

Communicating Science through ICT: A study of VKC's in Puducherry

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Abstract

The objective of this paper is to explore the functioning of the ICT intervention through Village Resource Centres (VRCs) and their sub-units Village Knowledge Centres (VKCs). This paper involved field visits, focus group discussion and non-participant observation with the stakeholders.

Focus on Information Technology

Communication of information about science is essential for good governance. IT can help democratize governments. It can make information transparent and thus reduce bureaucratic and political control over information. APSWAN or Andhra Pradesh State Wide Area Network enables connectivity among departments as well as the various offices of each department. CARD or Computer-aided Administration of the Registration Department has become one of the most successful examples of e-governance. Many other states in India have followed suit. If not anything, such initiatives have speeded up transactions and have brought in some amount of transparency. Andhra Pradesh is setting up Internet kiosks at all public call booths in all its villages. In fact, hoarding of information is common with government departments; and data that are vital for grassroots

development are normally not revealed. But ICT-centred governance would usher in free flow of government information to all those who needed it. Thus, people can benefit directly without having to grease the palm of middlemen.

The point is that IT can make a difference even in a society handicapped by underdevelopment and illiteracy. There is all the more the need to take up IT-centred development since grants are readily available for IT projects – you could easily get a grant for setting up an irrigation management information system but not for desilting the irrigation channels.

Non-government organizations involved in science-based activism such as AIDS awareness and environment awareness too employ science communicators. Of late, people are particularly interested in health and

environment, and this has been reflected in increased coverage of these subjects in the media. Curriculum should also reflect this reality and offer special papers on Environment and Health. The scope for specializing in environment communication and health communication is increasing.

Information forms the basis to create awareness, though awareness to action calls for an integrated approach to development. For instance, the Kothmale project in Sri Lanka experimented with Internet browsing through radio. Here the questions of the listeners are searched in the Internet and the answers translated into the local language and contextualized by volunteers, and then broadcast. The project expanded knowledge base. According to Wijayananda Jayaweera (2001), given that information becomes knowledge only when it is discussed and contextualised in the community, the radio-browsing model has many advantages over browsing the Internet individually, particularly when language becomes a barrier to understand the content.

The Kothmale Internet browsing through radio project has opened up new job opportunities for the rural youth. It also increased the level of educational achievements among students. By encouraging community participation, the project strengthened the community bonds. Government websites constantly updated the content to augment database constantly accessed and transmitted over radio. Thus the project helped build e-governance too. Technology was demystified so that all could share its benefits. The people also took part in the management of the station

and had a say in the scheduling and programming. The individualistic medium of computer / Internet (normally used only by the elite) is here made a collective medium for the masses.

Village resource centres

Let us now look at the village resource centres (VRCs). The centres in the Pondicherry Union Territory of India have been developed by the M.S. Swaminathan Research Foundation in Chennai. Pondicherry, which was the administrative headquarters of the French territories in India, comprises 130 villages and the Pondicherry town. Tamil is the language spoken with English and French as languages of the administration. About 20 percent of the rural families live below the poverty line.

In 1997, MSSRF started a programme that would use access to information as the key to holistic rural development. Later in early 1998, the Information Village Research Project was established with financial support from International Development Research Centre (IDRC), Canada. MSSRF provided villages with free technology and information in exchange for the villages' promise to house the computers and staff their operation. MSSRF gave four Pondicherry villages in its network other practical, highly local information, which was distributed through the village computer network in the local language, Tamil. Mostly, information which was not on the Internet was disseminated.

The village knowledge centres were first established in Kizhur, Mangalam, Embalam and Veerampattinam villages of Pondicherry. The four villages were linked to an MSSRF hub at Villianur through an ingenious wireless system which served as a VRC. The centre at Embalam was uniquely located on the premises of a village temple, which is owned by the community through an informal trust. In each centre, a Pentium PC with multimedia and a deskjet printer had been installed in a specially designed box to prevent rodent attacks on the instruments. The computer could be connected to the wireless network through a modem and a specially designed interface. The volunteers too contributed news from the locality. A graduate of the Indian Institute of Technology at Kanpur oversaw the project. A local area network based on Very High Frequency (VHF) radio had been established with the Villianur office serving as a hub, handling voice communication as well as data. The project was later expanded to 12 villages of Pondicherry.

Formerly called “information shops”, the village knowledge centres provide information to the rural population on relevant issues such as: health (vaccine/medicine availability in the nearest health centre); relief information (loans, availability of officials); agriculture (local market prices for rural produce); transportation information; micro-meteorological information (relating to the local area); surface and groundwater-related data; and translating English-based Internet content into Tamil and contextualizing it.

The village knowledge centres were operated by individuals on a semi-voluntary basis. Such individuals were identified on the basis of the following criteria: education (at least high school); socio-economic status (marginal farmers were given preference); gender (other things being equal, women were given preference); and age (preferably in the 20-25 age group). They were given two days of training by MSSRF. The training session consists of demonstrations of the wireless instruments, training in its use PC keyboard and mouse, and use of conditioned power supply. And one person per village was selected from among the trainees, for each of the centres.

The equipment was provided to the operators and they were trained in the basic operations of a computer, elements of word processing, spread sheets and HTML, using e-mail and Web browsing, use of the radio modem, and general matters, including basics of upkeep. The training and materials are in Tamizh, the local language.

Value addition by professionals or trained individuals, to networked information helped rural families to have accessibility. A small VRC office in a centrally located village, Villianur, served as the value addition centre, where the project staff surfed the Internet for useful contacts or technologies.

Each centre varied slightly in the way it was operated and supported. In Kizhur, the volunteers were chosen by the Village Development Council, which also nominated a 23-member (14 men and 9

women) group to guide the centre's operations. At the centre in Embalam all the volunteers were women in the 21-27 age group; each of them spent half-a-day at the centre, rotating the schedule.

Three points to start a village knowledge centre based on MSSRF experience are:

1. It is a people-centred programme based on community ownership. The community as a whole must endorse it.
2. It must take into account the local context and the information needs of the local people. Only then it can provide useful demand-driven services. Although we may use a variety of technologies in gathering and reaching the information, the programme is not meant to demonstrate the power of technology. Usefulness is more important than the use of latest technology.
3. The programme should be inclusive and not be associated with one group or caste; it should allow everyone to take part. The ICT-enabled knowledge centre should be located in a public space, say in a village school or panchayat building, to ensure social inclusion in access.

Different models tried out

A few of the early MSSRF centres housed in individuals' homes had to be closed down, as the benefits were not reaching all members of the community, especially people belonging to the Dalit community. Social inclusion, reaching the

unreached and voicing the voiceless are articles of faith in the MSSRF-IDRC ICT programme. This project was followed by several other ICT-enabled information delivery projects (often referred to as 'info-kiosk' projects) in different parts of India. Information needs vary from place to place. Villagers in a fishing village are keen to get accurate forecasts of wave heights and location of fish shoals. The women need more information on health-related issues from women doctors. That is why it is important to provide timely locale-specific information. The information provided should be authentic and useful in the specific context. Knowledge centre staff work closely with partner organizations such as agricultural universities, Krishi Vigyan Kendras (KVKs), human and animal health institutions, research laboratories and field stations and marketing organizations.

The project continues to experiment with a range of technologies, but it is people-centred, focusing on people and their contexts. Both connectivity and content were given concurrent attention. The work in each village starts with social scientists / social workers getting to know the people and making a study of their needs and current level of familiarity with sources of information and the technological means to gather information. Rural families need both dynamic and generic information. Dynamic information includes managing and market factors as related to crops, animal husbandry, fisheries, agro-forestry and agro-processing, whereas generic information includes local news, employment news and government schemes. Information provided

should be demand-driven. The project is bottom up and recognizes the local people's right to know from the very beginning. Information needs of the community and the people's familiarity with different technologies and communication channels should be assessed, particularly through participatory rural appraisal. Fostering a sense of local ownership has been an important feature of this programme. For MSSRF to move into a village and help set up a knowledge centre, the village community has to provide a room in a building which has easy access and provide volunteers as well as pay for electricity and upkeep of the centre. The village volunteers are trained in the operation of computers and maintenance of the communication equipment as well as to gather and input information. The emphasis is on overall development; i.e., the project is society-centric rather than technology-centric.

Information is a necessary but not a sufficient condition for empowerment. Information has to be linked to the means of using the information. For example, if old people are empowered with knowledge relating to cataract, they should know where the cataract eye surgery can be performed at a low or no cost (in Pondicherry, the Aravind Eye Hospital provides this facility). In fact, increased health expenditure due to serious ailments is an important reason for farmers' indebtedness and even suicides. ICTs are tried out to bridge gender, social, economic and technological divides. The resource centre is at the core of the ICT for rural development movement.

Several other initiatives such as self-help groups, skill building, micro-credit, literacy, agriculture, health, governance and education are built around it. Poverty will persist so long as a large proportion of the rural population is engaged only in unskilled work. Here ICT is being used to bring about a paradigm shift from unskilled to skilled work and from routine on-farm to value-added non-farm activities. Having experimented with ICTs in a dozen villages in Pondicherry, MSSRF takes the concept of VRCs to other regions and other parts of the country.

This MSSRF-IDRC project was designed as a test bed for research into how ICTs could be used in rural development. MSSRF scientists have tried a variety of communication technologies for transferring information (voice, data, image, etc.) between the knowledge centres. These include Internet, VHF two-way radio, spread spectrum, World Space Radio, satellite communication using C and Ku bands and low-cost wireless technology.

Each project had its unique model. Some models were government supported, and others adopted a business model that made users pay from the beginning. Two such were established by large industrial houses, essentially to reach out to clients and supply them with products useful to them (ITC's e-chaupal and Hindustan Lever's iShakthi). n-Logue, an IT company largely promoting the technologies developed by IIT, Chennai, has a franchise model, wherein they provide an info kiosk (PC with an Internet and videoconferencing facility,

scanner, photocopier) at a low cost and train the kiosk owner, and the owner provides different services and tries to earn a reasonable income.

The Veerampattinam centre, though unique in its own right, represents the model of MSSRF VRCs. The concept of a resource centre in these villages revolves around community needs and the centres have become places where anyone who needs to share information can go. The approach of MSSRF is to have people as the focus. It looks at local contexts and needs and then proceeds to satisfy those needs within their context. It is ready to use any technology that comes in handy. For example, in VRCs and VKCs, it uses notice boards, public address systems (loudspeakers put up in different streets of a fishing village) and a local language twice-monthly community newspaper along with solar (photovoltaic) energy, the Internet, spread spectrum technology and Motorola two-way radio. Technology is often a mere enabler. What people want delivered is healthcare, education, agriculture, markets, entitlements, credit, and better livelihoods.

When the tsunami struck in December 2004 at Veerampattinam fishing village in the southeast coast of India, a mysterious spring showed up in the temple tank drawing crowds. So, when the tsunami hit the beach initially, most of the villagers were seen around the tank and could be evacuated by panchayat leaders. Mani, a fisherman, saw the waters rising when he was working on his boat motor and raised an alarm. He first alerted six women, who were

on the beach, hurrying them into a boat, which was then swept into the village. He rushed to the public address system (in the VRC), which was found locked, broke it open and alerted the village. Veerampattinam, which has more than 6,200 people, lost one life that day. Thus goes a news report in The Hindu (Muthalaly 2004).

Such VRC initiatives of the MS Swaminathan Research Foundation (MSSRF), Chennai, are an effort to present workable models of providing information and communication technology (ICT) for development. They strive to offer services that closely suit community needs. The idea is that a well-placed computer linked with other ICT tools – like an irrigation pump or a community well – may become another tool for development. Each day, the project's staff downloaded a map from a US Navy website that showed the wave heights and wind directions at sea. This not only increased the catch of fisher folk but also contributed to their safety. The project also helped improve access to markets through the availability of prices and marketing opportunities information; improved access to health infrastructure; increased exposure of rural youth and school students to computer-based networking; increase in awareness of ecologically sound techniques in agriculture and animal husbandry, leading to enhanced income. But all these are tried out mainly through ICT intervention. MSSRF has demonstrated that a VRC is a workable model, and the National Alliance for Mission 2007 took the task of making every village a knowledge centre by taking ICT there, before the country celebrated the

60th anniversary of Independence in 2007. This paper examines whether ICT intervention in rural development is sustainable.

ICTs can be described as a varied set of goods, applications and services used to produce, store, process, distribute and exchange information. They include both the most familiar technologies of television, radio and telephone (now called older or traditional ICTs) and the relatively newer ones – personal computers, mobile phones, satellite and wireless technologies and the Internet. Increasingly, the demarcations between these media or delivery channels are blurring as the world becomes more networked, as evidenced by interconnected telephone services, standardized computer hardware and seamless data transmission (UNDP 2001). ICT includes radio, television, telephone, computer, Internet services, web-based PCs, mobile phones, WLL network, projectors, wireless sets, I-pods, interactive boards and many more such kind of devices which are helping people to gather information and also communicate through the same.

ICT demonstrates its contribution as a tool, a resource for learning and as a catalyst in thinking. As a tool it takes on the 'donkey work' of processing and displaying information in a variety of forms. As a resource for learning, it provides insight into the nature of the subjects being studied. As a catalyst in thought, it organizes and presents information to the learner and provides the opportunity to develop higher order skills of analysis, interpretation and evaluation (Loveless 2003). ICTs can mesmerize many

and distort perception and public discussion. The real crux of the matter is not technology but information. Here one would like to say that how much information is available in all the accessible and timely manner how many people at any given time surrounded by a deluge and digital hype, governmental and civil society participants at the world summit on international society run the risk of missing this crucial point (Gunawardhane 2004).

Self-help groups

ICT Self-Help Groups (SHGs) are being promoted to organize and manage these village knowledge centres. The self-help group (SHG) account software developed by the MSSRF facilitates SHGs in villages to maintain and store all its records in the computer. SHGs know people's priorities the best. According to Prime Minister Manmohan Singh (2004), there are seven priority sectors for focused attention. These are agriculture, water, education, healthcare, employment, urban renewal and infrastructure. These seven sectors (saat sutra) are the pillars of the development bridge we must cross to ensure higher economic growth and more equitable social and economic development. There are numerous ongoing rural ICT projects in different parts of the country. Synergy and convergence are attempted among all ongoing efforts.

Take the story of S. Chitra, president of the Durga women SHG in K. Ramanathapuram. She and her group are operating a highly scientific small-scale factory producing *Pseudomonas Fluoreceus*

fungicides. They have a five-year business plan and are confident about prospects for the future. The only help they needed from MSSRF was the initial idea of what they could do as a group to improve their livelihoods. ICTs in the form of information are thus helping a group of otherwise poorly educated women take charge of their lives and that of their families.

In an area constrained by language, literacy and connectivity barriers, simply installing computer telecentres without providing assistance would be insufficient. With such assistance, the emergence of VRCs and info-kiosk movement has demonstrated that the local panchayats and self-help groups can take advantage of appropriate ICTs and that they can easily access the scientific and technical knowledge they need to solve local problems and enhance the quality of their lives, as well as to communicate their own insights and needs back to government departments and scientists. A national movement of knowledge centres needs to be established in mission mode to ensure quick implementation at the local level, create information infrastructure and locally appropriate and relevant content for rural economy through active involvement of Gram Sabhas, local SHGs and NGOs (Communication Initiative 2004).

Mission 2007 to Rural Knowledge Movement

Formed in May 2004, the National Alliance for Information and Communication Technologies (ICTs) for Basic Human Needs sought to take the ICT-

enabled knowledge revolution to all of India's 637,000 villages by August 15, 2007, when the country celebrated its 60th year of Independence. The Alliance saw itself as acting as a catalyst for technology innovation for rural ICT applications and connectivity. It worked to bring the private sector and the academia together with strong support from civil society organizations for experimenting every innovation among the target communities. The Alliance was using networking and partnership as strategies for taking ICTs to the poor and the disadvantaged in India's rural communities. One focus of these task force activities was how to use the ongoing efforts by the government and the private sector in creating an ICT infrastructure, human networks, and political institutions to provide multipurpose information kiosks in rural areas.

The Jamsetji Tata National Virtual Academy for Rural Prosperity had been established under the guidance of MSSRF. Mission 2007 envisaged creation of a cadre of one million grassroots level Fellows. In association with alliance partners it was identifying a million grassroots knowledge workers who will be enlisted as Fellows of the Academy. They would be the torch bearers of the knowledge revolution in Indian villages. The knowledge centres were being set up and managed by ICT self-help groups comprising both women and men.

The goal of taking the benefits of ICT to every village in the country can be accomplished only by providing a platform for partnership [particularly with grassroots civil society partnership] among the

numerous agencies and individuals who are working in different parts of the country in setting up information kiosks and other methods of empowering rural people with the technologies associated with the digital age.

The first meeting of the MSSRF-Tata National Virtual Academy for Food Security and Rural Prosperity was held on February 21, 2004. In this meeting, it was decided that the NVA should help launch an Every Village a Knowledge Centre Movement in collaboration with IGNOU, the 11 State open universities and other appropriate government and non-government organisations. The idea is to cover all villages by generating synergy between different technologies, particularly between the Internet and the community radio and the symbiosis among all institutions engaged in the field of technological and skill empowerment. Although the target was not achieved within the specified period, it was worth the effort.

The deadline passed by without much of the task of Mission 2007 being accomplished. But the cause was noble. Mission 2007 concretized the concept of ICT enabling of all the villages of India. After August 15, 2007, it was converted into the Grameen Gyan Abhiyan (Rural Knowledge Movement). The so-called movement has over 400 partners with an aim to creating a rural knowledge revolution. It has built multi stakeholder partnership with different ICT4D models. They include the community based models, entrepreneurial models, government models, business models or the corporate models,

cooperative models, and combinations of all these models in pairs or more. The movement aims to address the knowledge gap that exists in rural areas, and the divide between the Shining India and the non-Shining majority. It strives to develop a user controlled, owned and managed network which will help reach the rural population in terms of information, knowledge and skill empowerment.

Lessons learnt

The MSSRF initiative of setting up VRCs and VKCs gives contextualized information to villages regularly. The VRC earlier functioning from Villianur has been shifted to Pillyar Kuppam. Thirteen VKCs functioning under that VRC are managed by local volunteers. The projects are supported by grants from the International Development Research Centre, Canada, and other agencies. Notice-boards, loudspeakers, and a local newspaper are used to disseminate information. Notice-boards are updated daily. Loudspeakers are used to announce weather forecast twice a day and other information such as the schedule of panchayat meetings. Since 2002, *Namavoor Sethi* (Our Village News) comes out as a fortnightly newspaper giving government news, political news, employment news, healthcare news, and agricultural information. Now the newsletter is being distributed at the doorsteps, but this procedure is going to be changed and the newsletter will be henceforth kept in the VKCs itself to eliminate distribution efforts and to make all the villagers visit VKCs.

VKCs have a Microsoft Unlimited Potential Programme through which free self-learning CDs are given to high and higher secondary students to teach themselves courses such as Computer fundamental, Microsoft Word, Microsoft Excel, Microsoft Powerpoint, Microsoft Access, Digital Media, Internet Browsing and Web Designing. The students who finish a two-month course are awarded certificates from the Microsoft. But most students use the VKCs only for playing computer games, which nevertheless makes them computer savvy. Occasionally, VKCs conduct awareness programme against AIDS and liquor consumption. Vermiculture and mushroom farming have been tried out with the information backing from VKCs.

One question repeatedly asked is that why India, weighed down by high rates of illiteracy and underdevelopment, should spend heavily to provide villages with ICT. Should not the priorities be on schooling, health and agriculture? But then, we should not be lacking behind in information technology revolution that is gripping the entire world. Also, the mere fact funds are readily available for IT rather than tackling malnutrition means that IT for grassroots development needs to be taken up. According to M.S. Swaminathan (2007), "from my long experience in agriculture, I find that whenever poor people derive some benefit from a technology, the rich also benefit. The opposite does not happen."

Information technology, particularly the Internet, has opened up new frontiers. The Internet has no borders, no censors and

no Big Brother. It could be a place to learn about issues, connect with those affected by issues, start conversations about remedies, raise funds for solutions, coordinate solution teams, post the whole process and invite real-time feedback from participants around the world. Organizations working for social change are already employing information technology and the Internet to achieve their goals (Tresser, 2003).

Local bureaucrats are often reluctant to give up their monopoly on information, which can be a source of power used to extract bribes. This may be one of the reasons why ICT intervention fails once the demonstration phase is over. Not always the success of a project should be seen in terms of its sustainability in terms of continuance of the project. A good number of VKCs and village knowledge centres of MSSRF might have folded up. After the demonstration phase, such projects often cease as grants dry up or the project manager on the spot quits to take up a high paying job. But one's loss is another's gain and thus the skills imparted to the project staff do not go waste.

Also, the fact is that the villagers have undergone an attitudinal change and they have got over the fatalistic mindset. More so, they have been focusing more on livelihood issues which no doubt ranks high in the priority list of villagers. If villages abandon virtual communities and involve actively in local (physical) communities, there is nothing wrong in it. After all, the focus of VKCs was on how the communities could improve their livelihoods

using information to innovate, and take charge of their own destinies.

Harris and Rajora (2006) studied whether the ICT projects were reaching goals of utilization by communities to improve lives and livelihoods through better access to education, agricultural information, weather, health information, and markets. They found that there is a need to train staff for skills in organizing the community to continually expand use of the technology and skills for dependable maintenance of technology. The users should have a say in determining the sort of technology and content.

A few of the early MSSRF centres housed in individuals' homes had to be closed down, as the benefits were not reaching all members particularly the marginalized. Likewise, lessons can be learnt from experiences. The centres should be located in a public place and not be associated with any one caste or group. Bridging divides such as digital divides, caste divide and gender divide is a prime aim of ICT intervention.

A sustainable business model should be evolved. Public-private partnership has proved to be the most sustainable model, based on the MSSRF experiments. This will also take care of the public relations aspect of the project at least in the interest of the partners. A wide range of services should be offered with the most basic technology possible. The services offered should be closely related to the needs of the community. The info-kiosk should serve as

a communication hub, providing multiple telephone and communication services to the village, a virtual academy and training centre and banking, to have greater economic viability.

Democracy requires that people have the ability to move from participation to power. A strategy of working through and with grassroots organizations needs to be adapted. Partnership in terms of local civil society activism rather than posh corporates or NGOs will promote sustainable rural development. The activism of these kinds of grassroots organizations is the need of the hour. It can serve as an effective democratic tool, if grassroots organizations are strengthened.

Some NGOs use the Internet to learn about the experiences of their counterparts elsewhere and replicate them in their area without adapting them to the local context. This short-cut solution is counterproductive. The same problem is there when MSSRF's village resource centres are replicated without much understanding of the social processes (which include an agrarian orientation) that went along with it.

The successful Satellite Instructional Television Experiment (SITE) of 1970s had to cease as the American satellite was made available for the project for just one year. The father of the Indian space science, Vikram Sarabai, had said India would use the satellite communication and leapfrog into developing; but this did not happen despite initiatives in satellite-based communication. This does not mean satellite

TV was incapable of doing this. The fact is (i) communication for development was not promoted extensively and (ii) other infrastructure necessary for development was not made available. IT initiative at the grassroots can take lessons from SITE. It is better not to depend on temporary high technological intervention. Some low profile sustainable technological models like the use of loudspeakers along with a computer centre will work wonders. Unless ISRO or some corporate sponsors are ready at hand or a revenue model is in place, continuance of the project is not possible.

Routine power failures and overloaded telephone lines make connecting to the Internet a frustrating proposition. Of course, solar power and wireless telephone have also been tried out.

An integrated use of the Internet and community radio will be an effective means of reaching the unreached and giving voice to the voiceless, now that NGOs can set up community radio stations in India.

The local communities should be able to run the centres when the implementing agency withdraws its backing. The centres should be owned and managed by ICT self-help groups, grassroots institutions such as local panchayats, farmers' associations, or fisher folk's cooperatives. Members of all strata such as caste and gender should form part of such a centre. Some technical skills required for maintaining a connectivity infrastructure should also be in place.

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