbedding ICTs in the curriculum, rather than teaching computers as a separate subject. When Carnegie Mellon University changed its approach to teaching computer science from one of conveying abstract technical knowledge to demonstrating applied computer applications, they increased the number of females enrolled in the programme from 8 per cent in 1995 to 37 per cent in 1999.⁵¹

An effective way to offer relevant and applied ICT training is to focus on skill development for a specific professional or occupational group. An example is the seven-day workshop held in Kathmandu, Nepal, in August 2003, to train women development journalists in South Asia in new media. The workshop aimed to familiarise women journalists with the use of Internet-based technologies in order to improve their skills. The focus was “learning through content production.” Topics included website creation, writing for the Internet, discussion forums and mailing lists, Internet radio and TV, online journalism issues and using the Internet effectively as a research tool. The Centre for Women’s Research (Cenwor), based in Sri Lanka, facilitated the hands-on training.⁵²

All-female training sessions that place girls and women in the role of teachers have proven to be effective. In pilot projects in two telecentres in Mozambique, when it was determined that men were significantly greater users of the telecentre computer services, including e-mail, Internet and CD-ROM, a training programme called Skills for Women was launched. There were no dropouts from the programme, the trainees formed the nucleus of regular users of the telecentres and some became trainers themselves. Research emphasised the importance of all-female classes and the value of peer assistance.⁵³

Peer training is also being used effectively by Marathmoli, the Internet-based information network and support service for women and other marginalised peoples of Maharashtra. Marathmoli conducted ICT training and leadership training for young girls, and these same girls are now assisting as trainers in the ongoing training camps.⁵⁴

One of the critical strategies in the non-formal sector has been capacity-building in women’s organisations to enhance their capability to transfer knowledge to their target groups.⁵⁵ WENT (Asia-Pacific Women’s Electronic Networking Training) has been held annually since 1999. The training is organised by APWINC and the Association for Progressive Communications Women’s Networking Support Program (APC WNSP) with the goal of promoting the use of ICT among women and enhancing women’s roles in social and policy advocacy.⁵⁶ To date 116 women from 18 countries have been trained in basic website development

and networking, web-based information management using ICT and local area networking.⁵⁷

Women’s organisations are well positioned to develop gender-sensitive training for their clients:

- **Women’s Aid Organization (WAO)** is a Malaysian organisation that provides shelter and counselling to survivors of violence against women. WAO has been experimenting with a variety of techniques to provide computer training to residents and ex-residents, including pre-packaged training programmes. They have found customised training by volunteers to be most effective, especially when linked to employment prospects and daily concerns, local language instruction, child care provision, computer access and technical support.⁵⁸
- **Women’sNet**, which provides a website relevant to South African women, girls and women’s organizations, has developed a number of effective strategies to provide gender-sensitive ICT training. They work in small groups to facilitate participants’ engagement with the technology, and demonstrate applied uses of ICTs. They combine content development with technical training, either in the form of content that can be posted in the Women’sNet site, or radio-ready audio spots. They design campaigns for the learner’s organisation and demonstrate how the technology can facilitate their activities. Their trainers speak multiple languages. One technique that has worked particularly well for girls is to have them document the training through audio or videotaping.⁵⁹
- Large-scale government initiatives to target women for ICT training are underway in both The Republic of Korea and China, and in both cases organizations with a mandate for women are partners in the project. **The e-Korean Project** launched in March 2001 by the Ministry of Information and Communication has a goal of providing two million “housewives” with Internet training. The number of housewives who have used the Internet increased from 1.8 per cent in 1999 to 45 per cent in 2002. The Korean Ministry of Gender Equality is providing ICT training for women in specialised areas including e-business courses, web-design courses and onsite job training. In addition, 1,000 female ICT professionals are being trained by Sookmyung Women’s University, Samsung Multicampus and the Korea Women Development Institute.⁶⁰ The **All China Women’s Federation**, the Ministry of Education and the Ministry of Science and Technology have trained nearly three million women who had been laid off from work to re-skill them to find employment in the emerging economy.⁶¹

Ensuring Relevancy

Research findings emphasise the tendency for girls and women to treat ICTs as utilitarian tools and as means to an end. The strategies that have been successful in engaging girls and women in the use of ICT for education have emphasised relevant content that matters to their lives.

An example of the power of relevant content is found in a pilot project using ICTs in literacy that is being carried out in Zambia and India in selected learning centres, supported by the Commonwealth of Learning (COL). The project started its operation in Kabwe in August 2000, with five literacy classes, now increased to seven. One of the most startling results of the pilot is that the number of female learners far outnumbers that of the male learners (nearly 100 per cent female). One of the conclusions for the programme's attractiveness to females is the content of the literacy training materials which are often interwoven with or based on topics that are viewed as "female," such as health, nutrition and child care.⁶²

Another example is the Women Empowerment through ICT project in Nepal, which has emphasised practical outputs in its programme to train 10,000 computer literate women. Computer training is being linked with the potential to engage in income-generating activities, and the focus is on ICT skills for front office management, for designing instructional materials or to set up their own businesses.

Organisers of the Information Village project in Pondicherry emphasise that the success of their project rests on the fact that much of the content, including close to 100 databases, has been developed in collaboration with the local people. "We do not download the information and then look for users. Through surveys and continuous dialogue with village communities, we study what information is needed and what will be useful to the community...We maintain ledgers in each centre and all queries are recorded and analysed."⁶³

Some significant efforts are being made to develop ICT content of relevance to rural women. Maharashtra Women's Net will be participating in the Virtual University initiative with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The organisation has already developed content on health issues targeted at rural women.⁶⁴ In China, Agricultural Broadcasting and TV School uses radio, TV, tapes, videos and written material to provide agricultural open and distance education to rural labourers, especially rural women and girls. Estimates are that nearly 10 million rural women have been trained through tele-education to enable them to use information for farming and daily life.⁶⁵ The FAO Regional Office for Asia and the Pacific supports various open universities in India, Sri Lanka and the Philippines to explore the educational and learning needs of rural women in their curriculum content. They are also working with three agriculture universities in northern India to improve their

multimedia teaching strategies in working with rural women. In 2004, FAO will support a subregional workshop on Gender Responsive Community Education Programme in Distance Education to make the linkages between the Open University and community-based organisations.⁶⁶

Conducting Gender-focused Research

Research reports decry the lack of hard data around the issues of gender, ICTs and education and recommend a commitment to ongoing research and gender-disaggregated data. When APWINC conducted their research on the ICT status of six Asian countries, the authors of the country reports drew attention to the paucity of data that were available, and especially to the lack of gender-disaggregated data.⁶⁷ This same situation was encountered by the researchers participating in COL's project on women and ICTs for open and distance learning.⁶⁸ The commitment to gender research needs to be an institutional imperative. As an example, one of the research priorities of the Open University of Sri Lanka is to address the role of gender in student enrolment and performance.⁶⁹

A valuable new tool for gender analysis has been developed by APC WNSP. Gender Evaluation Methodology (GEM) is a guide to integrating a gender analysis into evaluations of initiatives that use ICTs for social change. As well as serving in evaluation, the tool is designed to be used in the project planning process to ensure the integration of gender concerns. (See www.apcwomen.org/gem/index.htm.)

Promotion and Information Sharing

One of the problems confronting those who wish to engage girls and women in the use of ICTs for education is the lack of awareness of the potential of ICTs. This problem is well illustrated in the telecentre project in Mozambique where women were interested in the idea of using ICTs, but mainly used the telecentre services to meet their immediate and obvious needs such as telephone use. "Demonstration, training and practice is needed before the benefits of ICTs are recognised, but women are not prepared to give the time or spend the money until benefits are proven."⁷⁰

One strategy is to use the media as a transmission vehicle to raise awareness and knowledge about how ICT can empower women.⁷¹ The Information Village project in Pondicherry has been providing content to All-India Radio (AIR) including a series called Silicon Valley in which people are interviewed who benefit from the knowledge centres.⁷² In Sri Lanka the goal is to produce live radio programmes on the subject of the Internet and use the Mobile Computer Laboratory of CINTech to encourage women to increase their use of new technologies.⁷³ SchoolNet Africa carried out a Global Campaign for Education using celebrities to teach on gender issues for one hour. The programme reached 50 countries at the same time and involved 1.8 million learners worldwide. They

also use media campaigns to create awareness and increase gender sensitivity among educators.⁷⁴

Another promotional technique is the use of awards, both to give an increased profile to the sector and to share best practices. SchoolNet Africa provides an award for gender responsiveness. Global Knowledge Partnership (GKP) and APC WNSP organise the Gender and ICT Awards to recognise gender and ICT initiatives globally and provide further impetus for others to mainstream gender in the field of ICT for women's empowerment. Best practices and lessons learned will be showcased on a special website during the four-year run of the awards.

Using Blended Media

The use of blended media is a consistent theme in the use of ICTs for educating girls and women. The objective is to use a variety of technological tools within an educational experience, selecting what works best to meet the needs of the learner and the pedagogical objectives.

- Research on the ODL activities of the University of the South Pacific concluded that a combination of delivery methods would provide the best educational experience for their female students. Women preferred a mixed mode of learning, which included face-to-face and online delivery and communication. For people in rural areas, print packages were still the best mode for learning, and radio provided a viable alternative. However, in the future, it is anticipated that telecentres may provide isolated populations with access to ICTs.⁷⁵
- Women's Aid Organization (WAO) uses a website to provide information to survivors of violence against women and their support networks. They have concluded that although there have been major successes, the medium remains largely inaccessible to most Malaysian women due to a lack of infrastructure and skills, as well as a lack of culture that encourages women to use the technology to their advantage. WAO has found that public education through the radio and other forms of traditional media is more effective in reaching out to the public, especially to their clients. They have partnered with several national radio stations to produce regular programmes on women's issues, including some in soap opera format.⁷⁶ HAWKNet has decided that since radio and TV are the most commonly used forms of ICT in Africa, they will be promoting the integration of radio and television with the Internet.⁷⁷
- The Information Village project in Pondicherry has emphasised the use of multiple media. Knowledge centres in 10 villages are connected by a hybrid wired and wireless network consisting of PCs, telephones, VHF duplex radio devices, as well as spread

spectrum and e-mail connectivity through dial-up telephone lines. A fortnightly Tamil newsletter, *Our Village News*, is also part of the project. Multimedia and loud speakers are used to reach out to illiterate clients. "Currently we are testing the possibility of using World Space radio to network the rural poor of the world."⁷⁸

Conclusion

There is a legitimate fear that the advance in ICT development and use may increase the "structured illiteracy" of those who do not have access, and may reduce the status of women as bearers of "indigenous knowledge."⁷⁹ However it is equally possible for ICTs to give a voice to the voiceless and empower women to use their knowledge for global benefit.

The strategies discussed in are pointing the way forward. The non-formal sector in particular is learning the importance of engendering programmes and projects at every stage and ensuring that gender-specific policies are enacted at all levels. Access to equipment is critical, but true access requires addressing and overcoming the barriers of poverty, geography, time famine and socio-cultural constraints. Gender-sensitive training is essential and works best if it is applied, practical and provided in all-female sessions. And the role of computer-savvy women as teachers, mentors and role models cannot be overestimated. Capacity-building in women's institutions and organisations is a very effective method for expanding multifold the benefits of ICT training programmes.

The mandatory ingredient is *relevancy*. Women and girls need to understand the ways in which ICTs can benefit them and their community, and improve their world. They need to see how ICTs can help them do their work better or faster, keep themselves and their family fed, healthy and safe, and expand their horizons. Organisations that already have a valid and respected role with women and girls need to take the lead in ICT implementation, training and capacity-building. Organisations that are custodians of knowledge that is critical to women's lives, whether it be information about health, agriculture, business development or domestic violence, need to use ICTs in gender-appropriate ways to maximise the impact of their own programmes. We have learned a great deal about what needs to be done. We now need the collective will to apply these lessons learned.

NOTES

- 1 Lyndsay Green and Lawry Trevor-Deutsch, *Women and ICTs for Open and Distance Learning: Some Experiences and Strategies from the Commonwealth* (Vancouver: Commonwealth of Learning, 2002). Hilton cites the most important factors as geography, poverty, culture and health in Eliza Hilton, "KnowledgeBank paper 2 – Girl Issues" (2002), <http://imfundo.digitalbrain.com/imfundo/web/learn/kb2/?verb=view>.

- 2 Mildred M. Wakumelo Nkolola, "Interactive Radio Instruction in Zambia," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 3 Edith Mhehe, "Overcoming Gender Barriers When Using ICTs for Formal and Non-Formal Education," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003. Some of the benefits Dr. Mhehe envisions for women students: "They could more easily communicate with the world around them and open up their minds to the world beyond their home base and outside their culturally defined roles. They could discuss issues with both male and female peers and tutors anywhere in the country without having to travel or meet physically. They could spend less time, money and effort searching for library based study material, particularly important since their lives are already overloaded. They would be less isolated which is a significant dropout factor. They could assist their children and others in the community to learn how to use ICTs."
- 4 See note 1 above.
- 5 Subbiah Aruchalam, "Reaching the Unreached", How Can We Use ICTs to Empower the Rural Poor in the Developing World Through Enhanced Access to Relevant Information? presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 6 See note 1 above. A sample quote from a female student: "We are no longer dependent on boys. We feel capable of solving our problems with great autonomy...that is powerful. It makes us very proud."
- 7 Michael Olsson, "Institutionalizing Radio Science in Papua New Guinea: A Response to Teacher Demand for Interactive Radio Instruction," *Learntech Case Study Series 2* (1994).
- 8 For an online version of the CD-ROM entitled *Rural Women in Africa: Ideas for Earning Money* go to www.iwtc.org/files/!start.html. See Green and Trevor-Deutsch, note 1 above.
- 9 Namrata Bali Chandramohan, "SEWA Experiences on ICT," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 10 Kimberly Dawn Blum, "Gender Differences in Asynchronous Learning in Higher Education: Learning Styles, Participation Barriers and Communication Patterns," *JALN 3* (1999).
- 11 Eighty per cent of the women students of the University of the South Pacific (USP) indicated a lack of computer literacy and appropriate training to be a barrier to their use of ICTs for ODL. A Bangladesh survey of women professionals found that 60 per cent had no exposure at all to computers, and the computer knowledge of the remaining 40 per cent was limited to word processing. See Green and Trevor-Deutsch, note 1 above.
- 12 Hilton, cited in note 1 above, notes the importance of "hands-on" experience, and that boys often dominate classroom interaction around ICTs and act as "experts" for the teacher, thereby reinforcing a gender stereotype.
- 13 The importance of the role women teachers can play in balancing gender disparities is acknowledged in government education policies in some regions. For example, the Ministry of Education in Zambia has committed itself to ensuring that every school employs some female teachers to provide appropriate role models for girls. See Green and Trevor-Deutsch in note 1 above.
- 14 Seema Suri, "Attitudinal Barriers Amongst Teachers in Distance Teaching Institutions of India," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 15 Dato' Zawiyah Baba, "Women on the Web: An Evaluative Survey of Websites on Women with Special Reference to Malaysian Websites," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003. There are more than 50 Malaysian websites concerning women covering the following topics: women and family, violence against women, women in business, women professional, religion, gender equality and politics.
- 16 See note 5 above.
- 17 Constantine Obuya, "Bringing African Women's Voices 'On-line,'" presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 18 Angela Nakafeero, "Experience of Women of Uganda Network (WOUNGNET)" presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 19 Yumie Nishimori, "Japanese Efforts for Disadvantaged Women and Women in Rural Areas," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 20 Kio Chung Kim, Leelangi Wansundera, and YongJa Kim, "ICT related Human Capital & Women's Informatization of Asian Countries: China, India, Indonesia, Korea, Philippines, Sri Lanka," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 21 See note 20 above.
- 22 See note 20 above.
- 23 See Hilton in note 1 above.
- 24 Gan Siowk Lee and Rinalia Abdul Rahim, "Barriers to Information and Communication Technologies Encountered by Women: Country Presentations – Malaysia" (Vancouver: Commonwealth of Learning, 1998).
- 25 For example, see UNDP's Guidance Note on Gender Mainstreaming at www.sdn.undp.org/gender/policies/guidance.html.
- 26 For example, Grameen Telecom's Village Phone programme in Rural Bangladesh found that the concept of "universal access" is not gender neutral. The gender of the Village Phone operator and the physical placement of the phone can either inhibit or improve women's access to phones. A woman's home provides a space that is acceptable for other village women to access. See Green and Trevor-Deutsch in note 1 above.
- 27 Sara Kyofuna, "It is HOT for African Girls," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 28 Andrea Rugh, "Lessons Learned From the USAID Girls' Education Activity in Guatemala, Morocco, and Peru," (American Institute for Research, 2002). The Girls' Education Activity project ran from 1996 to 2001 with the goal of improving the overall school participation rates of girls in primary school in Guatemala, Morocco, and Peru. One of the lessons learned was the importance of supporting a group or individuals within (instead of outside) local institutional structures to pursue the goals of girls' education.
- 29 Examples include the research project on the ICT status of six Asian countries, WENT and GEM.
- 30 For an example of guidelines, see "Gender Guidelines for ICT and Education Policy Making and Planning" in the report *Gender Issues in the Use of Computers in Education in Africa* by Helen Derbyshire, January 2003. <http://imfundo.digitalbrain.com/imfundo/web/learn/genderissues/>
- 31 See Green and Trevor-Deutsch in note 1 above.
- 32 Uma Coomaraswamy, "Barriers to Information and Communication Technologies Encountered by Women: Country Presentations – Sri Lanka," (Vancouver: Commonwealth of Learning, 1998).
- 33 See note 5 above.
- 34 Ashabunnaher Beauty, "Bangladesh Country Report," presentation to Asia Pacific Latin America Government Women's ICT Training (APLAW-IT), Seoul, Republic of Korea, July 2003.
- 35 Phon Puthavika and Prak Sophear, "Royal Kingdom of Cambodia Country Report," presentation to Asia Pacific Latin America Government Women's ICT Training (APLAW-IT), Seoul, Republic of Korea, July 2003.
- 36 See note 28 above. Another lesson learned from the USAID Girls' Education Activity is that effecting changes in the school participation of girls requires attention both to the national policy level and to the organisations that can affect the local community level where impacts occur. One without the other dilutes the impact.
- 37 The current policy groups women with "the disadvantaged, the disabled, under-represented minorities, and those in rural and remote communities." They recommend that future policy give women a separate category of their own. See Green and Trevor-Deutsch in note 1 above.
- 38 See note 20 above.

- 39 Research carried out on the Information Village project in Pondichery found that offering computer training for women and children in the knowledge centre at the local village meant that more women and children were able to avail themselves of the training. Local access ensures the safety of the learners because it was not necessary to travel to distant towns, as well as saving time and money. See note 5 above.
- 40 See Green and Trevor-Deutsch in note 1 above.
- 41 See Green and Trevor-Deutsch in note 1 above.
- 42 See Green and Trevor-Deutsch in note 1 above.
- 43 Nasaruddin Che Abu, "Empowerment Through Community Development," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 44 See note 34 above.
- 45 Di Das, "Computers in Homes in New Zealand: Addressing gender and culture issues through ICT," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003. Cultural prohibitions make it unacceptable to attend night classes and women are caring for children during the day, but it is acceptable to visit their children's school for evening meetings. The schools run videos in the library to keep the children occupied.
- 46 Esther Batiri Williams, "Crossing Borders: Women and Information and Communications Technologies in Open and Distance Learning in the South Pacific," (Vancouver: Commonwealth of Learning, 2001).
- 47 For a discussion of the shortcoming of mainstream training methods for women, see *Gender & information & communication technology: Towards an analytical framework*. www.apcwomen.org/work/research/analytical-framework.html. See Green and Trevor-Deutsch (note 1 above) for more suggestions about gender-sensitive training for ICTs for ODL.
- 48 One of the recommendations from the Kuala Lumpur Declaration August 2003 is to "introduce ICT into the school curriculum at the earliest possible opportunity, ensuring equal access to all." Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 49 Professor Uma Coomaraswamy of the Open University of Sri Lanka also recommends "girl-friendly" computer labs and finds that "when interacting with technology, girls tend to work better in pairs or small groups." In addition, she has found that the visibility of women graduates has been one of the most positive impacts on women. See note 32 above.
- 50 See note 14 above.
- 51 Nancy Taggart and Chloe O'Gara, "Training Women for Leadership and Success in I.T.," *TechKnowLogia*, September/October (2000). www.TechKnowLogia.org.
- 52 The workshop was organised by Global Knowledge Partnership (GKP), OneWorld South Asia and Panos South Asia (Nepal). There were 12 participants from Pakistan, Bangladesh, Bhutan and Nepal. Another workshop targeted at participants from India, Sri Lanka and Maldives will be held in November 2003 in Bangalore. www.globalknowledge.org/gkps_portal/index.cfm?menuid=338.
- 53 Polly Gaster, "Promoting ICT Use by Women: Some Experiences from Two Districts of Mozambique," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 54 M.J. Asmita, "Marathmoli, Maharashtra Women's Net," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August, 2003.
- 55 The recommendation is made to train women leaders because they are catalysts and agents of change. They may include local leaders, extension workers, community development workers, NGOs, and media practitioners. See Green and Trevor-Deutsch in note 1 above.
- 56 WENT Africa 2003 was held in Cape Town, South Africa in March and was directly modelled on the Asian women's training, providing an excellent example of South-South collaboration.
- 57 Kio Chung Kim, "ICT For Women: Opportunities and Challenges," presentation on behalf of Dr. Kyungsook Lee at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 58 Jaclyn Kee, "Overcoming Gender Barriers When Using ICTs for Non-Formal Education," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 59 Natasha Primo, "Overcoming Gender Barriers When Using ICTs for Non-Formal Education – The Women's Net Experience," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 60 Online Learning Center (OLC) for Women at www.apolc.org has created an online community for ICT Trainers. See note 20 above.
- 61 See note 59 above.
- 62 See Green and Trevor-Deutsch in note 1 above.
- 63 See note 5 above.
- 64 See note 54 above.
- 65 See note 20 above.
- 66 Revathi Balakrishnan, "Rural Women's Equal Participation in Information Society," presentation at the Forum on ICTs & Gender: Optimizing Opportunities, Kuala Lumpur, 20–23 August 2003.
- 67 See note 20 above.
- 68 See Green and Trevor-Deutsch in note 1 above.
- 69 See note 32 above.
- 70 See note 53 above. HAWKNet also reports that one of their major challenges is lack of awareness of the benefits that come with ICTs. See note 17 above.
- 71 Another lesson learned from the USAID Girls' Education Activity is that the media need to be full partners to ensure extensive coverage. See note 28 above.
- 72 See note 5 above.
- 73 See note 32 above.
- 74 See note 27 above.
- 75 See Green and Trevor-Deutsch in note 1 above.
- 76 See note 58 above.
- 77 See note 17 above.
- 78 See note 5 above.
- 79 For example, see Hilton referenced in note 1 above.