

Chapter 2

ICTD and Rural Connectedness

This chapter illustrates how ICT influences connectedness in several realms particularly in education and community development. The chapter initially gives an introduction to ICT for development (ICTD) and description of how ICT has been utilized for rural community development. It will review relevant ICTD research and describe the different theories of change utilized by the researchers. This chapter ends with a general account of ICT and rural connectedness.

2.1 ICT for Development (ICTD)

Information and communication technology (ICT) is a term used to encompass all forms of computing systems, telecommunications and networks. In this brief, it is electronic means of capturing, processing, storing and disseminating information. Though the focus is on internet based technology, other communication tools such as radio and televisions are not to be dismissed as ICT tools as well.

ICT has infiltrated every nooks and corners of our lives. People are connected by ICT in many ways, spawning networks of information exchange, knowledge creation and community sharing. The ability to generate social connections resides in the multitude of social media applications, accessible via desktops, laptops, tablets, mobiles and handheld smart gadgets. The capacity to learn at a distance, at any time or anywhere has also been made possible via ICT.

ICT for development (ICTD or ICT4D) relates to the use of Information and Communication Technology (ICT) to support the development of people and communities in developing nations and underserved regions. It is fast becoming a point of concern to many. Issues of access, social equity, sustainability, technology design, technology dissemination and other related areas are constantly being addressed in conferences and development forums. The ICTD conferences, held annually since 2006 provide an international platforms for researchers and practitioners to explore ICT based solutions and possibilities. These conferences

also support networking and have spawned many collaborative projects among members of different sectors, industry and education. Academic programs at the doctoral, postgraduate and undergraduate level are now offered by universities such as University of Colorado, Royal Holloway University of London and University of Manchester. Online courses are readily available as well (More information on ICTD is available at <http://ictlogy.net/>).

Key players of ICTD include UNESCO, World Bank, ITU (International Communication Union) and several others based in the different countries such as IDRC (International Development Research Centre) in Canada and SIDA (Swedish International Development Cooperation Agency).

ICTD is also very much related to the United Nations Millenium Development Goals (MDG) that comprise aims to end poverty and hunger, gender equality, universal education, child health, maternal health, combat HIV, environmental sustainability and global partnership. Due to the limited ability to acquire ICT among the rural people, the range of ICTs relevant to the users varies from radio to internet ready computers at tele-centers. In many instances, the convergence of ICTs is exploited to support the effort to enhance human capacity and empowerment, reduce poverty, strengthen communication, promote local content and knowledge and to ensure equitable access. Much of the concepts linking ICTs and development (or ICT4D) have been explored by Weigel and Waldburger (2004) as illustrated in Fig. 2.1.

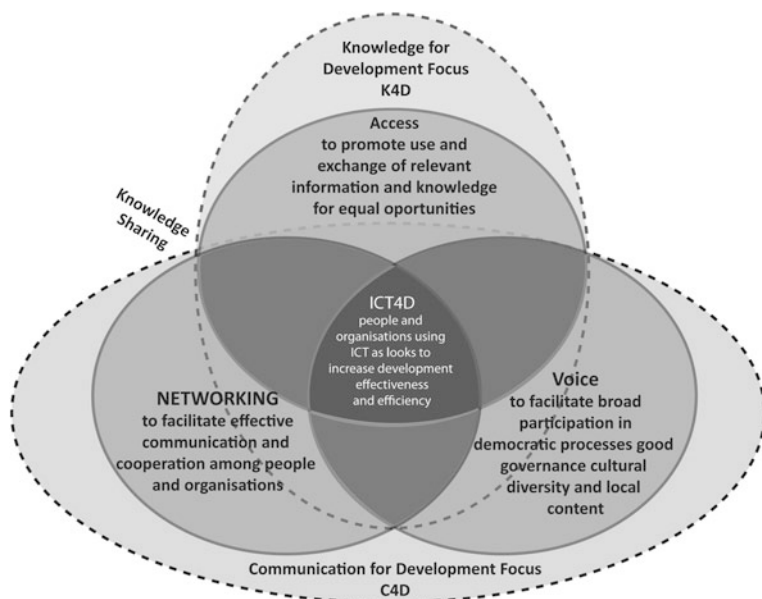


Fig. 2.1 Weigel and Walkdburger's framework for ICT4D: Key dimensions and main goals (Source Weigel and Walkdburger 2004)

The dimensions put forward in Weigel and Walkdburger's framework warrants an approach that is people centred and demand driven. It requires support and involvement from multiple stakeholders (government, NGOs, community) at the global, national and local level.

This brief zooms into the use of ICT in the microenvironment of people in local communities. However, it does not intend to discuss poverty reduction or democratic processes; it centers on the perspective of the people and harps on the idea of ICT as a tool to connect.

2.1.1 ICT and the Rural Community Development

Digital divide, or more appropriately digital inclusion is one the main themes associated with ICTD. The gap between those who have ICT access and those who don't requires intervention to prevent it from widening. ICTD focuses on alleviating the destitute, marginalized and technology—disadvantaged groups of people. Rural communities are prime examples of these groups. Most governmental initiatives aim to bridge the digital divide between the urban and rural communities by increasing access to technology. In Malaysia, for instance, forty two RICs in the different states in Malaysia were established to disseminate information via digital means and engage rural area citizens in its plans and transformation initiatives.

In the case of employing ICT for rural community development several points of concern need to be considered:

- Access: ICT needs to be equally accessible by the community members to allow acquisition of skills and knowledge sharing.
- Culture: local culture plays a role in the acceptance of ICT as a tool for personal capacity development and knowledge sharing.
- Utility and personal objectives: having access to ICT may not necessarily means maximizing the potential and capability of ICTs to improve one's wellbeing and personal growth.
- Beyond connectivity: the effective use of ICTs is not just a matter of having efficient infrastructure and speed of connections. It is also a question of how the people and community utilize ICT to connect.
- Relevant and people-centred applications: the impact of ICT use for rural development depends much on how relevant the technology is to the individual and the community he is in. Embedding ICTs in a rural community thus requires a thorough needs analysis.
- Theory of change and technology sustainability: change does not happen in a pre-defined fashion or strictly in accordance to some governmental plan. How a rural community evolves upon implementation of technology depends heavily on perceived needs of the community members and whether technology can be sustained and managed by the community.

The above points mirror most of Weigel and Walkdurger (2004)'s *framework*; making use of ICT for rural development therefore is not a straight-forward, easy task.

There are numerous rural ICT development projects in developing nations around the world. Early projects by UNESCO such as the Kothmale project depicted successful convergence of the internet and local community radio (Pringle and David 2002). Achievement of the project was on awareness and local capacity. Members of the rural community became aware, and used ICT in their daily lives. The Malaysian eBario is a pilot research project involving the innovative application of ICTs (Information and Communication Technologies) with the goal of continually sustaining social and economic programs in a rural community in Sarawak which does not have the basic amenities such as electricity, water and telecommunications. One of the innovation and key lessons learnt is that there is a need to focus on people and not just on technology. The project employed a participatory approach whereby the community members were involved in all phases of the project, from planning, implementation, to operation and maintenance of the project. A similar experience was reported by Fourie (2008) on the South Africa's program on the use of ICT to alleviate poverty and rural human development problems. The country policies and projects were found to assist the rural poor in improving their livelihoods. ICT was found to be most useful in practical matters such as communicating during a crisis, keeping in contact with family members and in assisting business. The sustainability of such projects however, requires local community involvement and necessary appropriation of ICT.

The OECD (development working paper by Caspary and O'Connor (2003)) gives a detailed and exhaustive account of various ICT access models and projects in Bangladesh, India, Mozambique, Salvador, Chile, Brazil and many others. They relate the necessity of initial subsidy, conducive regulatory environment, willingness to pay among rural people, local content, complementary infrastructure and services and NGOs as catalysts to ensure ICT serves the rural communities well. Galperin (2005)'s report on wireless networks in rural Latin America echoes some of Casper and O'Connor's concern on government subsidy, regulatory environment and a balance of cost and social and economic returns. While there appears to be potential in WLAN technologies to enhance connectivity in the rural areas, Galperin cautions a large-scale implementation due to the lack of evidence in its long-term sustainability. Rao (2009) further discusses several aspects of ICT provision in rural India through projects aimed at enhancing access to information and communication, education, literacy development, entrepreneurship, health, governance and democracy. It was found that some projects fared well while others were less successful. Rao (2009) stated eight thrusts needed to meet the socio-economic aspirations of rural communities. These are connectivity provision, content creation, capacity augmentation, core technologies' creation and exploitation, cost reduction, competence building, community participation and community commitment. A local and particularistic approach is needed to empower rural people and reduce the digital divide.

There are countless government and non government ICT projects for rural community development; most of which are directed to provide connectivity that would inadvertently contribute to building local capacity.

The government of Malaysia spends billions on ICT infrastructure for both urban and rural areas. In 2001 under the Eighth Malaysia Plan (RMK 8) the Malaysian government had approved RM12 million (approx. USD 3.2 million) for the Information Technology division of the Ministry of Rural and Regional Development to implement the *Medan Infodesa (MID) Program*, or Rural Information Centre, a one stop ICT Centre for rural communities. Another RM9.5 million was also allocated for the ICT training (Final Outcome Report on ICT 2008). The main objective of the programs was to develop an integrated planning approach to create ICT awareness among rural population and to bridge the digital divide between rural and urban communities. The project started with 6 pilot projects in 2001 and by 2005 (at the end of the 8th Malaysia plan) 23 projects were operational and 19 in various stages of implementation (Final Outcome Report on ICT 2008).

The analysis of the outcome of the program for three villages in the state of Malacca was reported by the Malaysian Ministry of Rural and Regional Development in 2008 (Final report on the Rural ICT outcome 2008). It was found that 95 % of the participants who attended the training became more ICT savvy. Out of 109 respondents (30 % of the total number trained) 4 were categorized as not *ICT literate*, 57 as *ICT literate* and 48 as expert in ICT. The average number of users at the centers was around 173–547 per month depending on the village. It was reported that after the project, 69.72 % of the village residents owned computers.

Other ICT projects implemented under the Ministry of Rural and Regional Development include courses on using ICT to manage the rural areas. The objective of this project was to provide ICT awareness to the rural area heads, women and youth. At the same time it also aimed at increasing the use of ICT in their day-to-day affairs. From the project, 17 series of courses were implemented involving about 632 participants. Analysis of the results showed that there was a marked increase in the participants' knowledge of ICT. Thirty two (32 %) said they did not know anything about the components of a computer before the program while upon completing the program 95.5 % said they were more knowledgeable. With regard to the use of ICT in their daily lives; 40.9 % use them for official duties and 13.6 % use for personal use. For the personal use, 32 % is for surfing, 9 % data compilation, 9 % editing pictures, 9 % games, and 4.5 % chatting. The frequency of use: 23 % use daily, 18 % twice a week, 14 % once a week, and 14 % once a month.

Another initiative introduced by the government was the SchoolNet Project, a joint effort between the government and a few private sectors. The main objective of the project was to provide broadband infrastructure and Internet access to specific school sites (SchoolNet 2009). The SchoolNet Project was monitored by the Ministry of Education and Ministry of Energy, Water and Telecommunications. The target group were all schools throughout the country. Out of 9,406 schools, 75 % were in rural areas. However more research is needed to gauge the effectiveness of the program and to what extent the teachers and the schoolchildren have used the Internet and for what purpose. The GSB *TechnoGogy Learning in Schools* (GTL schools) project (2008–2009), a spin-off of the Schoolnet Project is yet another initiative that requires evaluation of its impact. Other projects include the

Gerakan Desa Wawasan (Vision Village Movement), *Titian Digital* (or the Digital Bridge) project and the eBario project for indigenous people.

The focus of this brief is the *Pusat Internet Desa* or Rural Internet Centre (RIC) project that represents yet another move by the Malaysian government and non-governmental organisation to provide ready access to ICT. As of 2010, forty two Rural Internet Centres (RICs) each with its own website and network of members are now available in Malaysia. The telecentre project initiated in April 2000 stands as one of the largest government's initiatives to bridge the rural–urban digital divide through free community-shared ICT facilities and internet access. The modest facility is hosted by the local postal office and managed by two personnel. The Malaysian government aims to set up such centres that will eventually reach an estimated 2.8 million members of the rural communities (Nor Iadah et al. 2008). The move is noble and appropriate. Rural communities need to stay abreast not only of technological advances but of the country's development and the government plans. A study was done by Hazita (2008) to look at the level of preparedness, the suitability as well as the ICT needs of the people in the rural areas that were considered as the critical groups namely, youth, women and the senior citizens. The research was based on an earlier report to UNESCO that found a clear gap between the urban areas and the rural areas with specific reference to youth in the use of ICT. It is important to note at this point that there are other public access ICT alternatives in Malaysia. These include public libraries, cyber cafés, Medan Infodesa (Village info-centres) and the Community Broadband Centres recently launched by the Malaysian government under different programs and ministries. The RICs however, are expected to reap their gains and benefits since they been in existence for almost 12 years.

2.1.2 ICT and Personal Capacity Development

Personal capacity development deals with increasing knowledge and skills of people within the context of their lives. This includes enhancing their capability to improve their working and living conditions. The use of ICT for inclusion and personal capacity development of those with disabilities have been widely spread. In terms of capacity development of rural people, projects are more often targeted at community capacity building than at the personal or individual level. Then again, empowering rural people especially women has been the agenda of many NGOs and government initiatives (Macueve et al. 2009). Within the limitations of this brief, rural people personal capacity development via ICT will be reported based on what they perceived as empowering them to conduct their day-to-day tasks.

Most ICTD project reports center on connectivity and issues of community development on a macro level perspective. This brief turns to a micro level context of connectedness of the rural people. A brief overview of ICT and connectedness is essential before rural connectedness is presented.

2.2 ICT and Connectedness

Of late, researchers have argued about the capability of technology to provide a sense of connectedness that encompasses a sense of belonging, sharing and a feeling of being touch (Haans and IJsselsteijn 2006; Rettie 2003; Yukawa et al. 2008). As mentioned earlier, synchronous and asynchronous communication media may lead to a strong feeling of connectedness and may contribute to feelings of relatedness and closeness, as they provide opportunity for interaction over geographical distance (Van Bel et al. 2010). This is also illustrated by Castro (2007) who studied community connectedness and the use of information and communication technology to increase the sense of connection between migrants and their community of origin. He argues that the migrants require certain information elements and tools to heighten such connectedness.

Research has also shown that ICT influences various dimensions of social connectedness. The CareRabbit e-health research conducted to enable family to stay in touch with a hospitalized child (Blom et al. 2011) demonstrates the enhancement of wellbeing and social connectedness via ICT. The Waag Society publishes research findings that promulgate ICT as a means to increase social interaction with elderly (Waag Society 2012). The Human Technology Interaction Group is an example of active group of researchers working on ICT on social connectedness. Van Bel et al. (2009) ascertained four dimensions of social connectedness, three of which were found to be heightened computer mediated shared subjective experiences termed as I-Sharing. The three dimensions were shared understandings, knowing each others' experiences, and feelings of closeness. Van Gennip (2012) explored the effects of mediated heartbeat communication on social connectedness at the personal level. Despite the absence of any significant effect, the research suggests future possibilities of ICT and social connectedness research. There is little doubt that social connectedness via ICT will soon be emerge as a field of its own.

On a more general note, ICT has also spurred educational engagement among students and the well being of the elderly and young children. ICT connectedness tends to assist work related tasks of office workers as well (Leung 2011). Community connectedness through community portals such as The GraniteNet (www.granitenet.com.au) is also becoming more prevalent.

2.2.1 Social Network, Social Media and Government Connectedness

Social networks can be accessed across geographical boundaries between people who may never have met. A study by Koebler et al. (2010) suggests that the use of status update messaging generates a feeling of connectedness between users. The feeling of being connected is reported to be in relation to the amount of messages and not the type of information an individual is sharing among his or her network.

Social media has undoubtedly been extensively used to connect. In October 2012 Facebook announced that there are now one billion people using Facebook every month. Leaders of institutions are using Facebook to connect. The vice chancellor of a Malaysian university boasts a number of more than 100,000 friends among students and academic staff. The platform to connect is now at a click.

Studies on ICT applications in the government include those applications that provide decision support to administrators, improve services to citizens and empower citizens to access information and knowledge (Bhatnagar 2000). In terms of government connectedness, Curtin (2006) in his report on E-Government list five stages of E-Government namely:

- *Emerging Presence*. Stage I e-government presents information which is limited and basic comprising of web page and/or an official website.
- *Enhanced Presence*. In Stage II the government provides greater public policy and governance sources of current and archived information.
- *Interactive Presence*. By Stage III the online services of the government enter the interactive mode with services to enhance convenience of the consumer.
- *Transactional Presence*. Stage IV allows two-way interactions between the citizen and his/her government.
- *Networked Presence*. Stage V represents the most sophisticated level in online e-government initiatives. It can be characterized by the integration of G2G [government-to-government], G2C [government-to-citizen], and C2G [citizen-to-government] (and reverse) interactions.

(Adapted from Curtin 2006)

The government needs to connect and to feel the pulse of its people, both urban and rural communities. Hence there must be a move from the transactional presence or stage IV of e-government to the network presence stage. And for this, many governments especially in the developed countries have launched their government 2.0 initiatives to be in line with the evolution of the web from web 1.0 to web 2.0 and of late, web 3.0. Government 2.0 initiatives include (1) mash-up services such as GIS, weather, traffic and tax services (2) Citizen-oriented services and improved accessibility through portals, mobile devices, TV etc. and (3) use of 'blogs' and 'wikis' to strengthen and expand participation by citizens and government workers (The Canadian National Information Society Agency 2008). Australian Centrelink and Britain's Connecting Britain are two examples of successful government initiatives. In Malaysia, the federal government launched the Malaysia.gov.my portal to offer services of both interactive and informative nature. The Government *Pemudah* website is another service to facilitate public services delivery where the citizens may provide feedback to a special task force of 23 highly respected individuals from both the public and private sectors via emails and feedback form available on the website. Other recent initiatives include the Prime Minister's blog and facebook.

Access to the internet thus provides higher level of connectedness as people are able to access information resulting in opportunities to participate and interact in their social network and society.

The discussion thus far, suggests that ICT supports many facets of connectedness. It is not merely a tool or a platform to connect. The disparity may rests in the access and form of ICT available to the person or the community. The more affluent societies typically enjoy the latest ICT tools and gadgets in the privacy of their own home or within their personal space. Others in the remote areas are by and large less prosperous and hence depend on government supported facility and/or NGO initiatives. The next section considers ICT and rural connectedness. Due to the differences between rural and urban ICT access and willingness to pay for services, rural connectedness will be viewed from a developmental perspective.

2.3 ICT and Rural Connectedness

The study of rural connectedness is a facet of ICT and rural community development research. Authors such as Reading (2010), Rao (2009) and Fourie (2008) described projects and research conducted on leveraging ICT to connect to communities in large and sparse countries such as Australia, India and Africa. Reading (2010) for instance, addresses the geographical isolation of Australian teachers and suggested the delivery of professional development modules via synchronous and asynchronous technology. The use of ICT to increase the professional connectedness of these teachers enhances reciprocal interaction, development of communities of practice, awareness of pedagogy and collegial and critical practices. The Worldbank has intensively embarked on similar projects; ICT in agriculture is an initiative the worldbank has taken to connect rural small holders to knowledge, networks and institutions (The World Bank Group 2012).

Rural connectedness has in fact evolved as reported by Alias et al. (2010) and Craig and Greenhill (2005). Craig and Greenhill (2005) for instance see the shift towards greater levels of connectedness in terms of

- Rural areas are increasingly using broadband to create supportive local relationships and to build social cohesion;
- Rural areas are accessing new resources and opportunities through broadband, changing the relationship between centres and peripheries;
- People and resources are moving out from urban centres towards the most connected rural areas.

(Craig and Greenhill 2005)

In terms of applications, more rural youths are on using social media to communicate. More often than not, rural connectedness entails the existence of a tele-centre or community centres. In particular, a study by London et al. (2006) indicates two types of ties that are fostered through community technology centers. These are (1) bonding ties within communities that are horizontal (peer to peer) and (2) bridging ties to individuals who are not aligned in social status or geographic location. The first tie thus enhances supportive relationships and opportunities to belong while the

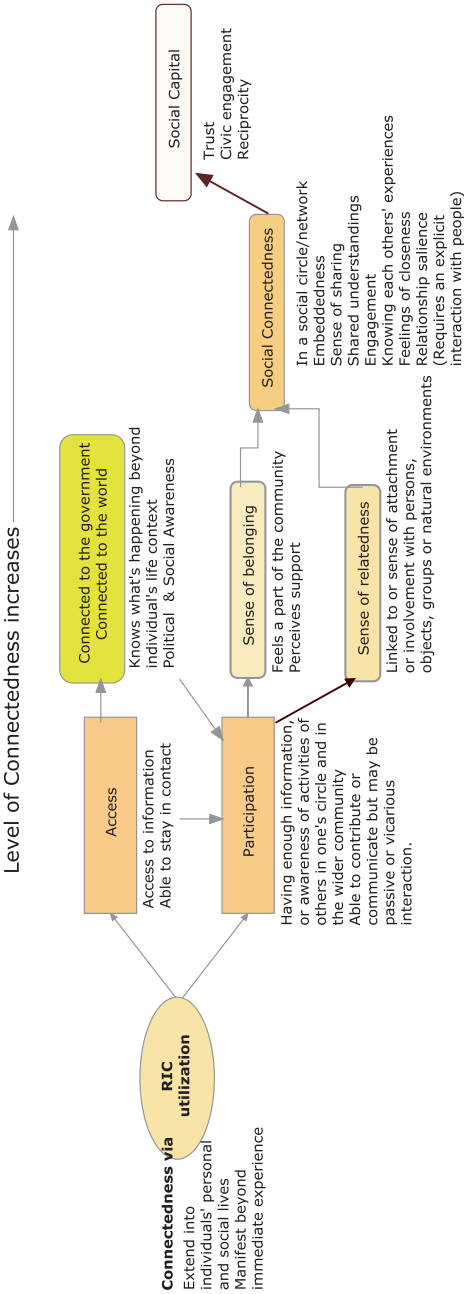


Fig. 2.2 A framework of connectedness among Malaysian RIC users (Adapted from Alias et al. [forthcoming, 2013](#))

second tie provides the chance to connect to a world different from one's own. A report on the strength of internet ties by Boase et al. (2006) describes,

The connectedness that the internet and other media foster within social networks has real payoffs: People use the internet to seek out others in their networks of contacts when they need help (pp. 2).

In the context of this chapter, both ties will be explored in the light of a typology of connectedness to be presented in the next section.

Akin to Markham et al. (2010) and Libbey (2004), several constructs are considered when studying connectedness among rural community members. Generally, ICT access is via public access sites such as tele-centers and internet centers. In relation these common sites, it is postulated that connectedness begins with initial access as shown in Fig. 2.1. In this framework, it is inferred that with access to information and to other people, rural people are able to stay connected. This leads to participation; a sense of relatedness and sense of belonging emerge out of it. Connectedness is therefore evolves on a continuum.

Figure 2.2 illustrates the various constructs that frame the connectedness of rural Malaysians. These constructs are based on literature and the initial findings of a research on ICT and rural connectedness, to be discussed in the next chapter. Due to limited capability to acquire ICT on an individual basis, having access and participation are seen as precedents to higher levels of connectedness. The Rural Internet Centre (RIC) thus plays a crucial role in providing this access to the rural poor.

In short, this brief studies how public access sites, in this case the Malaysian Rural Internet Centres impact the connectedness of its users with friends, family, nation and state leaders through the utilization of various ICT tools and Government 2.0 initiatives.

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