

# e-Bario and e-Bedian Project Implementation in Malaysia

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## BRIDGING DIGITAL DIVIDES

The Malaysian government inspires the country to become a fully developed nation with an emphasis on knowledge-based economy by the year 2020. Though the government has been pushing aggressively for one household to own one computer and at least an Internet connection, it is difficult to see these desires and plans of the Malaysian government going beyond the borders of urban centres and small towns due to the limited infrastructure and amenities. In Sarawak, it has been noted that there are limited mechanisms to ensure that remote rural populations are able to get the same benefits as their urban counterparts due to its vast undeveloped areas and that the majority of Sarawak's population live in such areas. Harris (1999) has remarked that even though Sarawak's rural population was promised a full and equitable share in the benefits of national development, it has great potential to be sidelined in the nation's quest towards a knowledge society. This situation, if left unchecked, would produce an "unbridgeable" digital gap between the developed urban communities and the technologically impoverished rural communities.

Nevertheless, this situation should be considered as a temporary setback as recent developments in Information and Communication Technologies (ICT) have made it possible for the technologically impoverished remote communities to enjoy the benefits of connectivity which are now part and parcel of the lives of their urban cousins (Harris, Bala, Songan, Khoo, & Trang, 2001). It can be seen that comprehensive and extensive radical efforts are being taken by various agencies or governments to promote the use of ICT in rural communities.

These efforts include the M.S. Swaminathan Research Foundation in India which had established six Village Information Shops enabling rural families to access and exchange information using ICT (Balaji & Harris, 2000), and Massachusetts Institute of Technology's (MIT) "digital town centres" in remote villages in Costa Rica (Harris, 1999).

These initiatives have spurred Universiti Malaysia Sarawak (Unimas) to conduct similar research projects to introduce ICT to remote communities in Sarawak, Malaysia. The first of the projects is the largely successful e-Bario project, and the second project is e-Bedian, which was modelled after e-Bario. The projects are an effort to understand how ICT can be used directly to achieve sustainable human development and improve the lives and livelihood of rural communities. These projects also aimed to identify the needs and opportunities which can be met by the innovative use of ICT through the facilitation of communication and access to information and knowledge resources in the areas such as agriculture, health, education, and general development. It is hoped that the research projects would provide learning opportunities, stimulate local capacity for informed decision-making to enhance personal, institutional and community development (Bala, Songan, Khairuddin, Harris & Khoo, 2002).

While the e-Bario and e-Bedian projects are of similar nature, there are lessons to be learned in comparing them, in particular, with respect to the different implementation approaches that were taken. Thus, this article aims to provide insights to the implementation of ICT projects in rural communities, insights which could be used as a guide for future projects.

## GEOGRAPHICAL BACKGROUND

Bario and Long Bedian were chosen as the location for Unimas' research projects, as they are both extremely remote geographically (see Figure 1) and isolated from mainstream development. Both villages do not have basic amenities such as electricity, water supply and telecommunication. They rely very much on personally-owned generators, gravity-fed water system and rain water supply. The communities are completely isolated in terms of modern communication. Bario is accessible only by 19-seater Twin Otter aircraft while Long Bedian can only be accessed by river using long boat or by logging tracks on 4-wheel-drive vehicles. In addition to their remoteness, Bario and Long Bedian do not have 24-hour electricity supply. Their electricity is mainly supplied by generator sets running on expensive diesel—diesel fuel in Bario costs 6 times more than in the city, as fuel has to be flown in. The rationale for selecting such extremely remote locations was that, if the project succeeded in these “worst possible” contexts (in terms of remoteness), then future projects would be relatively easier.

The Bario community is made up of about 1,000 Kelabits. The majority of them are Christians (97.9%) with a small group of Muslims (2.1%). The population is mainly aged between 31-60 years old (72.9%), with about 83% of the population in the actively working group age. Farming is the main occupation of the Bario community with an average income of approximately RM500 (USD 132) per month. About 19% of the population have completed primary education, 27% lower secondary education, 20.7% upper secondary education and only 0.7% tertiary education. About 29% of the population had not attended any formal schooling before.

The Long Bedian community on the other hand, comprises several ethnic groups, such as, Kayan, Kelabit,

Kenyah, and Punan. The population of Long Bedian consists of about 1,700 people, majority of them are between one to 35 years old. Approximately 32.2% of the population have completed their primary education, 27.1% secondary education and only 4.9% tertiary education. About 35.8% of the population had not attended any formal schooling before.

The Long Bedian folks are mainly farmers (68.4%), Government servants and small business operators. The average monthly household income in Long Bedian is RM830 (USD 218).

## APPROACHES AND IMPLEMENTATION

e-Bario was undertaken in the wake of the government's adoption to use ICT as the base for national development. Picking up on this cue, the researchers from Unimas decided to embark on the e-Bario project beginning with the school. The school was chosen first, as it already had the infrastructure (building and day-time electricity supply). It also provided a platform to train and prepare not only the teachers and students but also the community. Besides the school, the e-Bario project also provided Internet and computer access to the community through a telecentre.

Prior to the e-Bario project, difficulty was initially faced in identifying an approach to bridge the digital divide as this was one of the first pilot projects in Malaysia. After much research done on the approaches to be used, and taking cues from experiences shared by Anderson, Crowder, Dion and Truelove (1998) and Garcia and Gorenflo (1998), the researchers decided to employ the active Participatory Action Research (PAR) model. Anderson et al. (1998) and Garcia & Gorenflo (1998) stated that the focus should be on the people and the process, and not the technology. Much emphasis is also placed in understanding the context of the social, economic and political systems where the technology will be employed. Anderson et al. (1998) remarked by quoting the Food and Agricultural Organisation of the United Nations (FAO) (1995) that continuous dialogue and consultation with the community should be held to facilitate participatory problem analysis and development planning. These steps taken would ensure information flow, and empower the community to take control of their own development process.

Anderson et al. (1998) further warned that ICT awareness, familiarisation and literacy training have to be provided to the community, or else the telecentre stands the risk of being “alien” to the community, with the community neglecting it and not wanting to own it. The

*Figure 1. Location of Bario and Long Bedian in the State of Sarawak, Malaysia*



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