CHAPTER 14

TELELEARNING AND TELELEARNING CENTRES IN INDIA

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INTRODUCTION

Comprising 26 states and six union territories, covering 3,287,590 square kilometres and having a population density of 304 per square kilometre, India is the world's second most populous nation and second largest democracy. Nearly 40% of its 1 billion people live below the poverty line, nearly 79% live in rural areas, and about 60% belong to disadvantaged groups: the scheduled castes, scheduled tribes, rural poor, urban poor, women in villages and small towns, and disabled. The Indian constitution recognises 18 major languages although in fact 1,652 dialects and languages are spoken. With a per capita GDP of US$358 (1997/98), India's economy is predominantly agricultural. During the last decade, however, the economy has been opened up to world markets and deregulated.

India's literacy rate is 64%, but for females it is just a little over 40%. The National Literacy Mission's drives have been highly successful, but there are still 400 million people who are functionally illiterate. More than 190 million children in the 6- to 14-years age group are enrolled in the 23 million elementary schools, and a further 5.3 million school dropouts attend the 240,000 non-formal education centres. However, there are still 70 million children who miss out on their schooling. Compounding these social problems are low health standards. The infant mortality rate is 71 per 1,000 live births, the maternal mortality rate is 4 per 1,000 live births, and the protein energy malnutrition rate is 8%.

Most of those living in the rural and tribal areas are landless labourers, and in some states, migrant labourers or nomads. Rural development is a high national priority and central and state governments and non-governmental organisations (NGOs) are supporting many schemes that integrate education, training for employment or self-employment, health and family welfare, agriculture and allied activities, and women and child development. These interventions are achieving perceptible improvements in rural circumstances.

It is widely recognised by international agencies, central and state governments, and NGOs that information and communications technology (ICT) and telecentres could

have a key role in supporting educational and socio-economic development. However, while the "Scandinavian multipurpose telecentre" might seem ideally suited to the needs of a developing nation such as India, the country has so far opted mainly for the simpler model of "phone shops." Thousands of these small agencies have been established in rural areas, some equipped with faxes and even computers, all providing services at a price. Even some village clubs now have Internet access. There have also been occasional experiments in teleconference- or computer-based rural education and training, and some states have strong networks of community volunteers and co-operatives providing voluntary community education and training. Some useful lessons may be learned from the Indian experience, but we have yet to come across a sustainable multipurpose community telecentre or network as those described elsewhere in this book.

TECHNOLOGY

Telephone services include basic telephony, leased lines, ISDN (a high-speed communications line), voice mail and data services. Private cellular phone services are available in all metropolitan areas. Telephone connections grew from 4 million in 1990 to 12.6 million in 1996 with an annual growth rate of 12.6% (Department of Telecommunications 1997). The current teledensity (number of main telephone lines per 100 inhabitants) is about 2.7. The aim is to raise this to 7 by 2000 and 15 by 2010. By 2002, it is estimated that 23.7 million telephone lines, 6 million pagers, 4 million cellular phones and 25,000 VSATs (very small aperture terminals) will be added nationally (Menon 1997).

The Government of India has recently decided to end the monopoly of the flagship Videsh Sanchar Nigam Limited (VSNL) for international long distance telephony and as an Internet service provider. There also used to be a government monopoly of in-country telephone communications, but now there are private telecom service providers in three states: Maharashtra, Madhya Pradesh and Andhra Pradesh. In 1998, about 400,000 telephone connections, including 10,000 public telephone connections, were implemented in the state of Andhra Pradesh alone. Across the nation, approximately 44% of the 6 million or so villages have access to telephony and 10% – 15% of all telephones are actually in rural areas (Vittal 2000).

The number of cable TV connections rose from zero in 1990 to an estimated 32 million by June 2000 (*www.nasscom.org*). Privatisation has boosted cable TV which has a potential for interactive service provision in rural areas. There will also be an increase in the use of KU band for educational, health and other government broadcasts.

Radio and TV coverage is 97.3% and 87.6%, respectively. There are about 63.2 million TV sets and 180 million transistors in the country (Chaudhary 1999) and about 43% of all TV sets are in the rural areas (Dave and Bhavsar 1999).

The Indira Gandhi National Open University (IGNOU), South Asia's largest distance education provider, is now the nodal agency for the sub-continent's first fully fledged educational TV channel, *Gyan Darshan* (Knowledge Network) on the national *Doordarshan* (Television) network, a channel to which it formerly only had limited access. In fact, IGNOU is the only university in the world entrusted with co-ordinating and operating a national channel devoted exclusively to education.

The computer market has grown substantially, from 1 million in 1995 to today's estimated 10 million (Mitra 1999) and the Internet is significantly influencing the

market. Internet access is developing fast, with 50% of users currently connected through VSNL (Adhikari 2000). As mentioned earlier, the VSNL monopoly on international long distance with FLAG (Fibre Link Around Globe) will end in 2000. Private providers, some offering services through VSNL, will have direct Internet service provider access to FLAG, which will substantially increase access to and use of the Internet, including in-country Web hosting (Zarabi 2000).

India graduates great talent in ICT — as evidenced by the many successful Indian expatriates in the Silicon Valley. The country has a large pool of software engineers and other technologically trained people and is making its mark in a software industry that is projected to earn about US$6 billion in 2000.

EARLY VENTURES IN TELELEARNING AND TELETRAINING

India launched its first *Aryabhatta* satellite in 1975 and ever since that time has had the capacity to design, build and launch satellites for its own requirements. However, the first application of ICT for education and development — the one-year Satellite Instructional Television Experiment (SITE) which was also launched in 1975 to provide one-way television programmes for 2,330 villages in economically disadvantaged regions — used an American satellite. SITE aimed to improve primary education, provide teacher training, help improve agricultural, health and hygiene practices, and support family planning and national integration. Community viewing centres were created in villages and the villagers watched these programmes through direct reception system sets. Such communal access was found to be quite acceptable in the village culture. Every resource was fully mobilised to make this experiment a success, but the initial enthusiasm created by SITE was not maintained in subsequent INSAT (Indian National Satellite) projects, which were marred by technical and human problems.

One particularly serious criticism of SITE was that it only provided one-way communication, preventing the queries and doubts of the viewers from being resolved and their responses from being used to improve the programmes. In 1989, recognising the importance of interaction, the Indian Space Research Organisation (ISRO) determined to conduct some satellite-based one-way video, two-way audio experiments in support of education, mass literacy and human resource development. Running throughout the 1990s, these applications included distance education programmes ranging from engineering to maternal health, rural development programmes covering such topics as the role of women in afforestation, programmes for women and children, programmes supporting *Panchayati Raj* (local community self-government) and industrial training. One of the providers was IGNOU, which in 1995 conducted a 10-day telelearning/telecounselling experiment via its OPENET teleconferencing channel to its networked regional centres and study centres.

Research carried out in regard to these initiatives showed that teleconferencing could be an effective tool for distance learners, provided it was well planned and implemented. However, as Rao (1999) notes:

- Interaction was voice-only and, being via STD telephone line, the recurrent costs were prohibitive.
- The quality of audio was inconsistent.
- There were technical breakdowns.

- To avoid feedback, the volume of the TV had to be turned down at the receive sites any time the viewers wished to respond or raise queries.
- Because of the lack of visual cues, learners often had to hold onto the telephone for a long time before the studio-based resource persons realised they wished to speak.
- The learning centres were not necessarily accessible to many of the potential beneficiaries.

Two parallel developments in using ICT for community development and technology capacity-building are worthy of further discussion: the Jhabua Development Communication Project and the IGNOU Telelearning Centres and virtual campus initiative. Both of these may be seen as having implications for any use of ITC or telecentres for education and training, and particularly in the rural sector.

THE JHABUA DEVELOPMENT COMMUNICATION PROJECT

Jhabua is a tribal-dominated district of Madhya Pradesh with a population of 1.13 million and population density of 116.68 per square kilometres. Over 90% of the population lives in rural areas. The literacy rate is extremely low at 14.54%.

The aim of the Jhabua Development Communication Project (JDCP) has been to gain experience in satellite-based broadcast and interactive networks for education, training and development. The JDCP Interactive Training Programme (JDCP-ITP) uses one-way video, two-way audio teleconferencing via narrowcast. The JDCP-ITP system comprises a small makeshift studio and mobile uplink earth station based at the Space Applications Centre in Ahmedabad, direct reception systems installed in 150 villages, 12 satellite-based talk-back terminals, and a transponder on the INSAT satellite. Participation from the receive sites is made possible by VSAT terminals equipped with Demand Assigned Multiple Access (DAMA) (comprising a computer, modem and TV monitor). The anchor person or DAMA operator in Ahmedabad allocates audio channels to particular receive sites as they wish to join in. The DAMA system also allows data broadcasting to the receive sites.

At the start of this project, orientation and awareness-building programmes were organised for the various developmental functionaries and NGOs. Educational and training programmes have since been transmitted five days a week on agriculture, watershed management, health, *Panchayati Raj*, education, socio-economic and human resource development, and cultural issues. Various presentation formats are used to make the broadcasts lively and interesting and the programmes have been produced in accord with the culture and communication styles of the villagers.

It is now planned for JDCP-ITP to include more villages and to convert the entire system to digital with multimedia, personal computer–based technology and an Internet-based 64 Kbps channel for video.

Formative and summative research has played a central role in this project. Shah (1999) has found that the percentage of viewers is typically around 37% – 38% of the potential audience, but on occasions can fall to 8% – 10%. The viewers tend to be male and the more literate of the population. The frequency of use by high socio-economic status viewers is low. The main reasons given for people not viewing the TV programmes are lack of time, lack of desire to engage in such activity, and the distances being too great to the receive sites.

SERVE (1998) found that the village halls used as receive sites were not ideally suited to this purpose. Acoustics and viewing conditions left a lot to be desired and there was often a lot of external noise distracting the trainees. In some cases, the TV sets had been stolen or were not working, and there were occasional failures of computers, audio systems and power supplies. The viewers also experienced difficulty in understanding the "bookish" Hindi language used by the resource persons. However, the conclusions of this study were that, while there might not always be a great deal of actual skills transfer, at least such programmes could promote general awareness among the villagers of Jhabua district.

THE IGNOU TELELEARNING CENTRES

The Indira Gandhi National Open University was established in 1987 and is mandated by the Indian Parliament to promote, offer and maintain standards in distance education nationally. As well as being a major provider, it is also the apex body for quality and standards in India's nine state (open) and 62 dual-mode universities, a role it performs through a Distance Education Council. IGNOU operates 22 regional centres, 12 recognised regional centres and about 561 study centres that are managed locally by various organisations, institutions, agencies, societies, NGOs and community groups across the country. It has a yearly intake of about 200,000, with about 600,000 students on its rolls, including some students from rural, tribal and disadvantaged urban areas.

The university had gained considerable experience in teleconferencing, using the Internet and localising educational delivery, and serving learners through community-based centres, even before it introduced its virtual campus through a network of telelearning centres (TLCs) in 1999. IGNOU offers two programmes through these TLCs: a three-year Bachelor of Information Technology mounted in collaboration with the UK Edexcel Foundation, and the one-year Advanced Diploma in Information Technology, sponsored by the Government of India's Department of Electronics. Students can apply through IGNOU's headquarters in New Delhi or their nearest regional centre and, on admission, they are allocated to their nearest TLC. Almost all of the academic work for these programmes is done online.

Students pay 67,500 rupees (Rs) (US$1,500) for their three years of study for the Bachelor of Information Technology, of which £95 goes to Edexcel and 40% goes to the TLC. The centres are expected to show a profit from the second year onwards. The course fee covers all course-related expenses including Web access, and the students can make further non-course use of the TLCs' phones, faxes and Internet facilities if they pay for these services.

There are currently 28 TLCs, including eight in Delhi. Until recently, all of them were owned and managed by commercial operators who either operated them exclusively for IGNOU or made the facilities available to other students and the general public in the non-IGNOU hours. Each centre is accommodated in accord with IGNOU-specifications and equipped with at least 50 Pentium computers, printers, scanners, digital camera kits, colour TVs, data projection equipment and antennas for teleconferencing. The students use the TLCs for live interactive satellite-based telelectures or teletutorials, pre-recorded videolectures, laboratory sessions, computer-based tutorials, online chat sessions with peers, faculty and external experts, and Web browsing. They can download their course material via the Internet, but as fallback, these are also available in CD-ROM.

The Bachelor's degree and Advanced Diploma in Information Technology each have a programme co-ordinator, a senior faculty member of IGNOU's School of Computer

Science who is responsible for creating the course units and the online chat counselling. Each co-ordinator has the assistance of a lecturer and full-time consultant. Many of the students are happy to work autonomously, but others find it invaluable to communicate with IGNOU staff, fellow students and others. Students regularly send e-mails to the IGNOU headquarters and there is always one consultant on duty to respond to these. Assignments are submitted online and returned by the same means with tutors' comments and grades. Weekly teleconferences are held for each programme and locally recruited counsellors provide further theoretical and hands-on sessions at the TLCs.

Great care is taken to ensure quality in these two prototype programmes. A Vice-Chancellor's task force, made up of two Pro Vice-Chancellors — the Director of Computing and the Director of Regional Services — monitors the programmes weekly. Every trimester, academic auditors from Edexcel visit IGNOU for a joint monitoring of all activities including the TLCs' operations. A joint review committee also meets each semester, once at IGNOU and once at Edexcel in the UK, to review the course content, methodology, staffing and infrastructure. As well, the IGNOU regional centres have a monitoring role, reporting on the TLC's performance to the Vice-Chancellors's task force. At each regional centre, there is also a consultant at the Assistant Regional Director level who is exclusively engaged in this task. On the last Friday of each month, all of the directors of regional centres involved in the Bachelor's degree and Advanced Diploma in Information Technology meet with the Pro Vice-Chancellors at IGNOU to take stock of the programmes and decide upon any corrective measures that may be needed.

The BIT programme has yet to complete its first three-year cycle, so there are no firm research findings on its ultimate outcomes. However, a number of operational difficulties and bureaucratic delays have been experienced. These "virtual campus programmes" operate within the established structure and culture of IGNOU and therefore inherit many of the problems of its everyday operations. E-mails and other queries from students are supposed to be responded to every day, but in fact there are too few staff at headquarters to handle this — only five of the proposed 35 personnel have been assigned to this task. Constant changes in the consultants also affect the smooth functioning of the programmes. Furthermore, while income is received from students each year, it is not always available for the TLCs when it is needed.

As mentioned earlier, the TLCs have been owned by private commercial organisations. Some of the private TLCs may be retained, but it has now been decided that, with the exception of a few reputable and reliable TLCs, IGNOU and its students will be far better served by bringing these centres under the control of the university and integrated with the IGNOU-owned regional centres rather than being in private hands. So far, 14 of the regional centres have been converted into TLCs and provided with the necessary computer labs for these virtual programmes. The Edexcel agreement is expected to be extended to all 22 regional centres, which will mean that all of the remaining centres will also need to be upgraded over the next year or so.

There are two important lessons in this for any future telecentres. First, privatising and granting autonomy to telecentres may make it difficult to ensure the quality control necessary for retaining governmental and other sponsorship and support for educational and training interventions. Second, online teaching and training entails far more than delivering pre-digested content by satellite, Internet, disk or CD-ROM. The levels of interaction and support needed, particularly by first-time learners or trainees, demand considerable staffing and resourcing, both at the providing sites and the receive sites.

OTHER RURAL ICT DEVELOPMENTS

The Commonwealth of Learning, with funding from the UK, has initiated an ICT-based literacy project in Bangladesh, India and Zambia. Launched in 1998 and due to end in 2001, this project includes the establishment of technology-based community learning centres to help literacy workers gain in-country experience and expertise and to provide training in reading, numeracy and applications of ICT. IGNOU is a partner in this programme. No evaluative findings were available at the time of writing.

The Madhya Pradesh Bhoj (Open) University in Bhopal, in collaboration with the Rajiv Gandhi Shiksha Mission (RGSM), has equipped 50 kiosks (telelearning centres) in 45 rural districts in Madhya Pradesh with Internet access and one-way audio/video for rural training via a 64 Kbps dedicated leased line. The plan is to increase the number of sites to 7,000 over the next three years. (Dikshit 2000). Here again, evaluative results are awaited.

The Internet has also come to 70 villages of Warana (Kolhapur and Sangli districts of Maharashtra state) where 25 co-operative societies have set up two hubs (costing US$6 million), one at Warana Engineering College and the other at a sugar co-operative's administration building. This project is supported by a national informatics centre and the state government. Each village has a "facilitation booth" with wireless LAN for high-speed transmission of data for farmers on such essential issues as the best time for harvesting, product prices, accounting procedures, method for processing ration cards and permits, market rivals, new farming techniques, crop varieties and machinery, and pest management. This initiative has enhanced farm productivity, increased the profits of farmers and helped the area's co-operative societies achieve an annual turnover of US$120 million (Prabhu 2000).

In the state of Andhra Pradesh, under the direct supervision of the state chief minister, a databank has been developed on all of the families in the villages in Medak district. Using this, a mobile van provides medicare services to families at a per capita cost of Rs100 (or about US$2.00) per head per year. The success of this computerised healthcare system has now led the state government to embark on a US$100 million *Sankshya Vahini* project, in collaboration with Carnegie Mellon University in the U.S., providing tele-education, telemedicine, e-governance and a citizen-government interface. This project will be implemented in the near future.

In the Dhar district of the state of Madhya Pradesh, farmers have access to the Internet in the vegetable market for product prices and access to land records. In another instance, in the Ganjam district of Orissa state, the tribal people have Internet access to various information sources, and officials use it for collecting and collating data for further research, with the support of Gram Vikas, an NGO located at Mohuda village.

"Village knowledge centres" have been established by the M.S. Swaminathan Research Foundation in five villages at a radius of 13 – 21 kilometres from Chennai in the state of Tamil Nadu. Designed to provide agriculture-related information, education and training via ICT, these centres are equipped with PCs with Internet access, printers, CD-ROM and TVs/VCRs. The centres are used to provide the villagers with essential information on such matters as grain prices, women's health and rural welfare schemes, announce grade 10 and 12 exam results, publicise events — even to provide updates on cricket matches! Due consideration is given to socio-economic contexts, gender and local culture in this work (Venkataraman 1999). The centres are provided rent-free by the villagers. Four of the centres are linked to the hub at Villianur village and all of the

centres are powered by solar hybrid systems, the first time these have been used in India. Each village has provided two to four volunteers with grade 10 education to help in the centres and, to date, nine volunteers (mostly female) have been trained in the basics of PCs, MS-Exchange, Word 97, I-LEAP in Tamil and system maintenance. Only 50% – 67% of the females in these villages are literate; 34% of the centres' users in Kizhur village and 50% of those in Embalam are women. About 60% of the usage is voice telephony, signifying significant dependence on voice as the main medium of transaction. M.S. Swaminathan Research Foundation currently funds this project. When the foundation withdraws, as it has announced it will do, the responsibility for sustainability will rest largely with the villagers.

An initiative has been taken by the International Telecommunications Union, UNESCO, the State Government of Gujarat and the lead agency, the Department of Telecommunications of Government of India, to establish multipurpose community-based telecentres in remote and isolated villages in the state of Gujarat. It is envisaged that these will be used for telemedicine, teletrading, tele-adminstration, telelearning and other services. A feasibility study (Gupta et al. 1997) and a Memorandum of Understanding were completed and a multipurpose community telecentre was established in Rajkot, run by a private individual, with land and building provided by the state government. However, as reported to the authors, this centre could not become sustainable and has now been closed.

CONCLUSIONS

Some may argue against rushing in to provide ICTs for rural development when many of the basic amenities are yet to be made available. However, the fact is that India needs the jet and the bullock cart, the global connections and the local delivery. The rural poor and the urban disadvantaged must be helped to become more empowered and self-reliant through education, to enjoy better health and lifestyles, and to be better informed about what is happening in the wider world.

It is recognised in many quarters that there is tremendous potential in the telecentre concept for integrated rural development, whether this manifests itself as multipurpose multimedia community telecentres with Internet access or simply as telephone-based call centres in villages. The crucial issues are how to make such centres financially viable and how to attune them to the needs of the nation and the local communities. As Vittal (2000) remarks, the present approach to rural telecommunication needs to shift from politics-focused and subsidy-driven to function-focused and economy-driven.

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