

# Challenges to Community Informatics to Bridging the Digital Divide

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## COMMUNITY INFORMATICS AS A MECHANISM FOR BRIDGING THE DIGITAL DIVIDE

Community Informatics (CI) is the application of ICT to overcome the “digital divide” both within and among communities (Gurstien, 2000). Taylor (2004) further asserts that CI is a connection between theory and practice in community networks. In this case, CI refers to the use of ICT for community practice, which Glen (1993) elaborates as encompassing concepts of community development, community service delivery and community action. With the emergence of CI, it is possible for remote communities to enjoy the benefits of ICT for economic and social development. For example, in India, the M.S. Swaminathan Research Foundation established six Village Information Shops, which enabled rural families to access and exchange a basket of information using ICT (Balaji & Harris, 2000). In Costa Rica, there is a project involving the Massachusetts Institute of Technology (MIT) to implement “digital town centers” in remote villages (Harris, 1999).

The pervasiveness of the Internet has brought ICT to large numbers of people who have never used them before, particularly where community-based telecentres have provided access to ICT in developing countries where there is very little likelihood of individuals owning their own computers. CI as a mechanism to overcome the digital divide, particularly in developing countries of Asia present many challenges, some of which are highlighted here.

It is estimated that nearly 75% of the population of Asia is reckoned to be living in rural districts. Dysfunctional patterns of technology diffusion serve to prevent the poor, mostly rural, majority populations of developing countries from benefiting from ICT to the same extent as their educated urbanised compatriots. Although the information revolution threatens to increase income inequity, nationally and internationally, it can provide tools, which can dramatically reduce isolation and poverty and alleviate its worst effects. Contemporary ICT can now be used to integrate rural and poor urban communities into economic life, thereby raising income, and improving their quality of life. Satellite network, wireless communications, public telephones and community information centres, cyber kiosks, or telecentres are effective arrangements for reducing information inequality (Harris, Bala, Songan, Khoo & Trang, 2001).

The World Bank recommends a systematic approach to the application of ICT to the needs of rural communities (World Bank, 1998). In order to support ICT adoption that will contribute to rural development, it is essential to begin with the needs of the rural community. As a first step, a feasibility study is required in order to:

1. Identify the needs and priorities of rural communities for such areas as agriculture, education, commerce, natural resource management, health and the like.
2. Determine the types of information needed to help meet those needs, including information gath-

- ered from the rural population and transmitted to policy-makers and project designers, and information shared among rural communities.
3. Determine the gaps between the information currently available and what is needed.
  4. Determine how ICT can close those gaps and build valuable synergies by mobilising information across sectors.

Evidence suggests that rural dwellers have more to gain than do urban dwellers from any increase in the density of communications capability (International Telecommunications Union, 1998). For example, the economics of telecommunications are related to distance. The greater the distance from communities of interest, the greater the savings in travel costs and time which individuals enjoy with improved communications. Unit gains from additional telephones are greatest where density is at its lowest. The greatest social payoff from telecommunications improvements, therefore, is found in rural and isolated areas. Unfortunately, these areas do not generate as much total revenue for private telecommunications providers as do high density urban areas, even with higher revenue per individual subscriber. Consequently, special arrangements and incentives are needed to upgrade telecommunications networks in rural and remote areas, and such facilities have to be designed to keep capital, operating and maintenance costs as low as possible. In gaining access to information, geography alone places rural people at a disadvantage compared to urbanites before communications are taken into account.

## **THE e-BARIO PROJECT**

The e-Bario project provides the context for analysis of the challenges to CI in an effort to bridge the digital divide. The project is being coordinated by the Universiti Malaysia Sarawak (UNIMAS), and financially supported by Canada's International Development Research Centre (IDRC) and the Malaysian Institute of Microelectronic Systems (MIMOS). Conceptualized and inspired by a group of researchers from UNIMAS, e-Bario seeks to demonstrate the many ways in which ICT can be used to help marginalized communities in Malaysia develop socially and economically. It is a development project that utilizes computers, telephones, and VSATs to connect villagers in the remote village of Bario to the Internet. The e-Bario project is one of the most notable of Malaysia's Internet development initiatives.

Located in a remote area in Sarawak, Bario exemplifies the disconnected portion of the digital divide. For instance, while most of the district's 1,200 inhabitants

have heard of a computer, more than 90% have never used one, let alone logged onto the Internet (Songan, Harris, Bala & Khoo, 2000). Thus, Bario met all of the experiment's qualifications for the pilot project, and presented a challenging environment in which to test the idea of rural Internet connectivity in Malaysia. Initially, the researchers conducted a baseline study to help them gain an understanding of the cultural, social, information and economic dynamics of Bario. Not only did the initial research demonstrate that the residents were hungry for new information resources, it suggested that the majority of teachers and students were well prepared for ICT adoption. For instance, it was found that each of the 13 secondary school teachers who have been polled had an intermediate to advanced level of IT understanding (Khoo, Tingang Trang, Sia, Songan, Harris, & Bala, 2000). An IT literacy program was established to help them expand their knowledge of how to use computers and the Internet.

Realizing the importance of community engagement and empowerment, the researchers designed the e-Bario project around a participatory development model from the beginning (Bala, Harris & Songan, 2004). While the project was inspired by the researchers from outside of Bario, they made sure that throughout the implementation process community leaders would consistently provide input to its evolution. Given their understanding of social and cultural dynamics, the community leaders have also been actively involved in identifying ways to sustain the project once the researchers withdraw. The e-Bario project also clearly demonstrates the effectiveness of how the public and private sectors can work together to sensitize rural communities to the capabilities and uses of new technologies, and the many ways in which ICT can improve the lives of marginalized groups.

The e-Bario project highlights the various components of creating a sustainable ICT-focused development program. For instance, the project demonstrates that ICT cannot just be "dropped" in a rural village, but needs to be accompanied by training and education to be successful and sustainable. Despite the imminent success of e-Bario, such grassroots ICT development initiatives remain largely experimental, as the long-term effects on a given society are not readily apparent. However, it is obvious from the first three years of the project that a participatory approach is a prerequisite for sustainability.

## **CHALLENGES TO COMMUNITY INFORMATICS**

Based on the experience of the e-Bario project, the challenges that are faced in using ICT for bridging the

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