The Village Knowledge Centres of Pondicherry

(An Indian ICT Adoption case study)

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Abstract

This paper[1] examines a project in South India which aims to empower the poorest of rural villages through giving them access to knowledge via networked ICT. The interesting points are the success of the model and the ways in which seemingly intractable problems of technologic complexity, network connectivity and user illiteracy have been overcome. The key to this is that the enabling experts are local, and the needs of the villages are carefully assessed and agreed before any technology is introduced. The success of the project is illustrated by the way it has grown and developed over the last 11 years.

Introduction - History of the Village Knowledge Centre Project

In 1992 an interdisciplinary dialogue was held at the M S Swaminathan research Foundation (MSSRF) in Chennai, India, on the theme "Information Technology, Reaching the Unreached" (Vedavalli, 2005). The outcome of this discussion was a belief that Information and Communication Technologies (ICT) had great potential for supporting rural development and sustainable agriculture in developing countries. To test this, experimental information centres were set up in 1997 in villages in Pondicherry, chosen as a test site because of MSSRF's experience with its earlier Bio-village scheme there.

In 1998 the experiment was given major impetus by support from the Canadian International Development Research Center (IDRC) in setting up the full Information Village experiment. Initially seven Information Villages were established, expanding to twelve for this experimental system. These included inland agricultural villages, coastal fishing villages and Dalit villages (the former *Untouchable* caste at the bottom of the Indian social caste structure). Each so called village knowledge centre (VKC) was linked to a resource centre in a hub and spokes model. The hub was in turn linked via satellite communication with MSSRF in Chennai and ultimately to the whole internet.

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[1] This paper is an abbreviated version of a full chapter in *Innovation, Education and Communication for Sustainable Development* (Leal 2006) which covers the full development of the Village Knowledge Centres of Pondicherry and relates them to other similar developments in India and Central America (Swindell 2006)
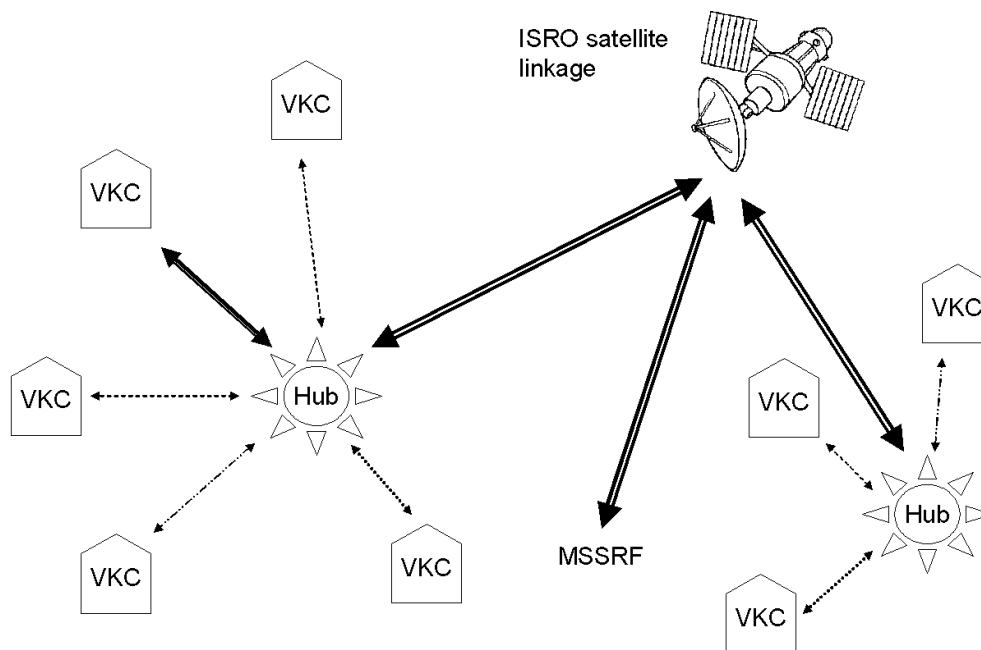
Figure 1 The basic spoke and hub infrastructure. Linking between hubs will make expansion of the network much simpler than trying to link all villages directly to each other.

Establishing a Village Knowledge Centre

Before establishing an VKC, a full participatory rural appraisal (PRA) is carried out amongst the villagers. Martin and Sherington (1997) argue that little firm evidence has been provided on the success of participatory development, due in part to the inherent action research nature of such work which inhibits replication of trials and the scientific use of controls.

The case of the Pondicherry VKCs is fundamentally different from many other PRAs because MSSRF is a local organisation which has workers based in the communities and is in constant repeated discussions with the villagers. It is an Indian institution working with Indian communities in India. Much of the fundamental language and culture is common to all involved, rather than being a barrier as it so often is for a foreign NGO. MSSRF remains an integral stakeholder in the project. In this case a PRA is a valuable and essential information gathering and sharing stage, and a satisfactory outcome is needed before a VKC is established. The PRA is also an ongoing process within each VKC and informs the appraisal of future centres. The initial PRA usually can take several months to a year to complete.

The basic methodologies: start with the local knowledge and follow *Antyodaya*

Blaikie et. al. (1997) have looked at local knowledge (LK) as a development resource within three development paradigms, the classical (very top-down, deterministic development), neo-liberal (largely market driven development) and neo-populist (very bottom-up, action research based development). All of these paradigms tend to look at the value of LK from the external development agency's viewpoint of its use as a resource for development. In the VKC paradigm, LK is seen as a core resource which can be used in different locations if it is found to be appropriate by the other end users, not by the enabling agency.

The other driving philosophy of all MSSRF's work is the fundamental Ghandian principle of *Antyodaya*:

> "… recall the face of the poorest and the weakest man whom you may have seen, and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny?"

Mahatma Ghandi

The intention of *Antyodaya* is to promote reflection on the relevance of proposed actions to those who could be affected by those actions. If this relevance is not clear and articulate, the actions will probably be of little lasting value and should be reconsidered. In the case of the Village Knowledge Centres, many cases of benefit were collected and recorded from the initial Pondicherry Information Village experiment to establish that the Centres had proved of value to the local community before the experiment was expanded (MSSRF 2003)

Content and connectivity

Two core components of the VKC model are locally relevant content and appropriate network connectivity. A VKC has access to the whole of the internet, but the nature and quality of most of that information is unsuitable or incomprehensible to Indian villagers. What they need is relevant information for themselves and their locality, presented in their own language. This is addressed by setting up a local intranet containing locally useful and relevant information which is used by all the villages and managed by the hub centres and the enabling agency.

Content: locally relevant knowledge

Answering local need is the core of the paradigm. A poor rural farmer does not need to know the current grain prices on the international commodity markets, but he does need to know the price his produce can fetch at the nearest market town that has sent a buyer to his farm. This allows him to negotiate a fair price with more confidence. (An example of this activity can be seen at the online daily market prices for Oddanchatram in Dindigul district of Tamil Nadu, managed by MSSRF) (Oddanchatrammarket.com 2006). He will not understand scientific papers on plant pathology, but he will appreciate step by step techniques to tackle sugar cane rot, if there is a local outbreak.

Much of the content of the intranet may be local knowledge which is shared between villages by means of the VKCs and their various publishing and broadcasting media. This information would be collated and digitised by the hub centre and then made accessible to the VKCs on the spokes. The information can be further shared with other hub centres.

Connectivity: whatever works locally

ICT connectivity in rural India would at first sight appear to be a major obstacle, but a range of solutions have been found, working on the basis that there is always a workable connectivity technology of some sort, and this may be very different in different locations. Currently the connectivity technologies include cable, broad spectrum and duplex vhf radio, WiFi and direct satellite communication. These link

the VKC to their hub, which in turn can link to other hubs, research centres and the full resources of the internet via direct satellite links provided by the Indian Space Research Organisation (ISRO). The cost of establishing connectivity can be high, but these start up costs can generally be met by capital investment by government and development agencies. The maintenance then becomes the responsibility of the VKCs themselves, with support of the enabling agency. The local volunteers will be trained in basic ICT maintenance as part of the capacity building within the village.

The functions of the hub

The hub centre is at the core of the VKC infrastructure and in connectivity terms works something like the central aerial of a mobile phone system cell. All VKCs link to one hub which in turn links to external information sources, the internet and cooperating experts and institutions. Staff at the hub are provided by the enabling institution, which therefore must have a long term commitment to the project. They manage the databases of the local intranet. Villagers may make requests for specific information, such as times for local health clinics, or details of national examination results. The hub staff will find the appropriate information and if necessary, translate it and reformat it to make it accessible to the villagers. This information would then be added to the growing database for other users to access.

Where connectivity is suitable, video-conferencing links have been set up so that villagers can ask questions directly and verbally of the experts back in MSSRF. Many of them find this direct, conversational communication far easier than formalised requests for information that may be used in more technologically developed economies. It also demonstrates the value of using local experts who can talk directly to the villagers.

The functions of the spoke, the Village Knowledge Centre

Each VKC is housed in a permanent building, or part of a building, provided and financed by the local villagers. This may be in a school, in a temple or a village TV room. This is to ensure that they have both commitment and ownership of the local portion of the network. In most cases they will also fund the cost of electricity, although this will be augmented by backup systems, usually solar powered battery systems, which are funded by the donor agencies or sponsoring bodies. The same sponsoring bodies will normally source and supply the hardware, software and connectivity technology.

Each VKC has one or more computers with CD-ROM drives, printers and scanners. These will be networked back to the hub centre by the most suitable means possible. In one village, the villagers had already obtained a cable TV connection by joining together to cover the subscription and cable cost, and digging the trench for the final connection route themselves. This cable was then be used for VKC connectivity and the communal TV room used to house the computers.

Each VKC is manned by trained local village volunteers, the Knowledge Workers (KW). They are chosen for their aptitude, commitment and any previous ICT experience. MSSRF make positive steps to encourage women to volunteer as this helps both with their empowerment in rural society, and ensures that other women are more likely to make use of the VKC. Training takes from five to fifteen days. In many cases the first stage is to simply introduce the KW to a physical fact of the computer,

which many will never have encountered before. Then they are encouraged to play simple games with it, to learn how to use the mouse and the keyboard. This progresses to using the free programs such as *Microsoft Paint* to create simple pictures and diagrams. Eventually the KW can prepare and store basic information files in quite a sophisticated manner, and can access all the information sources available via the Hub centre. The volunteers are also trained in basic maintenance of the hardware.

The number of Knowledge Workers and sizes of the villages varies considerably. Details of numbers for the first 10 Information Villages in Pondicherry is given in table I. This shows great variation, particularly in the village population per volunteer, ranging from 182 to 4,500.

In use, a villager seeking information would talk to the KW, who would search the existing information sources for an answer. This might be for school and college exam results (very important in India and difficult for isolated villagers to find), weather reports, health advice, employment opportunities and application forms, commodity prices, etc. If the answers are of general interest, they will be further disseminated, either by writing them on the village notice board, broadcasting them over a public address system or circulating them by the community newsletter produced by the project. The KW can also help job applicants, for example, to fill in online application forms, which would formerly have been impossible for them.

Village (some abbreviated)	Opened	Population			Volunteers			Villagers/ volunteer
		M	F	Total	M	F	Total	
Kizhur	08-09-98	497	470	967	-	1	1	967
Embalam	05-01-99	2400	1600	4000	-	10	10	400
Veeramp.	04-04-99	3190	3100	6290	5	1	6	1048
Poornang.	06-08-00	2516	2563	5079	1	2	3	1693
Pillyarkupam	06-08-00	2400	2100	4500	-	1	1	4500
Thirucanchipet	05-12-00	270	277	547	3	-	3	182
Kalitheer.	20-02-01	3570	2490	6060	1	2	3	2020
Nallavadu	05-12-01	1850	1780	3630	2	-	2	1815
Koonichampet	22-01-03	2650	2350	5000	2	1	3	1666
Periyakalapet	04-07-03	N/A	N/A	2500	2	1	3	833

Table I: Details of the first 10 Pondicherry Information Villages (after Vedavalli 2005:12)

The Knowledge Workers can also generate some personal income by using DTP systems to prepare wedding invitations cards and helping to market local produce and handicrafts via simple e-commerce networks. This is important, as one problem for the whole project is retaining the support of the Knowledge Workers, who are very poor and have other heavy commitments on their time. Women in particular have still to manage their households and have little spare time to devote to other activities

unless it generates resources for them. Even a small income can be enormously valuable in retaining their commitment.

Setting up a new Village Knowledge Centre: the ten steps

MSSRF have developed a structured methodology for setting up a new VKC, based on their experience with the Information Village experiment. This is set out in a handbook the *Toolkit for setting up Village Knowledge Centres* (VKC) (MSSRF, no date a) which is published in support of the *National Alliance for Mission 2007* (MSSRF 2004a). This is a very brief overview of the process which is described fully in Swindell (2006).

Step 1: Social mobilization and Need/Demand Assessment

This stage is crucial, as a VKC will only be progressed by the supporting agency if there is clear support and welcome from the local community. This is a long process of consultation and discussion between the agency and the village. It commonly takes two to three months and has taken nearly a year for some cases.

Step 2: Community participation

Community participation is found to be essential, and although listed in the Toolkit as step 2, it in fact runs through the project continuously. The agency needs to build a partnership with a cross-community group of stakeholders, taking care to ensure that these are not dominated by self interest groups or individuals. The community is strongly encouraged to support the proposed centre both in cash or kind to develop full ownership, and to provide volunteers to run and support the VKC.

Step 3: Connectivity

Technical solutions to connectivity problems can always be found. Conventional telephony systems are important, but often the participating community must provide the resources for the "last mile" connection to the commercial network. This can be through funds for cables or labour for digging trenches for that last mile.

Step 4: Content

Content is defined in three categories:

- generic content such as government employment schemes, health and health service information, local news, etc.

- dynamic content such as real time market prices, examination results, weather forecasts

- timely content such as offshore wave height predictions and potential fishing zones for coastal communities

Delivery of content uses many media, with the computer screen being only one output, and not necessarily the most used. Many of the end users are at best semi-literate and any printed or written output will be of limited use to them. Local languages vary widely throughout India, so final delivery must be in the appropriate language for that village.

Step 5: Hub and spokes model

This simple infrastructure model gives great flexibility and expansion potential. At most 25 to 30 VKCs (the spokes) are linked to a single central facility (the hub). The hub in turn is linked via satellite linkage to the State level hub at the enabling organisation.

Step 6: Management, monitoring and evaluation

This stage sets out ground rules for general management and monitoring of the function and success of a VKC. From a long term sustainability view, this is one of the most difficult areas to establish successfully.

Step 7: Services (multi purpose centre)

Step 7 sets out to ensure that the VKC provides a genuine, relevant range of services to the community. Emphasis is placed on local discussion between the implementing agency and as wide a range of villagers as possible.

Step 8: Partnership

The Toolkit emphasises the building of partnerships between the VKCs, local experts and remote institutional consultants.

Step 9: Capacity building

Capacity building for the local communities is one of the drivers for the establishment of the VKCs. That this has been achieved in some areas is clear from the various success stories for individuals in the villages. (MSSRF 2003). Although capacity building is given as step 9, again it is really one of the first and continuing activities of the whole programme.

Step 10: Sustainability

This is the key question. Will the VKC model develop into a sustainable system both at its current local level and at its planned national level, or will it become yet another well intentioned development programme which weakens and dies once external interest leaves and moves on? The VKC project recognises this and addresses it in two ways.

- Firstly, it must be of local value, driven by local needs so that the villagers themselves gain a clear benefit from its services and will want them to continue.

- Secondly, the VKCs must have a clear and developing business plan which includes fee paying and income generating services.

Conclusion

A common way for ICT to make its first impact on small communities in India and other developing countries is through the establishment of small, privately run internet browsing centres or more formally constituted information kiosks. These give access

to the internet and usually have some additional technological capabilities such as printers and scanners. The problem for inexperienced users with these centres is that there is no support or guidance for new users, it is simply a resource. The impact of these kiosks on the local economy and community is likely to be very limited. Those who have never used ICT before are unlikely to simply walk in and start surfing.

The MSSRF Village Knowledge Centres work quite differently. No technology is introduced until a village has been thoroughly appraised of its social needs and aspirations. If a VKC is established, it is accompanied by intense training of chosen volunteers, called Knowledge Workers, plus any other villagers who want to learn. This initial training can take up to 15 days and will continue in the future with regular visits from MSSRF staff. The VKC is linked to a support hub, where expert staff can receive requests from the villagers and help source and, if necessary, interpret and translate the answers before disseminating them to all VKCs. At all stages, the concept of capacity building for the villagers is the driving force. They choose what they want, they pose the questions and they provide the physical space and volunteers to run the VKC. The information provided covers all aspects of community life and is available to all members of the village.

The hub and spoke model gives the strength to the system, as it introduces accessible expert support, but may also contain inherent weakness as it is scaled up to regional and national levels. The hub centre processes information requests and outputs and is dependent on a permanent staff of four or five to do this. They are employed on an annual basis and will be required for the indefinite future of the project. Using the figures from the Pondicherry experiment, the hub centre there supports 10 VKCs with a total population of about 40,000. If this hub and spoke unit was expanded to the 25 villages that a full unit is seen as servicing, this population could rise to about 100,000. If VKC use becomes significant amongst the whole population, the hub staff could rapidly be overwhelmed. (In March 2006, each VKC was used about 25 times per day and this number was increasing.) This problem will be further exacerbated as the hub and spoke concept is expanded to link other clusters. This will increase the work load on hub staff, particularly in translating between multiple local languages and maintaining English metadata on the content of those translations. The challenge to the whole project will be how successfully it can be scaled up, and how the potentially large staff overhead can be managed and financed in the long term. This will be the test of the long term sustainability of the original Information Village experiment.

Author

Julian Swindell is a chartered architect and a principal lecturer at the Royal Agricultural College in the UK where he has worked in a variety of roles since 1984. His research interests include the use of GIS and ICT in rural development. He worked as a visiting scientist at the M. S. Swaminathan Research Foundation in 2006, studying the creation and replication of the Village Knowledge Centre project. He has been promoting this project as a rural development model in China since 2007.

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