Expanding Digital Literacy through Localized ICTs
Experiences of PAN Localization Project
2007 – 2010

Working Paper 02

Results of PAN L10n project evaluation research presented in preliminary form for discussion and critical comments

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Acronyms

CLE	Centre for Language Engineering
D.Net	Development Research Network
ENRD	E-Network Research and Development
EUL	End-User Level
ICT	Information and Communication Technology
IT	Information Technology
ITU	International Telecommunication Union
LLL	Local Level Leader
LLLT	Local Level Leader Training
MDGs	Millennium Development Goals
MoE	Ministry of Education
MPP	Madan Puraskar Pustakalaya
NICTSEP	National Information and Communication Technology Strategy for Education in Pakistan
NiDA	National ICT Development Authority
OMg	Gendered Outcome Mapping
PAN	PAN Asia Networking
TOT	Training of Trainer
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme

Acknowledgments

PAN Localization Project

Enabling local language computing is essential for access and generation of information, and also urgently required for development of Asian countries. PAN Localization project is regional initiative to develop local language computing capacity in Asia. It is partnership, sampling eight countries from South and South-East Asia, to research into the challenges and solutions for local language computing development. One of the basic principles of the project is to develop and enhance capacity of local institutions and resources to develop their own language solutions.

The PAN Localization Project has three broad objectives:

- To raise sustainable human resource capacity in the Asian region for R&D in local language computing
- To develop local language computing support for Asian languages
- To advance policy for local language content creation and access across Asia for development

Human resource development is being addressed through national and regional trainings and through a regional support network being established. The trainings are both short and long term to address the needs of relevant Asian community. In partner countries, resource and organizational development is also carried out by their involvement in development of local language computing solutions. This also caters to the second objective. The research being carried out by the partner countries is strategically located at different research entry points along the technology spectrum, with each country conducting research that is critical in terms of the applications that need to be delivered to the country's user market. Moreover, PAN Localizations project is playing an active role in raising awareness of the potential of local language computing for the development of Asian population. This will help focus the required attention and urgency to this important aspect of ICTs, and create the appropriate policy framework for its sustainable growth across Asia.

The scope of the PAN Localization project encompasses language computing in a broader sense, including linguistic standardization, computing applications, development platforms, content publishing and access, effective marketing and dissemination strategies and intellectual property right issues. As the Pan Localization project researches into problems and solutions for local language computing across Asia, it is designed to sample the cultural and linguistic diversity in the whole region. The project also builds an Asian network of researchers to share learning and knowledge and publishes research outputs, including a comprehensive review at the end of the project, documenting effective processes, results and recommendations.

Countries (and languages) directly involved in the project include Afghanistan (Pashto and Dari), Bangladesh (Bangla), Bhutan (Dzongkha), Cambodia (Khmer), Laos (Lao), Nepal (Nepali), Sir Lanka (Sinhala and Tamil) and Pakistan, which is the regional secretariat. The project started in January 2004 and will continue for three years, supporting a team of seventy five resources across these eight countries to research and develop local language computing solutions. Further details of the project, is partner organizations, activities and outputs are available from its website, www.PANL10n.net

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1. Introduction

"The purpose of development is to enlarge people's choices"-
(Mahbub ul Haq, founder of the HDR, 2011)

ICTs can act as a social, economic and human development enabler, and have potential to play a catalytic role in achieving the Millennium Development Goals (MDGs) (Accenture and UNDP 2001, UN ICT Task Force 2003). Using or accessing ICTs is not the development goal per se. The goal is to build capacity of developing populations through access and meaningful use of information (UNDP, 2003) to achieve social and economic empowerment.

The digital divide refers to the gap between those who have access to information and computing technologies (ICTs) and effectively benefit from technology, and those who do not. (Arrison, 2002, Ryder, 2006). Many factors have been identified that are deemed to widen this digital divide, including (i) physical access (being able to find a computer to use), (ii) financial access (being able to afford a computer), (iii) Language savvy (being able to understand English the lingua franca for ICTs), (iv) Education (being able to get benefits from technology), (Keniston 2003, Arrison, 2002, p.2).

The digital divide has often been measured in terms of technological access rather than use of technology and development of relevant content to foster effective use, even though the divides for the latter two are likely to be greater than the access divide. Thus to reduce the digital divide, barriers beyond mere access also need to be addressed to give all users the potential to benefit from ICTs. As reported by the [European Commission, 2009] among the top barriers to ICT uptake are a lack of perceived need; cost (of equipment and/or service); and lack of skills to use ICTs salient issue being the inability to understand English.

Ethnologue (2005) asserts a list close to 7000 languages around the world, off which more than 2600 are spoken in the Asian region, while, English, the lingua franca for ICTs, is understood by less than 15 per cent population of the World (Prado, 2010). Linguistic divide is widely observed on internet as more than 65% of the content on Internet is in English while majority (59.8 percent) of the total global online population comes from non-English speaking zones (Sood, 2002). Thus access to information available in English language is a significant obstacle in learning to use ICTs and empowering people with the rich information available on internet.

Research also clearly indicates that children who study in their mother tongue usually learn better and more quickly, and participate actively in the classroom and demonstrate greater self-confidence than children studying in a second language (Cueto et al., 2009; UNESCO, 2008; Benson, 2004; Woldemikael, 2003).The IEA SITES study (Law et al., 2008), which surveys 22 participating educational systems world-wide, reports that "language [is] an obstacle for schools in ICT-implementation in teaching and learning" where English is not the primary language spoken at home, English being the lingua franca for ICTs.

The usage level of the internet and benefits that can be obtained from using the Internet depends not only upon access to internet but also on the level of English language skills and availability of local content. Research indicates that level of English influence the use and usage level of internet and non-

English speakers like Asia face difficulties to interact with the virtual global community (Lambert, 1996; Horrigan, 2010, ITU, 2010).

Both access to computer and use of internet has increased in the past decade. Yet, according to the statistics presented by ITU (2007, 2011), it is observed that the gap between the developed and the developing countries has widened over the same period of time. For instance, in 2002 the proportion of households with computer in Bangladesh was 0.8, which gradually increased 1.9 in 2007 and 3.1 in 2010. In Nepal, the proportion of households with computer was 0.4 in 2002 and 4.2 in 2010. While, in US, which is a highly developed country, the proportion of households with computer was 59, that increased to 70.2 in 2007 and 72.5 in 2010. These statistics shows that the gap between the highly developed countries and the developing world remains enormous.

Enabling local language computing is essential for access and generation of information, and also urgently required for development of Asian countries. This need was first highlighted in the World Summit on the Information Society (WSIS) meetings held at Geneva 2003 and Tunis 2005, where specific targets were developed focusing on local language software and local language content. They were (i) *n*urture the local capacity for the creation and distribution of software in local languages, (ii) support local content development, translation and adaptation, digital archives, and diverse forms of digital and traditional media by local authorities, (iii) provide content that is relevant to the cultures and languages of individuals in the Information Society, through access to traditional and digital media services and (iv) enhance the capacity of indigenous peoples to develop content in their own languages.

Following similar objectives, PAN localization project has been researching challenges and solutions for the development and dissemination of multilingual computing applications in order to raise digital literacy in the developing region. PAN localization project has been conducted in two phases. In the first phase (2004 to 2007) the local language technology was developed and the indigenous research capacity to develop localized technology was investigated and improved. During the second phase of the project (2007 to 2011), the localized technology was made available to the grass-root populations in eleven participating countries across a diverse use group including students, teachers, farmers, monks, government officials etc. Country partners adopted different models/approaches for disseminating the localized ICTs. For instance, few countries adopted "train the trainers" approach while some focused on providing access to local content through tele-centres and "mobile lady" projects to specifically reach out to rural women.   The countries that deployed ICTs in rural communities and imparted end-user training were: (i) Bangladesh, (ii) Cambodia, (iii) Nepal, (iv) Pakistan, (v) Bhutan, (vi) Sri Lanka, (vii) Mongolia.

2. Evaluation Methodology

One of the fundamental research objectives of PAN Localization project were to study the impact of localized ICTs in enabling access and use of ICTs for the digitally divided population. Specific research objectives including understanding the efficacy of the localized ICTs for enabling online communication as well as access and generation of local language content on the Internet.

Through PAN Localization project, seven partner countries developed and executed outreach programs to deploy localized ICTs in the grass root communities. For the purpose of this study, data was collected from four country partners including Bangladesh, Cambodia, Nepal and Pakistan to determine the impact of localized technology in facilitating access and use of information and communication online.

Surveys were conducted using semi structured questionnaire (attached in Appendix) to directly collect data on the project's effectiveness from the end-users participating in the training programs. This survey questionnaire was first developed in English and as a second step it was translated in the local language to gather response from the selected training participants. 324 trainees who got training under the PAN localization project participated in the survey, off which, 11 respondents were from Bangladesh, 150 from Cambodia, 102 from Nepal and 61 from Pakistan.

These questionnaires were filled by the training participants themselves, about three months after the training program had ended. The data was analysed using Statistical Package for Social Sciences (SPSS) that is presents in the country sections (section 2, 3, 4 and 5) below.

Additional data has been gathered though secondary analysis of various reports developed by the country partners as well as the regional secretariat. The purpose of using secondary analysis technique was to triangulate the project findings gathered through the survey. These reports were also helpful in providing details about the training methodology followed and reporting country level discussion on the research findings evaluated through various evaluation methods such as survey, pre and post-tests, interview etc.   Analysis of the Gendered Outcome Mapping (OMg) Frameworks developed by the country partners were also used in identifying the specific boundary partners' associated outcome challenges and progress markers developed for each project.

3. Findings

The following section presents country specific findings on the impact of localized ICTs in enabling access and use of ICTs for the digitally divided population and efficacy of the localized ICTs for facilitating online communication as well as access and generation of local language content on the Internet.

3.1 Bangladesh

 "The information society is a way for human capacity to be expanded, built up, nourished, and liberated by giving people access to tools and technologies, with the education and training to use them effectively." (Annan, 2002)

The Prime Minister of Bangladesh, Sheikh Hasina Wajid in her party's election (2008) manifesto pledged to develop a "Digital Bangladesh" by 2021. To develop the foundation of digital Bangladesh, the government approved a new National ICT policy 2009. This policy had ten objectives off which, the fourth objective directly related to ICT training stating to "*Expand the reach and quality of education to all parts of the country using ICTs, ensure computer literacy at all levels of education and public service and facilitate innovation, creation of intellectual property and adoption of ICTs through appropriate*

research and development," setting up a strong backdrop to the country's focus and need in developing the ICT sector.

However, for effective engagement of the non-computer literates in this network age, UNDP (2001) asserts that every country needs the capacity to understand and adapt global technologies for local needs. This is further reinforced by Darrow and Saxenian (1986) who insisted that the technology must be understandable to people without specific or academic training. The technology must be fully understandable for the local population, the end-users resulting into possibilities for them to become involved in the possible innovation and extension of the use of the technology. Rural poverty portal reported that in Bangladesh the population is predominantly rural, with about 85 per cent of its 135 million people living in rural areas. Bangladesh bureau of educational information and statistics (2001) reported that the literacy rate of Bangladesh is about 45 percent and 98% of population is Bengali speaking.

Despite the fact that only 2% of the Bangladesh's population can speak English, yet 2009 National ICT Policyonly focused on basic localization issues within the 4-action plan focusing on Bangla keyboard layout and automation of Bangla script. However, the local language computing campaign has been well taken up by the non-profit organizations, activists and volunteers. Through PAN Localization project phase II, BRAC University, researched and developed a number of advanced Bangla language computing applications including Text to Speech System, Optical Character Recognition System, Spell Checker, Lexicon, Language Table for IDNs, Part of Speech Tagset and Tagger, Wordnet (1000 words), Tagged Corpus (5 Million words), and English-Bangla Parallel Corpus.

3.1.1 Localization and Content development

Through PAN Localization project phase II, D.Net in collaboration with BRAC University has developed a rich content database in Bangla language. Since 2003, D.Net has been developing Bangla language content for the rural communities following a six phased methodology namely to form, identify, prioritize, collect, develop and update. Figure 1 below presents the content development methodology followed by D.Net.
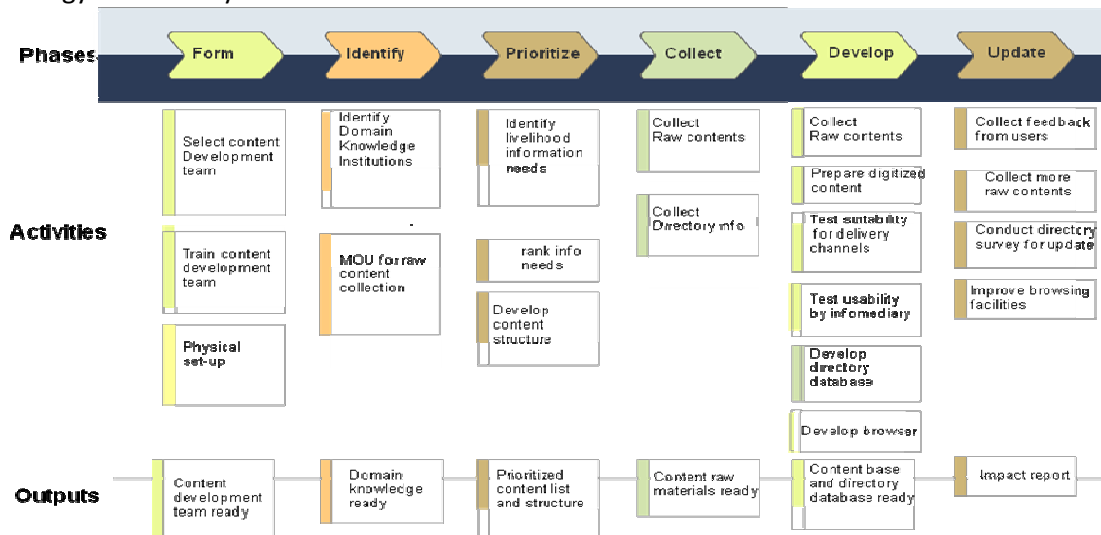
Figure 1: Content Development Methodology followed by D.Net

Based on this approach, in 2003, D.Net conducted a need assessment survey from the rural communities, funded by Research Initiatives, Bangladesh that identified the need for developing livelihood content for rural community Based on the identified needs, D.Net has been trainings a group of content developers to compile the relevant livelihood content, by mainly consulting books published by the government and private sector on the given subject.   The content being developed was validated by domain expert institutes and expert panels.

The content was developed on ten themes of rural livelihood namely, agriculture, education, human rights and legal support, health care, non-farm economic activities, awareness, employment opportunity for rural people, appropriate technology, disaster management and citizen services.   Through PAN Localization project phase II (2007-2011), D.Net developed more than 1000 pages on law and human rights content and added this content into Jeeon-IKB. The content developed during this phase focused on women rights, inheritance issues, land law, family law, local government issues (their structure, services etc.), and domestic and international human right laws.

The developed content was made available at the Jeeon-IKB subtitled 'Information for Life website, www.jeeon.com.bd. Jeeon-IKB is the largest Bangla language website on livelihood issues, providing content through both online as well as offline mode (in form of CD-ROM).

After the creation of the said content, the next challenge was to enable rural population to use the content effectively by addressing their queries related to rural livelihood through the information. Thus an innovative model for enabling rural access to information was developed by D.NET.   D.Net established four Pallitathya Kendra (meaning rural information centre in Bangla) (www.pallitathya.org.bd) which is a tele-center established within the rural community to provide rural populations the information they require.   Every Pallitathya Kendra has one centre manger, two *informediaries* (one male, one female) and one *mobile lady*
.
Informediary is a group of information workers who assist the rural community to quickly find the required information through using ICTs. Mobile-lady is a mobile tele-centre. She moves from door to door with an Eee-PC (Net-book) with internet access and content in the Eee PC, digital camera, and a mobile phone. She may directly search and provide the required content from her Eee PC or respond to the content request through helpline.

Through PAN Localization project Phase II, D.Net conducted training for content developers as well as infomediaries. Content developers were trained to develop locally relevant content while infomediaries were provided training on how to disseminate local language content to rural population. D.Net also conducted refresher trainings to update learning and skill of trainees after six month of trainings. Specific details of the training conducted have been provided in sections below.

3.1.1.1 Training of Infomediaries on Dissemination of Local Language Content
The objective of conducting the training was to train the infomediaries to search relevant local language content for the rural population by using computer and mobile phones.

Fourteen participants representing different telecentres/organizations such as Rural Knowledge Centre (RKC), Coastal Rural Knowledge Centre (CRKC), Dhaka Ahsania Mission (DAM), Global house of Advanced Technology (GHAT), Rural Technology Centre (RTC) Aramnagar Bazar, E-Hut BRAC Net, WARP, Digonter Dak-D.Net were trained through this program.

23 Jan.	• Expectation of the Trainees • Pre Evaluation

24 Jan.	• Training on
	  o Word Processing Fundamentals
	  o Spreadsheet Fundamentals
	  o Internet and World Wide Web Fundamentals
	• Photo Session: Photo Editing
	• Group Formation and Tasks Distribution

26 Jan.	• Telecentre Models • Role of Infomediary and Staffs • Online Searching • Video Show and Movie "Moni" showed
27 Jan.	• Livelihood Content Search • Identification of Jeeon content category and other information sources • Indigenous/Traditional knowledge collection process
28 -29 Jan.	• Mobilization and Marketing • Gender Awareness
30 Jan.	• Field Visit to Pallitathya Kendra (Rural Information Centre)
31 Jan.	• Tour Experience • Post Evaluation of Training • Certificate Distribution and Closing

Table 1: Infomediary Training Plan

Topics covered during the training included word processing, spreadsheet, searching the Internet and photo editing. The training also covered tips on effectively searching livelihood content through Jeeon-IKB (Off-line and online content database in Bangla) website. A complete session on mobilization and marketing that focus on the importance of enhancing mobilization and communication skills. The trainees were asked to role play as an infomediary and an information seeker from the community. In such a way the trainee acquired practical experience of how infomediaries will be asked to provide the requested information.

 Odame (2005) asserts that the existence of ICTs in public spaces does not entail access for all, as on average, women have less income, education, time mobility and face religious or cultural constraints that restrict their access to and use of technology. In this regard, D.Net also included a brief session on "Gender Awareness" within the content search training of the infomediaries. The purpose of this session was to broaden the vision of Infomediaries about ICTs and gender related issues. This session covered concept of gender, construction of gender ideas, the role of gender in development and content, and the gender aspect in the service delivery process. It also covered the barriers that hinder women from receiving and visiting information centers.

A field visit to a nearby *pallitathya kendra* operated by Gandi Ashram Trust in Noakhali District, located in the southern part of Bangladesh was also part of this training. The trainees later visited two villages around the centre and interacted with service recipients of the community. They also observed how the mobile lady worked with the community people and the way she delivered information services and

challenges. A few of the villagers also shared their success stories with the trainees. To gauge the effectiveness of the workshop, D.Net also conducted pre and post-evaluation of the workshop.

A refresher training of the Infomediaries was conducted after six months of the initial training. The basic purpose of the refresher training was to discuss and resolve issues faced in operating Pallitathya Kendra. During this training, the infomediaries presented the challenges in using the helpline , offline and online formats of Jeeon-IKB for content dissemination. A special session was also organized during the training on how to operate a telecentre/pallitathya kendra in which the participants discussed common types of information usually requested by rural community; issues in online and offline content searching; and the most appropriate channels for content delivery.

Figure 2: Infomediary Training on Dissemination of Local Language Content

The refresher *training* also included a session of effective ways of motivating rural community on content access. Three different motivational processes were discussed during the session. They were organization of seminars, meeting at courtyards and meeting/discussion with Union Parisad to attract the rural community members towards telecentres.

Pre and post survey was conducted on content dissemination for Infomediaries to measure the efficacy of the training program. Prior and after the content dissemination training covering fundamental concepts related to content and its development, identification of various sources and channels to acquire relevant contents trainees were asked to rate the clarity of their concepts regarding the topics discussed. Based on their self analysis, the following graph presents their responses collected through the survey.
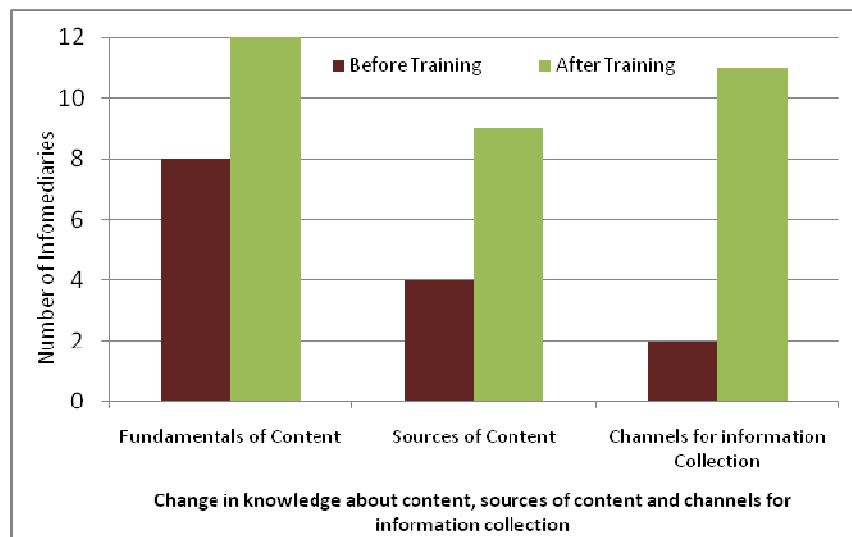
Figure 3: Change in Infomediaries' Knowledge about Sources of Content and Channels for information Collection

A significant change in knowledge about fundamentals of content, sources of content and channels for information collection is observed as shown in figure 3 above. The graph shows that eight of the fourteen participating infomediaries were familiar about the fundamentals of content before training while after the training conclusion, all the participants were confident that they were familiar about the fundamental concepts of content and its development. Regarding prior knowledge about sources to search for content only four infomediaries reported they had some understanding in this regard; however after the training, nine infomediaries reported that they now had good understanding of the required sources. The other significant finding has been in terms of knowledge regarding various channels for information collection.

3.1.1.2 Training of Content Developers on Bangla Content Development

Five day long training on content development was conducted by D.Net to train fifteen participants including telecentre practitioners and government officials from different departments such as Dhaka Ahsania Mission, World Net, Dhoritry Samaj Kallyan Shongha, Digonter Dak, Gandhi Ashram Trust, Shariatpur Development Society, Ghashful, Socio Economic Development Association, Participatory Advancement Social Service and Darpan Samaj Unnayan Kendro and Agricultural Information Services, Directorate of Agricultural Marketing on local language content development.

26 Mar.	• Expectations of the Trainee • Pre Evaluation • Introduction to Content Development • Tips for writing report/article • Existing Content Development Methodologies
27 Mar.	• Recapitulation • Introduction to CMS • Detail training on posting articles in Joomla (including typing in Typing in Unicode system) • Browsing Joomla based website
28 Mar.	• Recapitulation • Introduction to wiki and Bangla wiki • Introduction on how to write in wiki • Posting article in Bangla wiki using animation and video • Practicing • Browsing different types of wiki site
29 Mar.	• Recapitulation • Introduction to blog • Training on creating blog account in two blog sites and posting articles • Browsing blog sites • Writing article
30 Mar.	• Recapitulation • Learning from the Training session • Post Evaluation • Action/ Strategy plan finalisation • Certificate Distribution • Vote for Thanks

Table 2: Training Plan for Content Developers

On the first day of the training, content developers focused on report writing. On the same day an overview of the content development in Bangla and existing content development methodologies was also provided to the trainees.   Training to use content management systems, Wikis and Blogs was also included in this session. Specific training was conducted on the characteristics and layout of Avro, and Joomla. Participants were also trained on writing and posting articles in Joomla based websites. The trainees practiced Joomla by creating its account. All trainees created account in Bangla Wikipedia. They learned how to search topics, edit topic, post articles, insert images, and create external and internal

links in Wikipedia. The participants were also trained on creating Blog posts in English and Bangla language. They were further trained on creating tags to facilitate searching, and raising questions to acquire help. The participants practice its use by creating accounts on www.somewhereinblog.net and biggani.com. They also updated their profiles and wrote their views on above-mentioned blogs. On the last day of the training program before certificate distribution ceremony, the participants finalized and shared their strategy plans for content development. D.Net also conducted pre and post evaluation to assess the effectiveness of the training program.

After six months, D.Net conducted refresher training for the content developers to discuss potential solutions for the issues that content developers were facing in uploading content. Nine trainees from different telecentres and government institutes like World Net, Digonter Dak, Gandhi Ashram Trust, Shariatpur Development Society, Participatory Advancement Social Service, Darpan Samaj Unnayan Kendro, Agricultural Information Services and Directorate of Agricultural Marketing attended this training and shared their field experiences. During this session.

Figure 4: Workshop on Local Language Content Development (25-30 March 2008)

D.Net revised the curriculum of CMS, Joomla, Wikipedia and Blog. D.Net showed the www.wikimedia.org and desherkhobor.net to raise the interest of the trainees for content development specifically for posting local news at the web. The project coordinator initiated the development of an email group to instantly share their activities in the field.

The following sections presents the responses of the pre and post evaluation survey conducted by D. Net, before and after conducting the training on content developer for the Palittathaya Kendra content developers.

The first module of the training session covered basic concepts of content development including discussions on types of content, the content development life cycle, content development methodologies, content development tools and some principles of effective content development. The following graph presents the responses of the training participants regarding their knowledge gain regarding various sources of content, different types of content including audio and video content, online and offline content and the steps of content development.

The participants responded by choosing either of the two options; clearly understand the topic, ii) partially understand the topic. The results are shown in the graph below. The graph shows that the training session helped raise the knowledge of the content developers regarding the content development life cycle. Data also presents the fact that although trainees had some prior knowledge related to the content development life cycle and various sources of the content; however this training helped in further enhancing their knowledge.
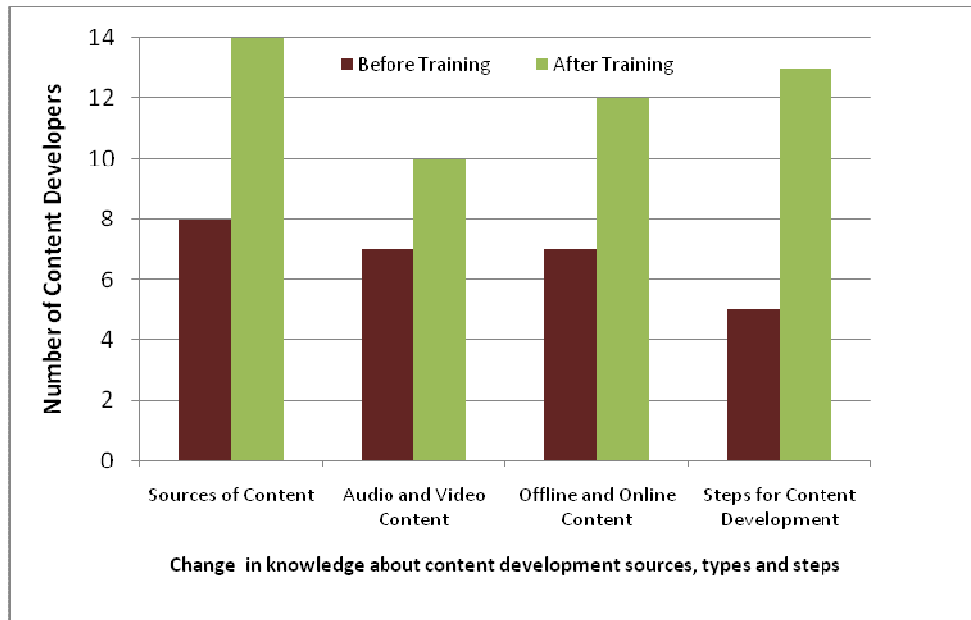
Figure 5: Change in Content Developers' Knowledge about Content Development Sources, Types and Steps

When surveyed at the beginning of the training session, off the fourteen training participants, eight participants knew about various sources of content, seven clearly understood about the differences between various types of content while only five participants were familiar with the steps for content development. When surveyed after the training session, all of the fourteen trainees reported that they clearly understood the different sources of acquiring content; eleven reported that they had a clear understanding about the various types of content and thirteen of the trainees reported that they now clearly understand the different steps involved in content development.

Regarding the ability to assess local content need from the community, prior to the training, nine participants considered themselves able to identify the local content requirements however after the training 13 out of 14 participants considered themselves able to assess the local content requirements.
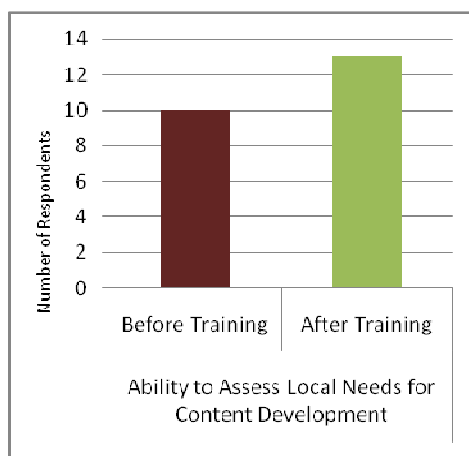
Figure 6: Ability to Assess Local Content Needs

Another major focus of the training program was to train the participants to use different Content Management System (CMS) for content development and search. Three CMS namely Joomla, Wiki and Blog were introduced in the training sessions. Through pre and post test survey, it was assessed that if the participants had any prior knowledge about CMS. Further questions were asked to investigate if the sessions had enhanced their prior knowledge by introducing them with new technology. The results of the survey are presented in figure 7 below.
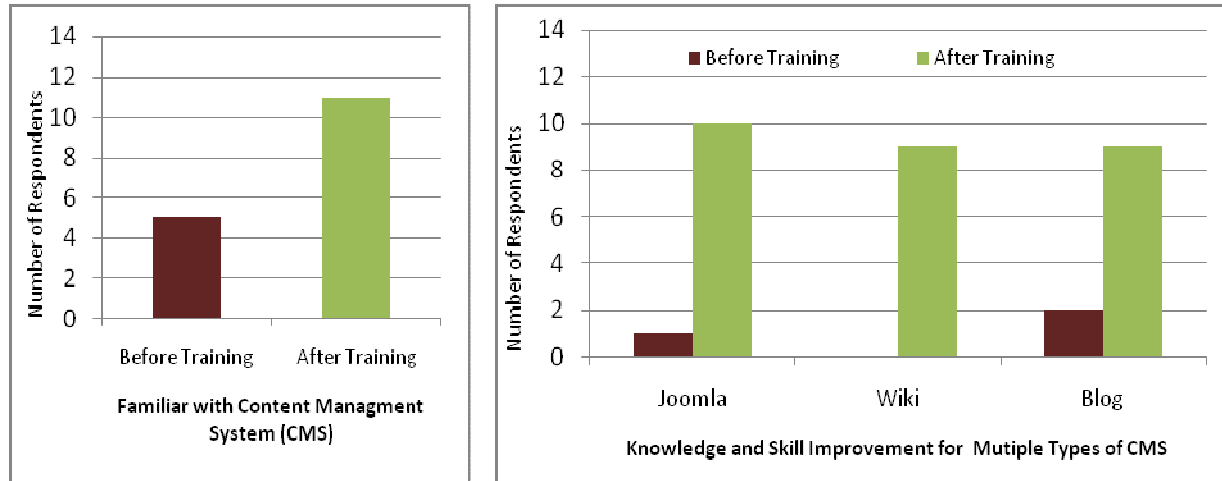
Figure 7: Content Management System and Its Types

The findings presented in figure 7 above depict that the training helped in improving the knowledge of the participants about various CMS. Results have shown that only 5 participants had some initial understanding of content management systems among whom only one participant was familiar with Joomla and two were familiar with Blog. This is important to mention here that the trainees who were familiar with CMS used English based Joomla and Blog. And, they never used Joomla, wiki and blog in Bangla language. After training, the 10 trainees out of 14 reported that they were familiar with content management system. During training, the trainees got hands on experience with Joomla based website jeeon.com.bd and biggani.com. They also practiced wiki and blog in Bangla. Most of the respondents reported, "by using Joomla, wiki and blog in Bangla language, content can be developed quickly" and "through this we can focus on providing our indigenous knowledge to our future generation".

Based on the data presented above, it can be concluded that the training significantly helped to raise the learning and knowledge of the training participants regarding content development.

3.1.2 Language and Information Access and Use
In order to study the impact of the PAN Localization project in enabling access and use of ICTs for the rural population trained to use localized ICTs, 11 of the 14 trainees, trained through the program were surveyed. The results of this survey are given one by one in sections below.

In order to baseline the language competence of the trainees, they were firstly asked to rate their reading and writing skills in English as well as the local language (Bangla). Their self assessment to this question would determine their core language skills. This response would also determine that if they are skilled in reading and writing in a certain language only then they would be able to effectively use the software and understand the instructions and content in that language.

Following this premise, trainees were asked to rate their skill levels for reading and writing in English as well as Bangla on a 5 point Likert scale having the five levels; i) poor, ii) fair, iii) good, iv) very good, v) excellent. Their responses are graphically presented in the figure below.
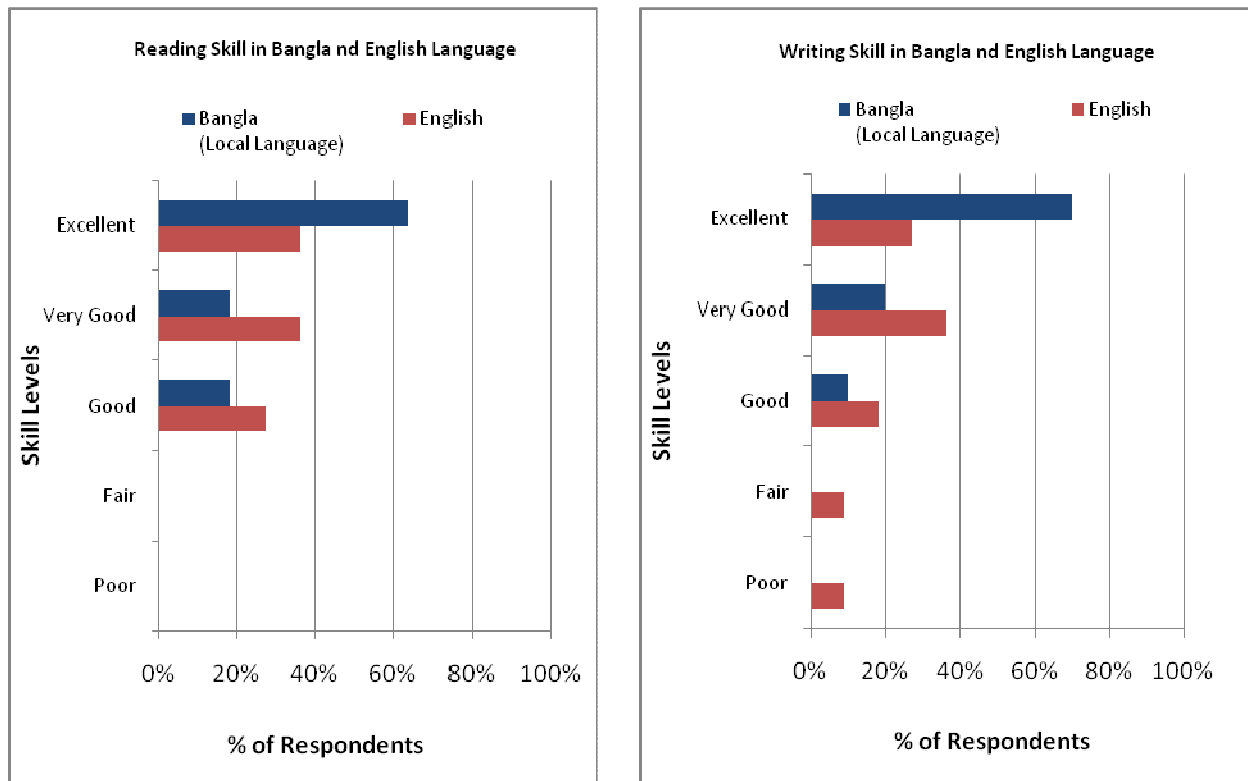
Figure 8: Comparison of Reading and Writing Skills of the Respondents

The graph given above shows that majority of the respondents (64%) have rated themselves as excellent in reading Bangla language while only 36% of respondents have rated themselves as "excellent" in reading English. While rating the general writing ability, again, 70% of the respondents have rated themselves as excellent in writing Bangla language whereas only 27% of the respondents have rated themselves as excellent in writing English language.

These figures thus present a significant difference in the reading and writing skills of the trainees in both the languages. On average, almost 67% of respondents have confidently rated their reading as well as writing skills in Bangla language as Excellent, while only 32% have rated both the reading as well as writing skill in English language as excellent. It is also worth mentioning that 9% of respondents consider themselves poor in writing English language whereas none of the respondents rates them on poor level in reading and writing Bangla language. Consequently, the results presented in figure 8 indicates that community in general have better language skills in the local language as compared to any other foreign language. Thus these basic finding, imply that provision of localized ICTs provide better opportunities for the rural non- English speaking and understanding population to access information.

When questioned regarding the preference of language for online communication (including receiving emails, writing emails and instant messaging), the results have been tabulated in table 3 below.

Online Communication	Bangla (Local Script)	Bangla (Roman Script)	Bangla and English	English	Total
Receiving Emails	40%	0%	40%	20%	**100%**
Writing Emails	0%	0%	56%	44%	**100%**
Chatting	0%	0%	43%	57%	**100%**
Average Percentage	**13%**	**0%**	**46%**	**41%**	**100%**

Table 3: Language Preference for Online Communication

Data shown in Table 3 above present that, on average only 13% of the respondents prefer to communicate solely in Bangla language while 46% of the population, prefer to use both Bangla as well as English language while communicating online. Although an important percentage (40%) prefer to receive emails in Bangla, yet none of the respondents prefer to write emails and chatting in Bangla language alone.

When questioned about the preferred language to access online content, a significant percentage (62%) of the respondents opted for English language to access online content while 38% opted for "Bangla and English" category. None of the respondents preferred to access online content in Bangla language alone. One fundamental reason for the low percentage of trainee preference to access online content in Bangla could be the relatively low percentage of the availability of content in local language.
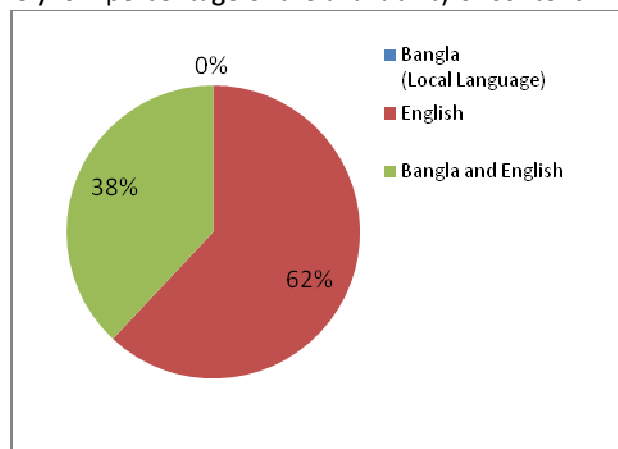
Figure 9: Language Preference for Accessing Online Content

Table 4 below shows the results about language preference for developing online content. On average, 48% of respondents prefer English language to develop content while alike percentage of respondents (45%) prefers to develop online content in Bangla language. On the contrary, a higher percentage (57%) preferred Bangla language for blogging while only 29% opted English for blogging. The table shows another interesting finding that none of the respondents preferred to develop website in both English and Bangla language. While only 14% of the respondents preferred both English and Bangla language for blogging.

Online Content Development	Bangla (Local Language)	English and Bangla	English	Total
Developing Websites	33%	0%	67%	100%
Blogging	57%	14%	29%	100%
Average Percentage	**45%**	**7%**	**48%**	**100%**

Table 4: Language Preference for Developing Online Content

This is worth mentioning that 5 respondents created their own blogs after the training and all these blogs were in Bangla language as: i) http://prothom-aloblog.com/, ii) http://www.somewhereinblog.net/blog/tanzin2008/28783455, iii) http://www.prothomalo.com/ and iv) somewhereinblog.net/blog/kibriyarafiblog. Among them most of the respondents reported that they sent new material on a post at least once in a month.

The above-mentioned findings about the language preferences for online communication, content access and content generation illustrated that a significant percentage of the respondents preferred English language for online communication, content access and generation. Fewer percentages preferred to communicate online, accessing and generating content in both English and Bangla language. One factor for these findings could be the educational profile of the respondents. However, majority of respondents prefers English language for content access, communication and content generation.

3.2 Cambodia

The first "National Information Technology Awareness Seminar" was organized in September 11 2001 which was hosted by the Royal Government of Cambodia's National ICT Development Authority (NiDA) with the support of UNDP Cambodia, APDIP, and UNESCO. In its opening ceremony, the Prime minister "Samdech HUN SEN" of the royal Government of Cambodia emphasized on the importance of localization. He said "*Language is an important vehicle to promote development and IT transfer. The use of IT in Khmer language will open access to millions of people who will be able to benefit from these technological developments. Therefore, standardization of Khmer language in computers will improve efficiency and capability of this sector and facilitate communications at all levels. I suggest to the Authority for ICT Development to pay considerable and immediate attention to this problem".*

Cambodian government also focuses on drafting ICT policy and relevant ministries are preparing the policy drafts. The draft of "Information Communication Technology Policy of Cambodia" (available on http://www.unapcict.org/ecohub/resources/cambodias-national-ict-policy-draft) includes policies on legal and regulatory frameworks; human capacity development; standards, software and content; infrastructure; and enterprise development. It has written in the draft that to achieve the policy on standards, software and content the government will: (i) "*promote the education, training and implementation of Free and Open Source Software (FOSS) in ICT in all areas where the implementation can be seamlessly and reliably undertaken; (ii) develop and adopt a standard Unicode-based Khmer characters system to be adopted in all ICT applications and systems; and (iii) promote the use of local language in ICT applications for the rapid development of ICT".*

3.2.1 Training on Localized ICTs

In Cambodia, PAN localization project was carried out by Institute of Technology, Ministry of Education, Youth, and Sports (MoEYS), and National Information Communications Technology Development Authority (NiDA). The training on Khmer Free Open Source Software (FOSS) application was undertaken by NiDA from Year 2006 to 2008. This initiative was aligned with the national ICT goals and objectives of the Cambodian government and NiDA is the key government organization that is dedicatedly working to promote and regulate the ICT services in the country. The aim of the "Khmer FOSS Training program" carried out by NiDA was to enhance ICT skills of citizens and to improve their daily living conditions. Through PAN Localization project, this training program was conducted in eight different provinces of the country primarily selected on the basis of availability of electricity. These provinces included: (1) Kampong Speu, (2) Kampong Thom, (3) Kampot, (4) Koh Kong, (5) Preah Vihear, (6) Pursat, (7) Utdor

Meanchey, (8) Krong Kep. These training were conducted at Regional Teacher Training Center (RTTC) or a Provincial Teacher Training Center (PTTC), Provincial Vocation Training Center (PTC) or a University that was chosen because of its central location within the province. To conduct the training NiDA was established a fully equipped computer lab at the training center.

NiDA focused on it objective of providing "ICTs for all". Therefore, the training program incorporated a diverse group of trainees. The training participants included government officials (local official, provincial government official, national officials); the training providers (school teachers, university teachers, vocational training institute, and teacher training center); the school students; the IT industry such as those in the computer shops to take on the role of troubleshooters; the NGOs working on IT applications; and the internet cafe owners. NiDA's objective to train government officials and students was to make them able to use computers for official work and communications. The intention to train Training providers was to give them exposure on how to deliver lectures electronically and generate electronic coursework. The Internet cafe owners were trained to guide cafe visitors and raise awareness in community about FOSS. The purpose to include NGOs was to help community to use Community Information Centers and in creating awareness about ICTs. In few provinces, the military and police personnel also participated in FOSS training conducted by NiDA. This is worth mentioning that NiDA assembled this diverse group under one platform and imparted trainings. The figure below presents the training program conducted at Kampot province.

Figure 10: Training In Kampot Province, 3-7 November 2008

Training program adopted the train-the-trainers format. At first stage, NiDA trained its partners. At second stage, NiDA conducted the training and its trained partners assisted the NiDA team. At third stage, the trained partner conducted the training with the support from NiDA team. In all those trainings NiDA also provided training material developed in Khmer language. Participant to computer ratio was ensured to be 2:1. NiDA also established a Help Desk to support the trainers and users in their training. Following this training methodology, 1,366 participants were provided hand-on training to use localized applications. The training courses conducted by NiDA included the following modules.
Module 1: Linux administration training and certification, Linux administration teachers training including advanced use of user interface
Module 2: Training of trainers who will impart FOSS end-user training
Module 3: Development of training materials in Khmer for Linux Administration and a Linux user interface (KDE)

In Linux Administration training, NiDA trained 90 participants from different ministries. The duration of this training was 6 weeks and almost 30 hours per week. For training the trainers to impart FOSS – end user training, NiDA trained 600 participants. The duration for this training was almost 20 hours. The teachers who were familiar with computer and had little expertise before training received training for trainers modules. The teachers who did not use computer before training received basic training on word processing and spreadsheet.

The FOSS modules included open office (Calc, Impress, Word Processing), use of internet, Mayura, Mekala, Suse, and Unicode. Three provinces, Kampong Speu, Kampong Theu, and Kampot had a full suite of training modules. Five provinces, Kokong, Preah Vihear, Pursat, Utdor Meanchey and Krong Kep were given the training only on "Calc".

NiDA used an opinion based survey to see how far was the project successful in making trainees' able to use ICT is their routine official and personal work, for example my using FOSS government officials and students are able to use computers for official work and communications. The data was collected from 8 provinces and from 440 trainees out of 1336 at the end of the training program. Among 440 participant, 68% were government officials, 15% were belong to police sector, 6% of respondents were training providers, 5% were from education sector, 2% were from finance sector and rest of the percentage were belong to health, interior.

In this regard, when asked from the trainees to report the extent to which the FOSS modules (open office (Calc, Impress, Word Processing), use of internet, Mayura, Mekala, Suse, and Unicode. 403) helped to accomplish their work, 45% of the respondents replied that the Foss module helped them to accomplish their routine tasks and 29% of respondents considered that FOSS applications is "very helpful" in accomplishing their routine tasks. While only 3% of the respondents reported that the FOSS applications helped them a "little" to complete their routine tasks. The data illustrated that training program significantly helped trainees to accomplish their routine tasks as shown in figure 11 below.
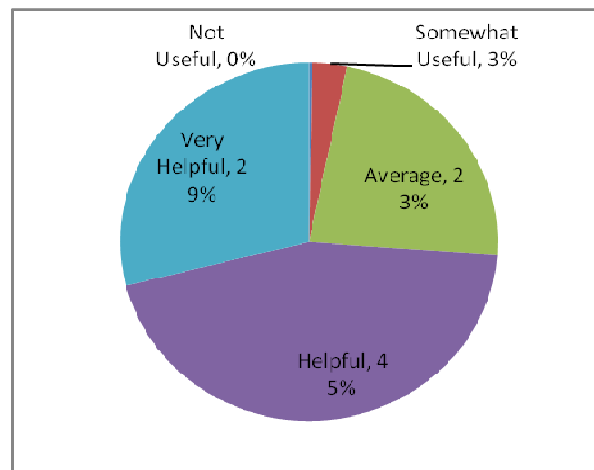
Figure 11: FOSS Module Facilitated In Accomplishing Routine Tasks

Similarly, when asked that to what extent the training satisfied their need and expectations, majority of the trainees (211) reported that they were "very satisfied" from the training program and 146 trainees reported that they are "satisfied" from the training program. 58 trainees were neither satisfied nor

dissatisfied from the training program. While only 4 trainees reported that their expectations from training were not fulfilled.

According to the team lead of the training program, in order to conduct a FOSS training program successfully, "*Learning objectives and instruction design must match with the curriculum and level of trainee and the trainer. In our target group, the levels of trainees were different. Thus, we adopted a strategy to make the training session more effective in learning aspect. The persons who had little expertise in using computer were allocated the seats with the persons who were not familiar with computer. Therefore, we allowed trainees to take some of the roles of the trainers during training sessions. He or she for example can be made to perform as the class assistant in some of the training sessions. This brought positive outcomes.*" Table 5 below shows that the need and expectations of the trainees from training program was fulfilled except 4 trainees out of 419.

Training Locations (Provinces)		Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Very Satisfied	Total
Sr. #	Name						
P 1	Kampong Speu			2	25	15	**42**
P 2	Kampong Thom			5	21	31	**57**
P 3	Kampot		2	18	21	18	**59**
P 4	Koh Kong		1	6	30	8	**45**
P 5	Preah Vihear		1	7	39	19	**66**
P 6	Pursat			4	17	22	**43**
P 7	Utdor Meanchey			3	47	19	**69**
P 8	Krong Kep			13	11	14	**38**
Total		**0**	**4**	**58**	**211**	**146**	**419**

Table 5: Training Satisfied the Need and Expectation of Trainees

The data illustrated that a majority of the trainees from every province were satisfied from the training program. As in Kampong Speu, 25 trainees out 42 reported that their needs and expectations were somewhat satisfied from the training program and in Kampong Thom 31 out of 57 trainees were "very satisfied" from the training program and so forth. However, a significant number of trainees reported that training satisfied their needs and expectation from the training program.

The team lead of the NiDA "Noy Shong" also shared a strategy which led them to deliver a successful training, he stated, "we used *and integrated "old wisdom" in the delivery of the training especially for new learners. We created a comfortable environment for new* trainers through pep talks. We done this to motivate them and overcome their fear from technology. For example, we said to trainees that t*iger and monkey do not talk but rural people always learn, how, because you can communicate. So, why are you scared? We observed a change in confidence among participants after hearing* this. When the participants start talking with others, they begin to learn and make the first steps. The motivating statements which we used for the staff and for potential trainers was: (i) d*on't die with your knowledge; (ii) two heads are better than one; (iii) you have short arm one cannot hold the mountain alone; and (iv) poor can help but lazy cannot help.*"

Based on the above presented findings it can be concluded that the NiDA training program was successful as high percentage of trainees were using Foss application in their routine tasks.

3.2.2 Language and Learning ICTs

In order to study the impact of the PAN Localization project in enabling access and use of ICTs for the population trained to use localized ICTs, 150 of the 1336 trainees, trained through the program were surveyed. Among them, 87 respondents belonged to University level (13 grade onwards), 54 had higher secondary (11-12 grade) qualification, 8 had secondary education and only 1 hold primary level of education. This survey was conducted after few months of training program.

The survey included the questions about the reading and writing ability of the respondents and language preference for online communication and content access. The results of this survey are given one by one in sections below.

3.2.2.1 Reading and Writing Skill

Reading and writing ability is an imperative aspect in learning ICTs and even for general education. To assess the Cambodian trainees ability to read and write English and Khmer, the trainees were asked to rate their reading and writing ability on a 5-point scale for Khmer (local language) and English. 150 trainees took part in this survey. The findings are given in figure 3 and table 4 below. Figure 12 below shows the self-assessed reading and writing skills of the trainees. The graph depicts that a higher percentage of the respondents 92% rated themselves as excellent in reading Khmer whereas only 1% of the respondents rated themselves as excellent in reading English.
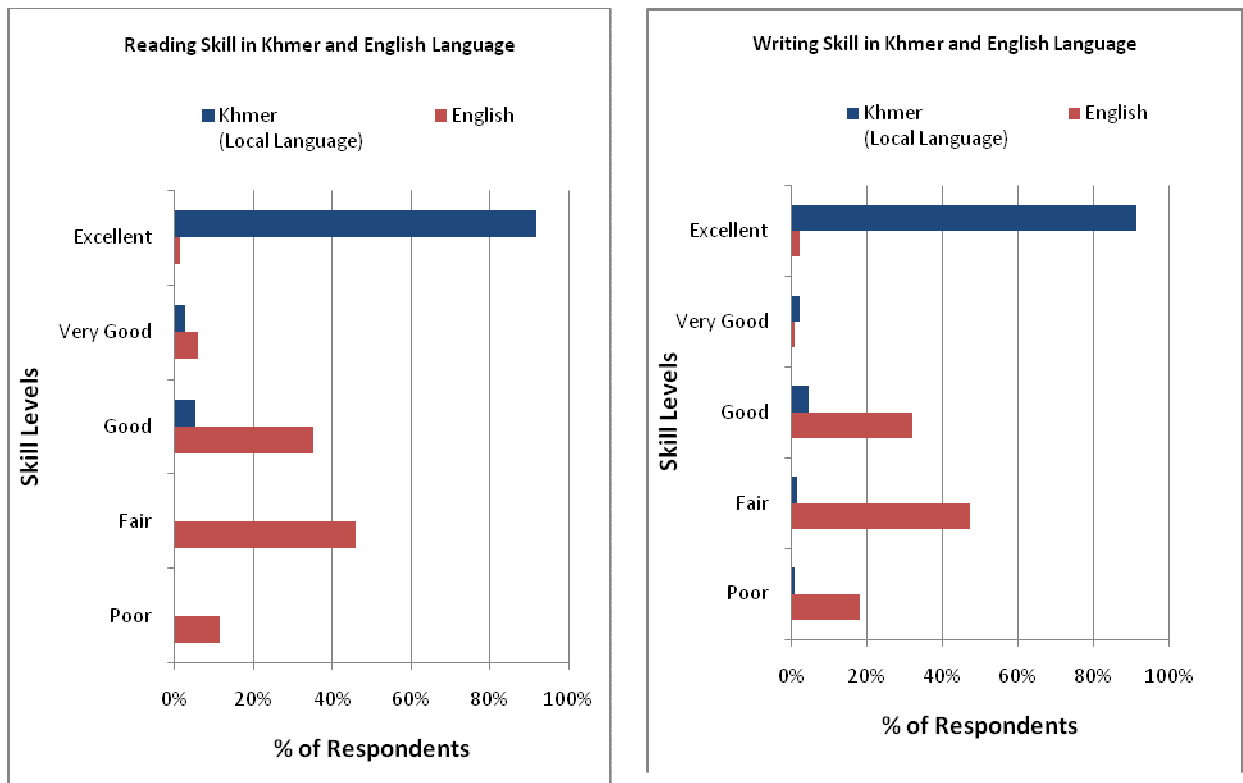
Figure 12: Comparison of Reading and Writing Skills of the Respondents

The data shows that most of the respondents rate them at fair level in reading and writing English, 46% in reading and 47% in writing. This is interesting that only 1% of the respondents choose fair level for writing Khmer but no one rate them at fair level in reading Khmer language. The graph shows another interesting finding that 11% of the respondents rate themselves as poor in reading and 18% in writing English while 1% of the respondents are at poor level in writing Khmer language and none have rated

themselves poor in reading Khmer language. Thus, the self-assessed rating of the respondents shows that respondents consider them more sharp and capable in reading and writing Khmer language as compared to English.

Table 6 below represents a cross tabulation of the trainees' educational qualification and their average reading and writing skill rating on a five point likert scale. Overall, 46% of the respondents rate them at excellent level in both reading and writing Khmer language while only 1% of the respondents rate themselves as excellent in both reading and writing English language. This is a remarkable difference. It is further analyzed that regarding the reading and writing skills in local language, majority of the trainees rate their skills as either fair (23%) or good (17%). This is also significant that only 7% of the respondents considered them poor in reading and writing in English language while none of the respondents rated themselves as incapable to read and write in Khmer, the local language.

Educational Levels	Reading and Writing Skill Levels										
	Excellent		Very Good		Good		Fair		Poor		..
	English	Khmer	English	Khmer	English	Khmer	English	Khmer	English	Khmer	Total
Primary	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Secondary	0%	3%	0%	0%	0%	0%	1%	0%	1%	0%	5%
Higher Secondary	0%	17%	1%	0%	3%	1%	11%	0%	4%	0%	36%
University	1%	26%	1%	1%	14%	2%	12%	0%	2%	0%	58%
Total	1%	46%	2%	1%	17%	3%	23%	0%	7%	0%	100%

Table 6: Analysis of Reading and Writing Skill Levels with Educational Levels

Hence, the findings of the self-assessed reading and writing skills of the trainees illustrated that it is always easy to read and write in mother language or local language as compared to any secondary or foreign language. Thus, local language would certainly help to learn the ICTs more effectively as compared to any other foreign language.

3.2.2.2 Language and Communication and Content Access

Table 7 below shows the results of the survey about language preference for online communication. The average percentage of language preferences for online communication shows that 91% prefer to receive email in English language, 53% prefer English language for writing emails while only 45% of the respondents prefer to chat in English thus making up 63% of the total population preferring only English language for online communication. The second highly preferred category that respondents opted for online communication was "Khmer and English". 28% of the respondents prefer both Khmer and English language to communicate online. The data illustrates that overall most of the respondents highly prefer English language for writing emails 72% (53% + 19%) and chatting 68% (45% + 22.5%).

Online Communication	Khmer (Local Script)	Khmer (Roman Script)	Khmer and English	English	Total
Receiving Emails	6%	0%	3%	91%	100%
Writing Emails	6%	4%	38%	53%	100%
Chatting	10%	0%	45%	45%	100%
Average Percentage	7%	1%	28%	63%	100%

Table 7: Language Preference for Online Communication

Figure 13 below represents the language preference for online communication with respect to educational level. The majority of the respondents 91 (out of 153 = 65%) had completed university education. Thus off the 63% of population preferring to communicate online in English language, 41% are university degree holders and 21% of the respondents belong to higher secondary educational level.

The second highly preferred category was "Khmer and English" as 28% of the respondents prefer Both Khmer and English for online communication. Among them, 21% belongs to higher educational level. Only 7% the respondents prefer to communicate online in Khmer. However, It is noteworthy that a higher percentage of the respondents 77% (63%+14%) prefer to communicate in English language while only 21% (7% + 14%) prefer Khmer for online communication.
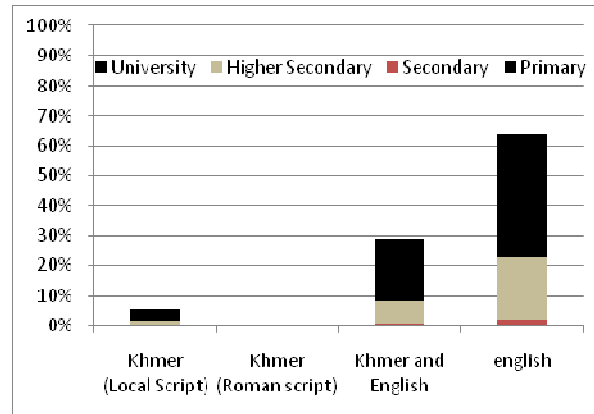
Figure 13: Analysis of Language Preference for Online Communication with Educational Level

Figure 14 below shows the language preference for accessing online content. Total 81 trainees responded to the question about the language preference for retrieving online content. Among 81 respondents, 48 (59%) have university degree, 29 (36%) have higher secondary, 3 (4%) have secondary and only one (1%) have primary. The graph shows that majority of the Cambodian respondents 49% prefer English language of which 32% holds university degrees. The pie chart shows that there is no remarkable difference between the categories of "English, 49%" and "Khmer and English, 42%". Overall, a higher percentage of the respondents almost 70% (49% + 21%) opt English language for searching information on internet. This is significant to mention here that among 70% of the respondents; almost 45% belongs to higher educational level (University). This finding reveals that highly qualified person feel more comfortable to read and retrieve content in English as compared to Khmer. However, this is also noteworthy that 42% of the respondents are interested to access online content in both Khmer and English of which majority of the respondents 25% belongs to higher educational level (University). The graph shows that only 9% of the respondents prefer Khmer for accessing information available on internet and majority of the respondents 5% belongs to higher secondary educational level.
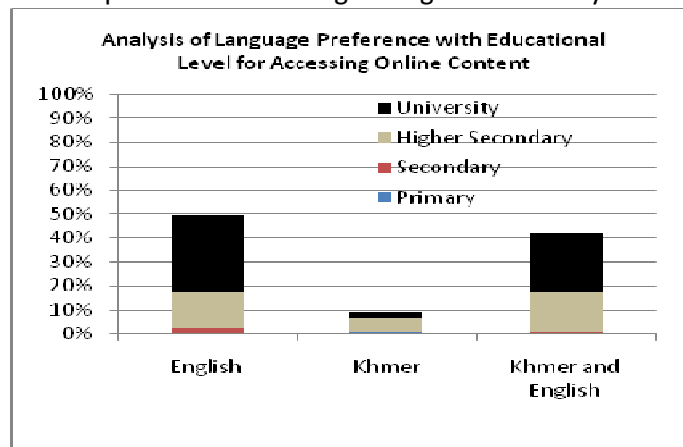
Figure 14: Language Preferences for Accessing Online Content

The results presented in sections above showed that majority of highly educated persons considered them more competent in reading and writing Khmer as compared to English as shown in figure 5 above. While a significant percentage of the higher educational degree holders prefer English language for online communication and accessing online content. Thus the findings reveal that educational qualification significantly influence people's choices for communication and accessing content online, as highly qualified respondents preferred English language for accessing online content and online communication, whereas less qualified preferred local language to for both communication and accessing content. These findings also illustrating that localized ICTs are more beneficial for less qualified persons as compared to highly qualified.

3.3 Nepal

Nepal has a diverse culture with more than a dozen ethnic groups, speaking a multitude of different languages and local dialects. Major languages of Nepal are Nepali (70%), Maithili (5%), Bhojpuri (3%), Tharu (4%), Tamang (3%), Newari/Nepal Bhasa (3.6%), Magar (2.4%), Rai (2.8%), Awadhi (2.5%), Limbu (1.5%), and Bajjika (1%). Nepali is the official language written in Devanagri Script. The literacy rate in Nepal is almost 54% which is even lower in rural areas that forms about 85% of the total population. Only 16% of the over-all population understands English language.

The Government of Nepal has been working to transform Nepal into a knowledge-based society and creating ICT-based industry for more than a decade. In 2000, Nepal government launched the country's first Information Technology (IT) Policy which has three clear objectives:
1) To make information technology accessible to the general public and increase employment through this means.
2) To build a knowledge-based society
3) To establish the knowledge base industry

An action plan was also suggested to fulfill the objectives of the national information technology policy 2000. The action plan was dived into six sections as: participation of private sector in infrastructure development; Infrastructure development; Human Resource Development; Dissemination of Information Technology; Promotion of E-commerce and so forth; and Facilities. It seems that the government of Nepal was aware with the concept "ICT 4 ALL" at that time as policy has a relevant clause under the section of human resource development "*A long-term programme with a slogan "computer education to all by 2010 A.D." shall be formulated.*" The IT policy also has the clause regarding the significance of Nepali language. Under the section dissemination of information technology, the policy asserts, "*Content shall be prepared to enhance materials with Nepali materials on the Internet to promote Nepalese arts and culture and to develop rural areas.*"

Following the IT Policy, In 2003, High Level Commission for Information Technology (HLCIT) successfully launched and carried out three specific projects: the rural telecenter, the software outsourcing/ BPO and the it park/e-governance. Rural s was a step to make the information accessible to general public by providing access to internet and computer. The Rural Telecenter concept in Nepal was carried out by ICT for Development (ICT4D) program under the United Nations Development Program (UNDP) with the Ministry of Science and Technology (MoST). The project started by establishing 15 telecenters in July 2002. At present, 117 telecenters are providing live services to the rural community in the different parts of the country. With the passage of time through different project results, the organizations working for rural telecenters realize the importance of the participation of local community, sustainability, equal access and local content. Therefore, many organizations are working on these aspects.

Madan Puraskar Pustakalaya (MPP) and E-network Research and Development (ENRD) are the non-profit organizations working for the rural empowerment by providing people access to technology and access to information through s since 2000 and 2004 respectively. Under PAN localization initiative, MPP developed a number of localized software as NepaLinux Spell Checker, Grammar Checker, Parallel Corpus (100,000 words), Tagged Corpus (80,000 words), Lexicon (37,000 words), Optical Character Recognition System (prototype) and Language Table for IDNs. MPP also deploy these localized software to rural community with collaboration of ENRD.

3.3.1 Training on Localized ICTs

Madan Puraskar Pustakalaya (MPP) and E-Network Research and Development (ENRD) conducted trainings into two phases. The phase one (April-September 2008) focused to disseminate localized software to end-users by providing trainings on Nepalinux and open source software. The second phase (October 2008 to March 2009) included advance training on creating digital content using localized software and to increase awareness about the achievement of PAN localization training by organizing workshops.

In the first phase of the training program, MPP and ENRD trained rural community on localized technology in five different locations of the country. The locations included Danda Gaun in Rasuwa district, Jhuwani in Chitwan district, Tolka in Kaski district, Nangi and Shika in Myagdi district. The training program focused on farmers, women, students, youth, and many other groups. Training program executed by MPP and ENRD during this phase based on "train the trainers" format. The training was conducted successfully in three stages. At first stage, s operators from each of five selected locations were trained. Then, each of these 5 trainers managed Local Level Leader training (LLLT) in their respective centers to 5 other persons who belongs to different groups such as teachers, students, youth etc. Subsequently, these 5 participants managed the third level training for their same group in each center. Thus, at the completion of the project, 31 end-users's were trained in one center and 155 in all centers. The detail about each layer of training is being discussed one by one in sections below.

The First Layer Training focused on the "Training of Trainer (TOT)", which aimed to develop local trainers in the project areas. MPP in collaboration with ENRD trained 5 telecenter operators from 25th November to 4th December, 2007 at MPP training hall in Kathmandu. The main objective of the training was to make the participants familiar with NepaLinux, its operating system and other localized software such as Content Management System so that they can successfully provide technical support and further training to the local community.

The objective of second layer of training was to train local level instructors for deploying the localized computing technology in rural community. This layer of training was called as Local Level Leader Training (LLLT). This training was organized from 22nd January 2008 in four s and in Tolka Kaski, it was started from 28th January 2008. At this stage, every trained teacher/ tele-center operator developed his/her own training outline and course and nominated a group of five participants. Each group has representation from target population of women, farmers, students, youth and teachers. operator/teacher trained his/her group. In this training, total 25 inhabitants were trained. Among them, 2 trainees belongs to farmers group, 5 belongs to youth group, 5 belongs to women or mother group, 4 students, 4 teachers, 1 ex-army, 1 belongs to hotel professional group and 2 belongs to forest users groups. The complete detail of trainees with respect to gender is given in table below.

Telecenter's Locations	Gender	Farmers	Youth	Women	Students	Teachers	Ex-army	Hotel Professional	Forest Users	Grand Total
Danda Gaun, Rasuwa	M	1				1				5
	F		1	1	1					
Jhuwani Chitwan	M	1	1		1	1				5
	F			1						
Nangi, Maygdi	M		1			1	1		1	5
	F			1						
Tolka, Kaski	M		1		1	1		1		5
	F			1						
Shikha, Myagdi	M				1	1		1		5
	F		1	1						
Grand Total		**2**	**5**	**5**	**4**	**5**	**1**	**2**	**1**	**25**

Table 8: Number of Trainees Participated in Local Level Leader Trainings (LLLT)

At third stage, each local level leader trained his/her own community members. This stage was called as End-User Level (EUL). The objective of this training was to provide basic Knowledge about handling computer with different open source software and enabling people to use computer in their routine work. This third layer End- User training was started form 1st week of may 2008 in all centers. Each Local Level Leader (LLL) developed his/her own training manual. In this training, each local level leader was responsible to impart training to other 5 persons belongs to his/her group. Like Farmers conduct the training for new 5 farmers, student conduct the training for new 5 students and so on. However, interestingly almost every LLL not only trained their respected group but also identified and trained new groups as paper making group, Dalit group, and ward committee group. In this training, total 125 (77 female and 48 male) participants were trained on using Nepalinux and open source software. Among them, 16 trainees belong to mother/women group, 27 belong to youth group, 21 trainees belong to students group, 20 belongs to teachers groups and 21 belongs to farmers group. The complete detail of trainees with respect to gender and group is given in table below.

Locations	Gender	Women/ Mother Group	Youth	Students	Teachers	Dalit	Paper Making	Ward Committee	Hotel Professionals	Farmers	Other	Grand Total
Shikha, Myagdi	M			5	2	2						25
	F	5	5		3	3						
Nangi, Maygdi	M				3			2			1	25
	F				2		5	3		5	4	
Tolka, Kaski	M		5	3	1				1	2		20
	F			2	4					2		
Jhuwani Chitwan	M		6	2						6		30
	F	6	6	4								
Danda Gaun, Rasuwa	M		1	1	5							25
	F	5	4	4						5		
Grand Total		**16**	**27**	**21**	**20**	**5**	**5**	**5**	**1**	**21**	**5**	**125**

Table 9: Number of Trainees Participated in End-User Level (EUL) Trainings

The duration of the phase two of training program was October 2008 to March 2009. During this phase, MPP and ENRD conducted the second training for the participants of the first "Training of Trainers (ToT)" and also organized a workshop to raise awareness about the achievement of PAN localization.

The Second "Training of Trainers (TOT) was conducted by the joint efforts of ENRD and MPP in Nangi Telecenter of Myagdi District from November 9, 2008 to November 18, 2008. The content of this training was more specific than first TOT. This training was organized for the operators of the five sites who had participated in the first phase training. Nevertheless, it was not only limited to them. The objective of this training was to train participants for developing websites by using Content Management System (CMS), creating blogs, introducing new features of Nepalinux and to teach them about domain registration and Web hosting.

Figure 15: Second Training of Trainers (ToT), 9-18 November 2008

One of the objectives of second ToT was to involve rural dwellers in creating local language content. The purpose of this was to create content by the villagers and for the villagers. As, students and teachers would be able to put the study materials, farmers would be able to create and accesses agriculture based content and so on. ENRD also interested to create a portal in way that rural dwellers would be able to post their comments about the created content. ENRD and MPP focused on building blog websites for each village. Thus, ENRD and MPP used two approaches for content development. One was top-bottom approach and the other was bottom–up approach. In the first approach, the content was produced by ENRD, MPP and other organizations. In the second approach, content was produced by rural dwellers including teachers, students, villagers and local government. The addresses of the developed websites are: www.shikha.com.np, www.nangi.com.np, www.jhuwani.com.np, www.tolka.com.np, www.dandagaun.com.np. The content included educational material, poem, stories, advertisement of the local products, local news and tourism.

ENRD and MPP also organized a workshop in this phase on 16 March 2009 at Dandagaun telecenter, Rasuwa. The objectives of this workshop are: (i) to discuss about the activities of Dandagaun telecenter in the village; (ii) to highlight the role of PAN Localization training in the development of the ; (iii) to draw attention of the local leaders and policy makers towards the importance of localized ICTs and (iv) to discuss about problems local people are facing while using ICTs. Telecentre operator of Rasuwa, two teachers and two principals of different schools of the Rasuwa village, a representative of Village Development Committee (VDC), two journalists were also participated in this workshop. The trainees who participated in trainigs shared their views and experience with other members of the workshop. They discussed that many villagers are interested to learn localized ICTs. The trainees also expressed their determination to give volunteer time for conducting similar training in the village. They also shared

some of the limitations and problems that they faced during the trainings. Most of the limitations, that were discussed, were about the short infrastructure like less number of computers.

Figure 16: Workshop at Dandagaun telecenter, Rasuwa, 16 March 2009

Madan Puraskar Pustakalaya (MPP) and E-Network Research and Development (ENRD) trained 155 rural dwellers including telecentres operators, students, teachers, women or mothers, farmers, hotel professionals, papers makers etc. To measure the effectiveness of the training program in terms of gaining ICTs skills and ability to train others, ENRD conducted a survey to get the baseline data and then at the end of the training program used "interview" technique to know the benefits of the training program.

A survey was conducted from trainees at the beginning of each training. The purpose of this survey was to know about percentage of trainees who were familiar with the computer before training and to know what skill they possessed about computer. All participants (155) took part in this survey including 5 trainers, 25 local level leaders and 125 end-user trainees. As the project was executed in 5 different locations thus each location consisted of 31 participants. The results of this survey are given in table 10 below. Table represents the data about the trainees who were familiar with the computer.

Name of Locations	% of trainees familiar with computer before training
Shikha, Myagdi	43%
Nangi, Maygdi	32%
Tolka, Kaski	40%
Jhuwani Chitwan	20%
Danda Gaun, Rasuwa	56%
Average Percentage	**38%** *(or is equal to 59 trainees out of 155)*

Table 10: Percentage of Trainees Familiar with Computer

The average percentage in table 10 above shows that only 38% of trainees were familiar with the computer before training. In Danda Guan, a highest percentage 56% was familiar with computer as compared to other locations. In Shikha village, 43% of trainees were already familiar with computer

before training. 40% of the trainees in Tolka, 32% in Nangi and only 20% of the trainees in Jhuwani village were familiar with computer before training.

The familiarity with computer here means that trainees have little exposure about computer and this does not reflect the competency to use the computer. As the Nepal evaluation team reported, "*Among 59 (or 38%) trainees out of 155, only 5 trainees who participated in "Training of Trainers (ToT)" were familiar with the basics of computer and internet. The trainees who participated in Local Level Leadership Training (LLLT) had seen and heard a lot about computer but they never got chance to touch or use computer. The trainees who participated in End-User Level (EUL) training only heard about the computer and they never got chance to see the computer.*"

As, the training program used the "train the trainers" approach to disseminate localized ICTs among rural communities, thus, the efficacy of the training program depends on the successfully trained number of trainees and the curriculum which trainers used for their trainees. The training was conducted successfully in three stages. The following figure 17 concisely depicts the efficacy of the training program in the light of above-mentioned explanations.

Stage 3:
End-Users Level (EUL) Training

125 trainees who never saw comptuer before training were using computer succesffuly after training

Stage 2:
Local Level Leadership Training (LLLT)

25 Trainees who never used computer before training trained 125 trainees on Localized ICTs succefully after training

Stag 1:
Training of Trainers (ToT)

5 Trainees who were only familiar with basics of computer before training trained 25 trainees succesffuly on Localized ICTs

Figure 17: Efficacy of Training Program on Localized ICTs

At first stage of the training program or TOT level, 5 participants were trained. Although all trainees were the basic users of computer, yet they had no knowledge about Open Office Software and NepaLinux. They were trained on Microsoft Windows and Nepalinux operating system installation knowledge (Nepalinux live CD, NepaLinux in PC), Open office and Microsoft office application installation (Open office calc, Open office empress), Open software Base Internet Browser and Messenger, Mozilla Firefox and Gimp Messenger, Troubleshooting and error management (Hardware, Operating System). After training, each trainee successfully performed the role as trainer and trained 25 participants during the second stage of the training namely Local Level Leader Training (LLLT). This is worth mentioning that each participant of ToT developed his/her own curriculum for LLLT. On the whole, almost all trainees of ToT trained the participants of LLLTs on basic computer knowledge specifically knowledge about Open Source Software, Open Office Suite (Calc, Impress), Open software Base Internet Browser and Messenger (Mozilla Firefox and Gimp Messenger etc).

As the Nepal evaluation team reported that, the participants of LLLT had almost no knowledge of computing system. Therefore, this is worth mentioning that after receiving in-depth training from the participants of ToT in Open Source Software, they could operate the software system and develop content according to their needs. They were also empowered to provide training within their own professional groups as farmer trained farmers and students trained students. Each participant of LLLT further provided trainings to almost 5 rural dwellers. Thus, 25 participants of LLLT trained 125 participants during the third stage of training program namely End-Users Level (EUL) training.

The evaluation team of Nepal reported, "*Before training, the all participants of EUL training (total 125) had no knowledge about ICT and they didn't have any idea on how to use the computer. They were curios to gain access and use ICT knowledge for daily activities. After training on Open Source Software, all participants became aware about the computing system and were able to use the computer. After training, they were able to write letters, documents, and send mail. The participants of EUL are now involved in diffusing ICT knowledge and its positive impacts in their local community.*"

Success Story

Mr. Narayan Prasad Poudel participated in Local Level Leadership Training (LLLT) conducted by the participant of Training of Trainers (ToT). He was born in B.S. 2029 in Lumle Village Development Committee ward no. 9 Landruk of Kaski district. He is a teacher in Landruk Primary School of Landruk which is the same school he had started his education. He passed his S.L.C. exams form Himalaya Secondary School.

Before project, he didn't knew much about computers. He said, "I didn't know how to use computer before PAN Localization training conducted at Tolka telecenter in Nepal".

After completion of LLLT, Narayan said, "Now I am very much confident about using computers. I can prepare documents, send e-mails, use internet and other things as well." Narayan also successfully trained 5 participants of End-Users Level (EUL) training.

Figure 18: Participant of LLLT "Mr. Narayan" Conducted EUL Training

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Hence, it can be said that training in Nepal was significantly helped to raise the capacity of the rural dwellers. As after the short duration of the trainings, the trainees were able to impart trainings successfully to similar rural dwellers.

3.3.2 Language and Learning ICTs

Language is an aid to the acquisition of knowledge from various disciplines like philosophy, psychology, literature, and other social and natural sciences. These disciplines enrich the intellectual life of the Individuals. Language is also an important factor to use information and communication technologies (ICTs).

PAN regional evaluation team was interested to know the language preferences of the participants involved in project for ICTs. The team was also interested to measure the influence of education in selecting the language for learning ICTs. Thus, the team developed a survey to know the preferences of

Nepal trainees. This survey was conducted after few months of training program, therefore, Nepal team carried out this survey from easily accessible trainees. Consequently, the data was collected from 102 trainees out of 155. Among them, 14 respondents belonged to University level (13 grade onwards), 31 had higher secondary (11-12 grade) qualification, 46 had secondary education and only 9 hold primary level of education. 2 respondents did not report their educational levels. The survey included the questions about the reading and writing ability of the respondents and language preference for online communication and content access. The results of this survey are given one by one in sections below.

3.3.2.1 Reading and Writing Skills of the Respondents

Competency in language plays an imperative role to acquire the knowledge about anything. If one person is not able to read French thus how he/she able to read any document written in French. The PAN team asked a question to measure the competency of trainees about Nepali (local language) and English language. The trainees were asked to rate their skill on a 5-point scale in Nepali and English language. The results are given in figure 19 below. The figure represents the data of 102 trainees. The figure denotes that a highest percentage (58%) of trainees is "fair" in both reading and writing Nepali. While, a highest percentage (73%) is "fair" in reading English whereas, only 24% of the trainees are fair in writing English. A consistency has been shown in reading and writing ability about Nepali as compared to English, as the equal percentage of trainees opted "fair" level for both reading and writing Nepali. The figure demonstrates that 14% of the trainees considered them as "poor" in reading Nepali and 10% in writing Nepali while 10% are not capable to read English as they rated them as "poor". While only 1% of trainees considered them "poor" in writing English. The figure below also demonstrates that 0% of the trainees consider them "excellent" in reading both Nepali and English. While 8% of the trainees considered them "excellent" in writing English and 5% of the trainees rated them as "excellent" in writing Nepali. However, the figure illustrates that trainees considered them more competent to read Nepali as compared to English while conversely they considered more competent in writing English.
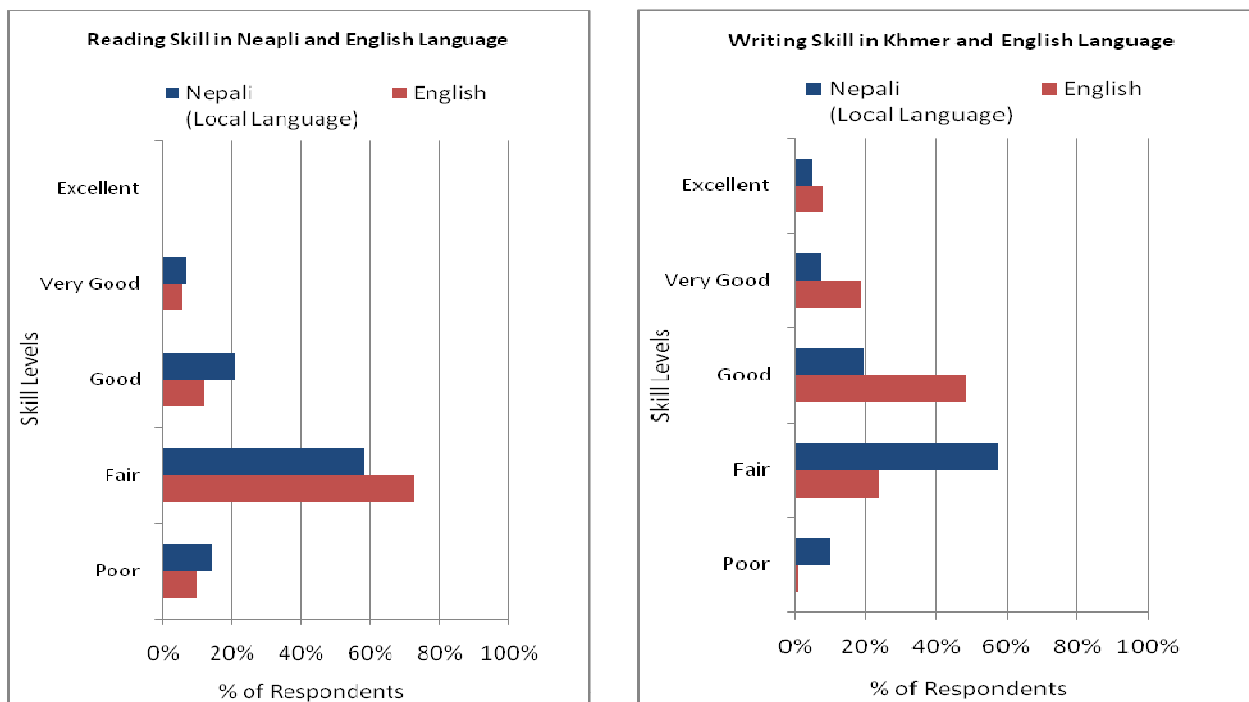

Figure 19: Reading and Writing Ability of Nepalese in English and Nepali

Table 11 below represents a comparative analysis of reading and writing skill with educational level of Nepali trainees/respondents. The highest percentage of the trainees (46%) belongs to secondary level of education. Among them, a highest percentage (18%) consider them as "fair" in both reading and writing Nepali while 14% consider them as fair in both reading and writing English. The table depicts that 31% of the trainees belong to higher secondary level of education of which interestingly the same percentage (8%) is at "fair" level in reading and writing in both English and Nepali language. The table shows that 14% of the trainees belong to higher level of education and among them the highest percentage (3%) deem as "good" in both reading and writing Nepali and the same percentage also consider them as "good" in reading and writing in English. The table also depicts interesting results that among 9% primary educated, 1% rated them as "poor" in English. And, among 46% of secondary level of education, only 1% rated them as "poor" in English. Yet, among 31% higher secondary level of education and 14% university level of education, no one rated them as poor in English.

| Educational Levels | Reading and Writing Skill Levels | | | | | | | | | | Total |
| | Excellent | | Very Good | | Good | | Fair | | Poor | | |
	English	Nepali	English	Nepali	English	Nepali	English	Nepali	English	Nepali	
Primary	0%	0%	1%	1%	1%	1%	1%	2%	1%	1%	**9%**
Secondary	1%	0%	1%	1%	6%	3%	14%	18%	1%	2%	**46%**
Higher Secondary	0%	1%	2%	2%	5%	3%	8%	8%	0%	2%	**31%**
University	0%	0%	2%	1%	3%	3%	2%	2%	0%	1%	**14%**
Total	**1%**	**1%**	**6%**	**5%**	**15%**	**10%**	**24%**	**29%**	**2%**	**6%**	**100%**

Table 11: Analysis of Reading and Writing Skill Levels with Educational Levels

In the view of above-presented analysis about reading and writing ability of the trainees in English and Nepali, it can be concluded that less educated persons are less competent in both reading and writing English as compared to highly educated persons. While highly educated persons are more sharp in reading and writing English as compared to Nepali.

3.3.2.2 Language and Communication and Content Access

The trainees were also asked to mention their preferred language for online communication and accessing online content. The results are given in sections below.

When trainees were asked to report their preferred language for online communication (through receiving and writing emails), majority of them (57%) preferred English language as shown in figure 20 below. Among them, the highest percentage was (22% out of 57%) belong to higher secondary level of education. The second highly preferred category was "Nepali based on Roman Script" as 25% of the trainees preferred to communicate online specifically were interested to write Email in roman script. The data illustrate an interesting result that no one was interested to receive emails in roman script. Among them, the highest percentage (14% out of 25%) was secondary level of education. The third highly preferred category was "Nepali based on local script" as 11% of the trainees were interested to communicate in Nepali language. Among them, 6% were belong to higher secondary and the same percentage belong to secondary level of education while only 1% of them was belong higher level of education.
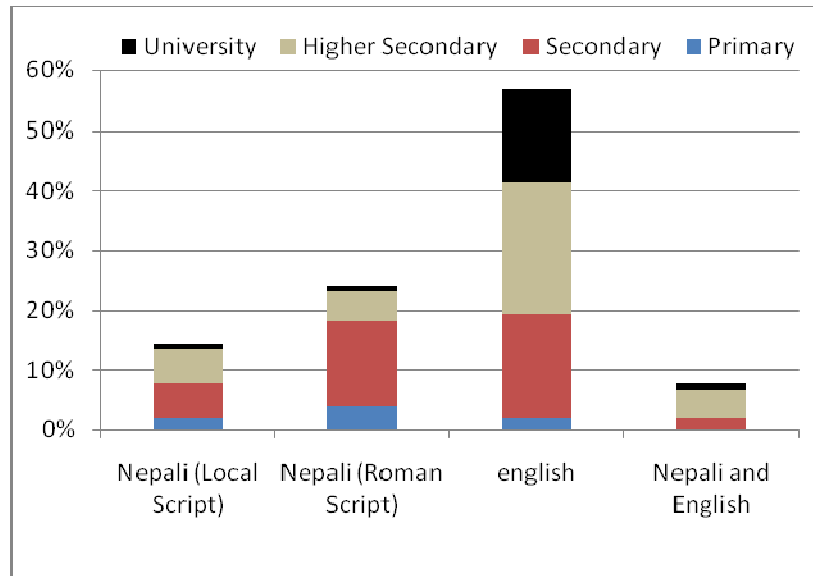
Figure 20: Analysis of Language Preferences for Online Communication with Educational Levels

The figure 20 above shows that almost 20% of the trainees were interested to communicate in Nepali (local script) while 26% of trainees were interested to communicate in Roman script. Among 26%, The majority of the trainees were those who were familiar with computer before training and used to communicate online in Roman script. It is also observed that few of them were quite happy after lerninng Nepali in local script. As Hem Purja from Nangi village said "*The most important thing that I like about the telecenter in our village is that I can chat freely with my friends and relatives in Nepali. In the past, we used to chat by writing Nepali in English Roman letters but now it can be done in Nepali itself and Nepali typing is also can be learnt in about half an hour.*"

The trainees were also asked to mention in which language they usually like to access online content. Majority of the respondents (53%) opted "Nepali and English" category for accessing online content. Among them the majority of the trainees (19%) was belong to higher secondary level of education, 17% were belong to secondary level of education, 11% were belong to university level of education while only 6% was belong to primary level of education. The equal percentage of trainees (23% for each category) preferred to access content online in both Nepali and English. Yet, the figure demonstrate that less qualified trainees as primary and secondary level of trainees were interested to access content in Nepali language as compared to English. As 16% out of 23% was belong to secondary level of education who prefer to access content in Nepali language and only 3% out of 23% preferred to access content in English language. While, 16% out of 23% was belong to higher secondary level of education and only 6% of higher secondary qualified preferred to access content in Nepali language. Hence, the data reflects that highly qualified person prefer to access content in local language while less qualified person prefer to access content in local language as shown in figure 21 below.
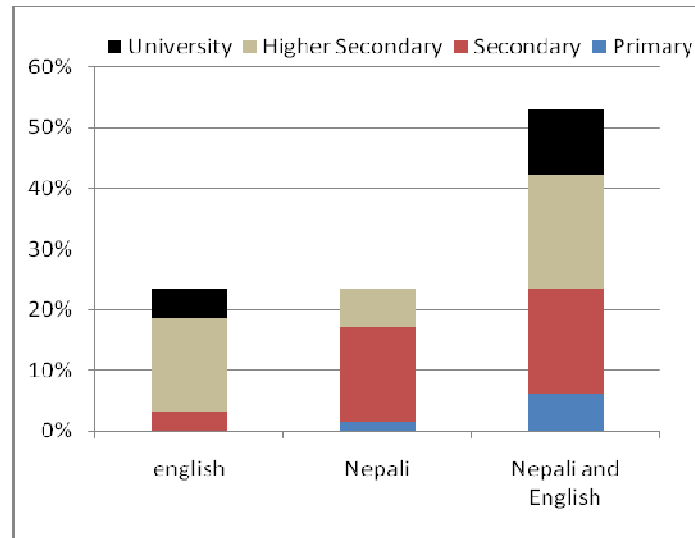
Figure 21: Analysis of Language Preferences with Educational Level for Accessing Online Content

In the light of the above-presented analysis about the language preference for online communication and accessing online content, two important deductions can be drawn. First, localized ICTs should be developed as to write in Nepali language is not possible without the localized computing technology. Secondly, the localized ICTs are more beneficial for less qualified including secondary and primary level of education as compared to highly qualified education including higher secondary and university level of education.

3.4 Pakistan

Pakistan is a developing country, therefore, it is essential for Pakistan is to adapt new technologies according to local needs for rapid development. The Government of Pakistan first recognized the need for the development of ICT through Information and Technology (IT) policy of 2000. The policy envisions to "harness the potential of Information Technology as a key contributor to development of Pakistan". The policy focused on multiple areas including human resource development, infrastructure development, software industry development, hardware industry development, Internet, incentives, IT promotion & awareness, IT usage, legislation, regulations. IT policy of 2000 paved the way for significant developments in IT industry.

Pakistan is a multilingual country including six major languages and over fifty-nine other known languages (Rahman, 2003). The official language of Pakistan is English. Urdu is national language and also lingua franca. Pakistan has four major provincial languages: Punjabi, Pashto, Sindhi, Persian and Balochi, as well as three major regional languages: Saraiki, Hindko and Kashmiri. The government of Pakistan emphasized to develop software in local language and local content while emphasizing to promote the Software Industry in Pakistan, as IT policy 2000 asserts " *Software development is a high growth industry and forms a major segment of the vast IT market and will continue to do so in the future. Integrated efforts to develop software industry with focus on exports (in addition to the local market) would be undertaken. This would include encouragement of local software houses in Governmental projects, local content development, Urdu and regional language software development".*

In 2007, Ministry of Education (MoE) states that the "*use of Information Communication Technologies (ICTs) in Education shall be promoted in line with Ministry of Education's National Information and Communication Technology Strategy for Education in Pakistan* (NICTSEP) ". NICTSEP recommends the

following key areas of focus in education: (i) use ICT to extend the reach of educational opportunity, (ii) apply ICT to strengthen the quality of teaching and education management, (iii) employ ICT to enhance student learning, (iv) develop complementary approaches to using ICT in education, (v) build on the current experiences of existing and successful ICT programs, and (vi) develop capacity at the federal and provincial department of education levels.

ICTs can accelerate the education system in Pakistan. Although, the government of Pakistan is trying to promote ICTs as the use of ICTs in education, yet technology is still out of reach for the majority of population. As the ownership of computer is 0.41. One of the reasons to this problem is low competency in the English language. English literacy rate is 20% of literates. A number of researches clearly indicates that children who study in their mother tongue usually learn better and more quickly than children studying in a second language (Cueto et al., 2009; UNESCO, 2008; Woldemikael, 2003), and that teaching in a language which is not the mother tongues "create cycles of disadvantage in education" (UNESCO, 2010, pg. 134).

3.4.1   Training on Localized ICTs and Content Development

Under PAN localization project which is a regional initiative to develop local language computing capacity in Asia, Centre for Language Engineering (CLE) conducted a project named Dareecha to specifically research the following three issues: (i) *Effective model for ICT literacy training for rural area school children; (ii) Preference for and impact of language on learning the use of ICTs; (iii) Differences in ICT adoption across gender for rural area school children.*

The project has been conducted in three phases, within a period of three years, each phase lasting for about a year. In the first phase, the ICT literacy training program was designed and all relevant tools and materials were prepared, closely considering the needs of rural area public school children, both boys and girls. In the second phase the training sessions were conducted for participating teachers and students across the participating schools. Detailed project planning was also done in the first phase and careful project monitoring was performed in parallel to the training during the second phase. This planning and data collection was done using the Outcome Mapping framework (Earl et al., 2001) explicitly extended for gender considerations (Gul et al., 2010). In third phase, the project data analysis and evaluation was conducted and the results were synthesized for dissemination to the stakeholders.

During first phase of the project, the key learning areas, curriculum and localized software were designed and developed. The objective of the Dareecha project is to develop and disseminate localized technology to rural population specifically to students and teachers. The four high level functional areas were identified by the project including: (i) *General Computer usage, (ii) Information Acces, (iii)Communication, (iv) Content Generation.* These functional areas were sub-categorized into seven *learning areas* for ICT literacy. Granular and incremental *competency levels* were then derived for each learning area. Finally, these competency levels were used to formulate training, practice and assessment materials for the students.

The first functional area "general computer usage" includes basic skills required to use computers for the first time. This functional area has a single learning area: basic computing skills. The second functional area "information access" covers modes of information access available through desktop computers and suitable in a rural school environment for students, and includes a single learning area: web browsing. The third functional area "communication" covers synchronous and asynchronous modes of communication available through computers and useful in a secondary school environment, sub-

categorized into two learning areas: emailing and instant messaging. The last and fourth functional area "content generation" contains a variety of learning areas. It includes the following three learning areas: word processing, graphics editing and webpage development.

In order to develop a training program, practice material, and a corresponding ICT literacy evaluation methodology, competency levels were developed for each of the seven key learning areas. Competency levels for each learning area consisted of a set of entry criteria, exit criteria, and a set of levels. The entry criteria defined the pre-requisite knowledge required for a student before embarking on a course based on the levels. The exit criteria defined the level of knowledge a student is expected to have attained after attending a course designed using the levels. The levels itself broke down the learning area into manageable steps. For example, the competency levels designed for the Basic Computer Skills area consisted of six levels, where the description for the first level is "the student is aware of the concept of a computer and is familiar with the different components of a computer". The description for the last level is "the student is aware of simple problems that may be encountered and is equipped to conduct basic troubleshooting". Each description was then further described in a series of steps. The number of levels developed for each area varied depending on the breadth of the key learning areas.

Software was selected corresponding to each learning area. For the purposes of the program, it was decided that the software should be open source to avoid licensing costs and also because open source software would provide some flexibility in localization options. The following software was selected for each leaning area. For Basic computer skills, Microsoft Windows XP was selected as the operating system. SeaMonkey suite was selected for web browsing (Sea Monkey Navigator), email (SeaMonkey Mail & Newsgroups) and web page development (SeaMonkey Browers). For Word Processing, OpenOffice.org write and for Graphics Editing, OpenOffice.org Draw were selected. All software were localized and freely downloadable form the project website.

The training material was also developed in this phase. Training material was developed in Urdu language and customized for students of both genders. Seven training books (one for each learning area) were published by Dareecha team, to be used for the training of both students (girls and boys) and teachers (men and women). The training material was freely distributed to all participating children and teachers through the schools. Though the initial plan was to hand the books over to the students, after discussing with the schools, the books were given to the school library and then checked out to the students for their use. This enabled the schools to get the books back and use them for subsequent batches for training. These books, shown in Figure 2.1, are available for free download under the Creative Commons License at from www.cle.org.pk/dareecha.

Figure 22: Dareecha Training Books

Assessment material was also developed during this phase in form of ICT literacy tests, which also served as a quantitative evaluation tool to determine technical competency of the training participants. Three types of tests were designed and developed for each learning area as described below:

I.   **Pre-training test:** to be taken by students before commencement of the training for a particular learning area. The result of this test was taken as a baseline for the initial competency

II. **Post-training test (short term):** to be taken by students immediately after the end of training on a particular learning area (possibly on the same day). The results from this test were used to measure the extent to which the learning area was learnt by the participants

III. **Post-training test (long term):** to be taken at the beginning of the next training (approximately two months later). The results from this test measured the long term retention of the concepts taught during the training sessions and the effectiveness of the practice sessions coordinated through the teachers at each school during the two months since the training

In the second phase of the project, the training sessions were conducted for teachers and students from 3rd November 2008 to 12 June 2009. The training was conducted in 10 schools including 5 government girls schools and 5 government boys schools. These schools were located in the Tehsils of Sarhodha, Bhalwal ,Sahiwal, and Silanwali and Chakwal and Attock. The program planned to train 14 students in each girls and boys schools and two teachers of each school. Thus, it was planned to impart training to 20 teachers (10 male and 10 female) and 140 students (70 male and 70 female). In the schools, where the number of students was almost double, the training sessions were repeated twice daily to accommodate all the students. One of the reasons to accommodate all the students was the overwhelming response of the students specifically girls to learn computer. However, 20 teachers (10 male, 10 female) and 228 students (140 females, 88 male) were trained on localized ICTs.

None of the participating schools had a computer lab. Therefore, computer labs have been setup through the Dareecha training program. Lab setup at each of the ten school included a network of eight refurbished computers (with one setup as a server), a printer, a scanner, speakers sets and head phones. Special keyboards with Urdu characters printed along the English alphabet were acquired separately and also distributed with the computers, as absence of Urdu letters may have had adverse effects on literacy (as also pointed out by Hall et al. (2009)). Internet connectivity was provided through PTCL local loop service.   External antennas were installed, as these were remote locations and required the signal to be amplified to enable proper communication. The set up also included furniture for the equipment and to seat twenty people.

The training program was organized and executed in three phases. Each phase was focused on 2-3 learning areas. Phase 1 included two learning areas: Basic Computing and Web Browsing. Training Phase 2 also based on two learning areas: Email and Instant Messaging while training phase three included three learning ares: Word Processing, Graphic Editing and Webpage Development. Each phase started with a teacher training session. Therefore, each teacher worked as a facilitator during students training sessions. The duration of the each training phase was 3 days (8 hours per day) for teachers and 5 days (3 hours per day) for students. The training for teachers was organized at one location while the trainings for students were organized in their respected schools.

Two training teams worked in parallel to conduct the training sessions. The program was implemented in both boys and girls school, and with the social context in mind, a team composed of female members only was formed for the girls' schools, and a team composed of male members only was formed for the

boys' schools. The two teams worked together during the teacher training sessions (which included all teachers of the program, both male and female). Each training team had one linguist, who conducted the training, and one technical person, who served as technical support and back-up for conducting training sessions. During this phase of the project, evaluation officer also travelled with training team and collected data qualitative and quantitative data though using multiple data collection techniques mainly survey, interview, observation.

In third phase, the final evaluation data was collected and all monitoring and evaluation based data was analyzed and the results were synthesized for dissemination to the stakeholders. The core approach followed by evaluation team was based on Gendered Outcome Mapping (Gul et al., 2010), also complemented by other methods.

PAN regional evaluation team was interested to know the effectiveness of training program executed in Pakistan in terms of competency to use computer. The regional evaluation team thus conducted a survey with collaboration of Dareecha team. This survey was conducted after few months of the training program. Thus, the results of this survey show the impact of the training program as well. The data was collected from easily accessible trainees from each participated school. In this survey, the trainees were asked to rate their before and after training skills among 5 pre-mentioned skill levels. Each skill level refers the competency to use localized ICTs. As skill Level 1 denotes that end users are not familiar with the application. Skill Level 2 denotes that end users are aware about application but never used it. Skill Level 3 denotes that end-users are capable to use application but require more training. Skill Level 4 denotes that competent to use application with confidence. Skill Level 5 denotes that end-users are expert in using application and even able to train others on it. The results of this survey are given in figure 23 below. The data was collected from 61 (31 male and 30 female) trainees including 46 students and 15 teachers. As the Dareecha team identified four functional areas and within seven learning areas for conducting training on localized ICTs. Therefore, the results are also presented according to functional and learning areas. The functional areas were: (i) *General Computer usage, (ii) Content/Information Access, (iii) Communication, (iv) Content Generation.*
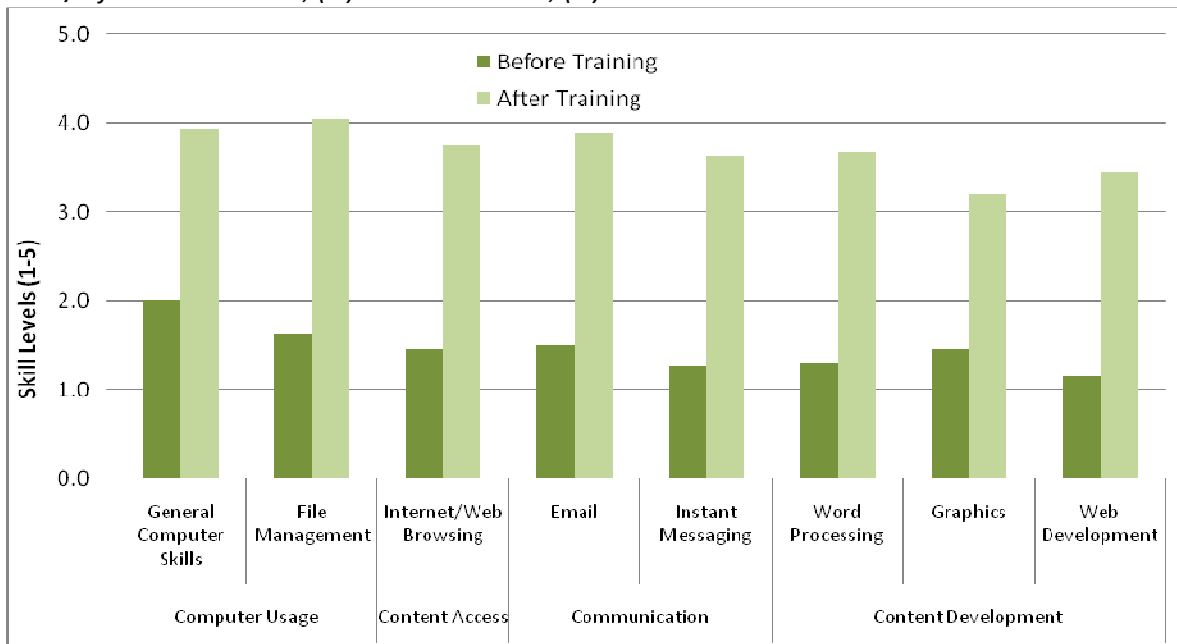
Figure 23: Competency in Using Computer (Training Effectiveness)

The figure 23 above depicts the self-reported before and after skills levels for each functional and learning areas. The figure presents the "mean" of skill levels. In statistics, "mean" is a measures of central tendency. The graph illustrates that most of the trainee were not familiar with computer before training as the mean skill level for all learning areas except for general computer skill is about 1. The fractions (.6, .5, .3 etc) with skill levels shows that few among trainees were familiar with all learning areas. The graph depicts that training has significantly helped to raise the capacity of students and teachers to use computer. As most of the trainees reported that after training, they are capable to use software applications but they also need more training. For general computer skill and file management, most of the trainee considered them competent and felt confident in using them.

The similar results were also presented in country evaluation reports. As mentioned above that Dareecha team developed ICT literacy tests to monitor and evaluate the students' competencies in various learning areas. The ICT literacy tests were conducted three times during training program: before training (pre), after 5 days training (post-short term) and after almost 2 months of training (post-long term). The following graph shows the results of ICTs literacy test conducted and evaluated by Dareech evaluation team. Figure 24 below presents average score achieved by 139 eighth grade students (70 male and 69 female) in these functional areas.
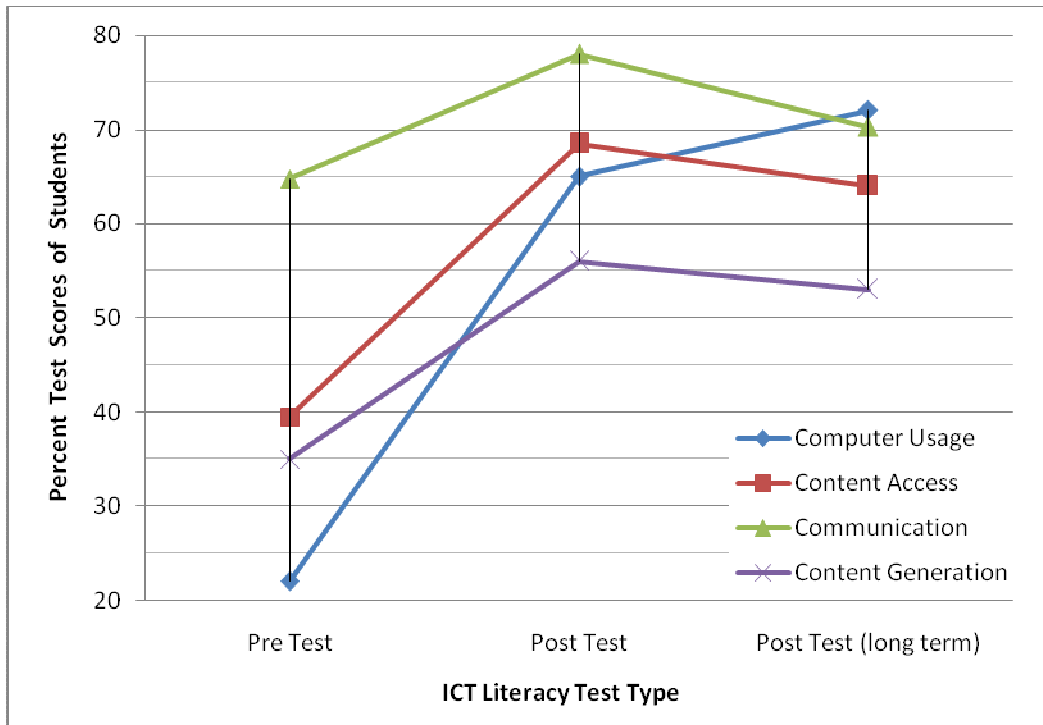
Figure 24: Development of ICT Literacy of Students in the Four Functional Areas

The figure above shows that the ICT literacy training helped to raise the capacity of the school students in each of the four learning areas. The figure shows the drastic change in pre test scores and post-test scores. This was because the students were not aware of ICT tools beforehand as figure 2 above depicts and after getting 5 days training on respected learning areas, they were not only familiar with the software application but also used them. The most significant increase is observed in computer usage where the results show an improvement from 22% to 72%. Another significant increase is observed in Content Access. The figure

illustrates the relatively high scores of pre-training test results for Communication. The country team mentioned a key reason in evaluation report that "*The key reason is that the preceding training on Content Access had already familiarized the students in using web applications, which were also being used for Communication functional area, e.g. web based email and chatting tools, thus raising the baseline.*"

However, the results presented in figure 23 and 24 are substantiating each other. Both figure shows that training significantly helped to raise the capacity of trainees.

3.4.2 Language and Communication, Content Access and Generation

PAN regional evaluation team was interested to know the language preferences of the participants involved in project for ICTs. The team was also interested to measure the influence of education in selecting the language for learning ICTs. The team used two techniques for data gathering: survey and secondary analysis. Secondary analysis included the reports that Pakistan submitted to PAN regional team. The survey was conducted after few months of training program, therefore, the evaluation team of Pakistan carried out this survey from easily accessible trainees. Hence, the data was collected from 61 trainees out of 308 (288 students, 20 teachers). Among them, 7 respondents belonged to University level (13 grade onwards), 1 had higher secondary (11-12 grade) qualification, 45 had secondary level of education. The survey included the questions about the language preference for online communication and content access. The results of this survey are given one by one in sections below.

Online communication was divided into: receiving email, writing emails and chatting. The respondents were asked to mention their preferred language for each type of online communication. The results are given in table 12 below. The findings shows that majority of the respondents opted Urdu language for online communication. 90% of the respondents opted Urdu language for receiving email, 75% preferred Urdu for writing emails which 26% of the respondents opted Urdu for chatting. Accumulatively, a high percentage of the respondent preferred to communicate in Urdu language. The second highly preferred language for online communication was English as 22% of the respondents were interested to communicate in English. The table 1 below also depicts that 13% of the respondents was interested to communicate in both Urdu and English languages.

Types of Online Communication	Urdu (Local Script)	Urdu (Roman Script)	Urdu and English	English
Receiving Emails	90%	0%	2%	8%
Writing Emails	75%	0%	19%	6%
Chatting	26%	2%	19%	53%
Average Percentage	**64%**	**1%**	**13%**	**22%**

Table 12: Language preference for Online Communication

Table 12 above shows that a high percentage of the respondents preferred to communicate in Urdu language which is lingua franca in Pakistan. Majority of the respondents (84%) were students and had secondary level of education while only 13% of the respondents had university level of education. Thus, the results of language preference for online communication illustrates that the less qualified persons preferred to communicate in local language as compared to any secondary language. Similar results were also observed by country component. The country component asked logged all written communication by the project participating students and teachers with the project staff and noted the language in which the communication was done. Total 1467 emails and 363 chats were logged by

Dareecha team from Nov. 2008 till Dec. 2009. The results clearly showed the preference of Urdu for communication purposes as 89% of the total online communication was in Urdu, 9% in English and 3% in other local languages (Punjabi, Saraiki etc). The country component team asked the reason for searching in Urdu, the students responded that, "*We preferred to search the answer of the query in Urdu language because it is difficult for us to read and understand English language. When we try to search content in English language, we usually do spelling errors.*"

The trainees were asked to mention in which language they usually like to access online content. Majority of the respondents (47%) opted "Urdu and English" category for accessing online content. While 33% preferred English language and 20% opted Urdu for accessing online content as shown in figure 25 below.
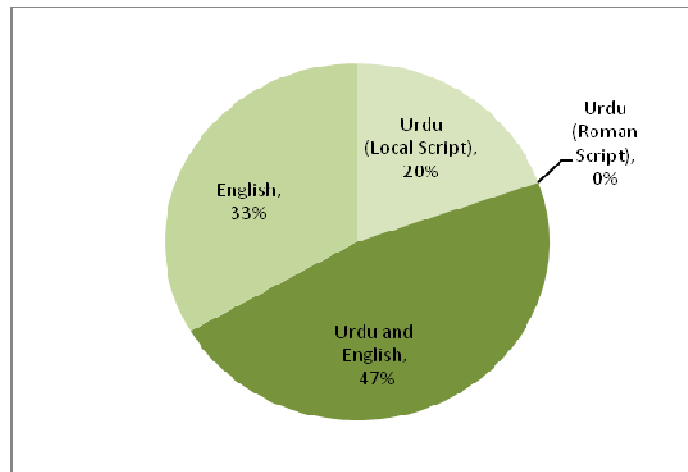
Figure 25: Language Preference for Content Access

Figure 25 above presents the language preference for accessing online content. One of the reasons to opt "Urdu and English" category can be their current social status as all respondents were belong to educational sector (students and teachers). As the curriculum in participated government schools based on both English and Urdu, that is why most of the respondents preferred to access online content in both English and Urdu language. On the question, "what sorts of websites have you visited in the last month?" They were also asked to mark different types of websites and as many as apply. Most of the respondents 35 (out of 54) reported that they visited "education" related websites. While only 20 of them visited entertainment-based websites, 23 visited news websites, 27 visited religious websites and 34 visited sports websites. On the question which type of information do you mostly like to search among the categories: (i) work/business, (ii) learning/teaching, (iii) personal needs, (iv) others. Majority of the respondents (31 out of 54) reported that they would like to search "learning/teaching" related information. These findings substantiate that one of the reasons of opting "Urdu and English" category was their current social status.

Among 61 respondents, 28 have developed websites after getting training under PAN localization project. The respondents were asked to mention the language in which they developed websites among the categories; (i) Urdu, (ii) English, (iii)Urdu and English, (iv) Other. The results are presented in table 5 below. This is worth mentioning that 24 websites out of 28 developed in Urdu language.

Educational Level	Urdu	English	English and Urdu
Secondary	22	0	3
University	2	0	1
Total	**24**	**0**	**4**

Table 13: Language of Developed Websites

The data presented in table 13 above shows that most of the respondents (24 out of 28) developed websites in Urdu language of which 22 websites developed by secondary qualified persons and 2 developed by university degree holders. Only 4 respondents of which 3 had secondary level of education and 1 was belong to university level of education developed website in both "English and Urdu" language. This is worth mentioning that none among the 28 respondents developed websites in English language.

In the view of above presented data about the language preferences for communication, content access and generation, it can be said that localized ICTs facilitate the less qualified persons more compared to highly qualified in online communication, accessing and generating online content. As, a high percentage of respondents prefer Urdu language for online communication and to develop online content.

4. Discussion and Conclusions

The purpose of this study is to assess the efficacy of localization in term of learning ICTs and how localized ICTs are and can facilitated rural community to learn and use ICTs. The specific research questions are to measure the extent to which localized ICT raise the accessibility of end-users to use ICTs and the extent to which localized ICT facilitated end-users to communicate online, accessing and generating online content.

4.1 Localized ICTs and Digital Literacy

One of the core objectives of PAN localization phase II to deploy and disseminate the developed local content and localized ICTs to rural community. Seven countries followed this objective and adopted different training approaches to train the rural communities on localized ICTs. Among them, only four countries were selected for evaluation purposes due to time and funding constrains.

In general, it has observed that training on localized ICT drastically enhanced the capacity of end-users to use ICTs. The findings revealed that after training on localized ICTs, non-users of the computer were not only using the computers for routine tasks but also provided trainings to others. This is worth mentioning that this ability and confidence to train others was developed after a short period of training program on localized ICTs. As in Nepal, the team adopted the "train the trainers" approach for training program. Following this approach, the team conducted a 10 days training on localized ICTs from 25th November to 4th December 2007 and provided training to only five participants. Each trainee after 48 days of training program prepared his/her own training content and trained five rural dwellers (including farmers, students, teachers, women etc.) in their respected participated village. Then, each participant further provided training to five persons and prepared his/her own training material to impart trainings to them. The monitoring and evaluation officer of the Nepal team reported, "end-users are "highly (ranked 4 on 1-5 scale) convenience in learning a software that has been localized versus the one available in a foreign language and localizing the software has significantly (ranked 5 on 1-5 scale) helped end-users to use software". Similar training approach was adopted and similar findings were observed in Cambodia. One of the contributing factors which enhanced the skill and confidence of

trainees to train others is "local language". Benson (2004) highlights the importance of local language with comparing it foreign language, he asserted, "submersion (instructions in a language which speaker do not speak) makes both learning and teaching extremely difficult, particularly when the language of instruction is foreign to the teacher".

Bangladesh adopted an innovative model to disseminate the benefits of localized ICT through empowering rural dwellers with its digital livelihood network. The country component trained 14 content developers to develop content in local language and 14 infomediaries were trained to disseminate the content to rural dwellers. They were specifically trained on how to search content via using Jeeon-IKB. Jeeon-IKB is the directory which contains digital content on livelihood issues in Bangla language developed by content developers. Under PAN localization, content developers successfully developed 1000 pages on Law and Human Rights issues in local language. The evaluation officer reported that the content is "highly accessed" by rural community as ranked 4 on 1-5 point scale. The skill to develop local content was enhanced as most of the content developers were not familiar with Joomla, blogging and wiki before training. After training, almost every content developers developed his/her own blog and in local language such as: i) http://prothom-aloblog.com/, ii) http://www.somewhereinblog.net/blog/tanzin2008/28783455, iii) http://www.prothomalo.com/ and iv) somewhereinblog.net/blog/kibriyarafiblog. Most of the respondents reported that localized ICTs facilitated them to develop content easily in local language and they also stated, "by using joomla, wiki and blog in Bangla language, content can develop swiftly".

Pakistan component trained students and teachers on localized ICTs. Most of the trainees were not familiar with computer before training and the trainees who were familiar with computer were only familiar with basics of the computer specifically able to play games and videos. The team conducted pre and post ICT literacy test to gauge the competency of the students. The results showed a drastic change in competency levels before and after training. This is worth mentioning that before training program, majority of the trainees were not familiar with computer and most of them never touched or used computer. Yet, within the periods of eight months, the students and teachers were able to develop websites. The country component organized a fairly extensive website development competition at the end of the training. A total 56 websites were received, of which one website was developed in English language and 55 websites were developed in Urdu language. The websites and the details of this evaluation are available at www.PANL10n.net/english (see Output section for Pakistan). The training used an innovative model which specifically facilitated female students more as 140 were female students out 228 students.

One of the reasons of the confidence to train others and to develop websites within the short period of time is "language" as the end-users were trained on localized ICTs . Every country localized ICTs in the language recognized as mother tongue of the country or lingua franca of the respected country as Nepal localized technology in Nepali language, Bangladesh in Bangla, Cambodia in Khmer and Pakistan in Urdu. Most of the trainees reiterated, "*it is very easy to learn localized ICTs as local language is easily understandable thus, the terminology used in software is also easy to understand through which tasks can easily performed*". One of the Nepali respondents stated, "*Nepali typing can easily learn about half an hour".*

The findings of PAN localization substantiated the theory that the children learn more quickly and demonstrate greater self-confidence when they instructed in local or mother language compared to secondary or foreign language (UNESCO, 2008; Woldemikael, 2003). According to Benson (2004), the program based on the instructions through a language that learners do not speak may succeed teaching

student to decode words, yet it can take years before they discover meaning in what they are reading. Thus, one of the significant factors which contributed to success of PAN project and drastically helped to raise the competency and skill of trainees is "local language". Because under PAN project, not only software were localized but also training material and instruction were delivered in local language.

4.2 Language and Education Association for learning ICTs

Though it is widely recognized that people are more competent in mother tongue as compared to any foreign language, yet a questionnaire was still conducted to get some quantitative measure of this difference, specifically to relate competency disparity with educational levels. The purpose of relating the competency levels with educational levels to assess the relationships between these. One of the purposes of this analysis is to relate it with the language preferences for online communication, content accessing and generation. The respondents were asked to rate their skill or competency levels for reading and writing in English and mother/local language. This questionnaire was conducted from three countries and from 222 respondents of which 11 respondents were from Bangladesh, 150 from Cambodia and 61 from Pakistan. The findings of this survey are presented in table below with respect to educational levels.

Educational Levels	Excellent		Very Good		Good		Fair		Poor		Total
	English	Local L.*	English	Local L.	English	Local L.	English	Local L.	English	Local L.	
Primary	0%	2%	0%	0%	0%	1%	0%	1%	2%	0%	**6%**
Secondary	0%	1%	0%	0%	2%	1%	5%	6%	1%	1%	**17%**
Higher Secondary	0%	6%	1%	1%	3%	1%	6%	3%	1%	1%	**22%**
University	5%	14%	7%	7%	10%	4%	5%	2%	1%	0%	**54%**
Total	**6%**	**23%**	**9%**	**9%**	**14%**	**7%**	**17%**	**11%**	**4%**	**2%**	**100%**

*Local Language .... (The data is presented without rounding the figures)

Table 14: Reading and Writing Competency in English and Local Language

Table above shows the relationship between educational levels and self-assessed competency levels in reading and writing English and local language. The findings depicts that majority of the respondents (23%) consider them excellent in local language as compared to English (6%) language. In other words, the majority of the Bangladeshi, Cambodian and Nepali respondents' consider them excellent in Bangla, Khmer and Nepali respectively as compared to English. The data illustrates that level of education affects the competency in reading and writing English language. As majority of university respondents consider them "very good" in English while the majority of higher secondary and secondary respondents consider them "fair" in English. This is also noteworthy that the respondents belong to secondary level of education consider them "poor" in both reading and writing English while zero percent of them consider poor in local language. The table also demonstrates that within the competency levels of English, the highly preferred competency level for English is "fair".

Two conclusions can be drawn from the above presented results about reading and writing competency in English and local language. First, people whether qualified or illiterate are more competent and sharp in reading and writing local language as compared to English or any secondary language. Second, the level of education affects the competency levels of reading and writing English and bottom level of education leads to low competency level while higher level of education leads to higher competency level in reading and writing English or secondary language.

4.3 Language and Education Association for Communication, Content Access and Generation

In this 21st century, Internet has become an important source of information and knowledge. Yet, this rich source of information cannot be accessed by majority of world's population. As more than 65% of the content on Internet is in English (IBM's Web Fountain Analysis, 2003), while majority (59.8 percent) of the total global online population comes from non-English speaking zones (Sood, 2002). According to Internet World State analysis (march, 2011) about usage of internet and population statistics, the total internet users in Asia are 44% while the rest percentage of users (56%) are from the rest of world's population. PAN localization evaluation team conducted a questionnaire from the participated four countries of Asia; Bangladesh, Cambodia, Nepal and Pakistan. The respondents were asked to mention in which language they usually typed their search query to access online content. The findings are given in table below.

Educational Levels	Local Language	Local Language and English	English	Total
Primary	1%	2%	0%	**3%**
Secondary	7%	16%	7%	**30%**
Higher Secondary	3%	9%	8%	**20%**
University	2%	18%	27%	**47%**
Total	**13%**	**45%**	**42%**	**100%**

Table 15: Language Preferences for Content Accessing

The findings presented in above table illustrates that alike percentage of respondents prefer to access online content for in English and local language. Education significantly influences people's preferences about the language for accessing online content. As university level respondents highly preferred English language while secondary level respondents significantly preferred "local and English" category for content accessing. This is also noteworthy that among primary level respondent, zero percent preferred to access content in English language. The secondary level of respondents equally preferred "English and local language". While a high percentage of university level respondents preferred to retrieve content in English language. The findings illustrate that a less qualified respondents prefer local language more compared to higher qualified respondents. Thus, education significantly influences the people's choice to opt a particular language for accessing or retrieving online content.

Access to content is related with competency to read the language and content generation associated with the competency to write a particular language. To quantitatively measure the language preference for content generation, a question was asked from the respondents that in which language they developed the online content specifically for websites and blogs. 10 respondents from Bangladesh and 28 from Pakistan developed online content. The findings are given in table below.

Educational Levels	Local Language	Local Language and English	English	Total
Primary	0%	4%	0%	**4%**
Secondary	39%	5%	0%	**44%**
Higher Secondary	0%	0%	0%	**0%**
University	26%	2%	24%	**52%**
Total	**65%**	**11%**	**24%**	**100%**

Table 16: Language Preferences for Content Generation

Table above represents the data of language preference for content generation. The table depicts that high percentage of the respondents developed websites in local language while much fewer percentages developed websites in English language. This is noteworthy that the respondents who developed websites in English language were highly educated (university level) while among 44% of the secondary level respondents who developed websites, 39% developed websites in local language. Though the web content and blogging shows the people interest and likings, yet content generation is also related with competency to write. Education is one of the factors which influence the competency of people in general. The results are suggesting that higher education gives confidence to write in English and low education leads to low confidence to write English. The majority of the Pakistani respondents reported the reason for developing website in local language, *"It is convenient for us to produce content in Urdu (local language) because we easily understand it and do fewer mistakes as compared to English language".*

Communication is the most popular use of the Internet. The respondents were asked to mention in which language they prefer to communicate online specifically in which language they prefer to chat, send and receive email. The table below shows the language preferences for online communication. The highly preferred (37%) category was "English". Most of the respondent belong to university level and among them alike percentage 22% prefer English and 21% prefer the category "local language and English" for online communication as shown in table below.

Educational Level	Local Language	Local Language and English	English	Total
Primary	0%	2%	0%	**2%**
Secondary	19%	6%	6%	**31%**
Higher Secondary	2%	6%	9%	**18%**
University	6%	21%	22%	**48%**
Total	**27%**	**35%**	**37%**	**100%**

Table 17: Language Preferences for Online Communication

The findings presented in above table illustrates that a significant percentage of secondary respondents prefer local language for online communication. The findings illustrates that low level of education lead to high preferences for local language while much high level of education lead to choose English language. This reflects that people able to understand English as the education level increases. The low level of education lead to low level of understanding of English while higher level of English increases the competency to understand and communicate in English language.

In the light of above presented data about training on localized ICTs, and language preferences for online communication, content access and generation, two important conclusions and deductions can be drawn. First, technology and online content should evenly be available in both English and local languages. Monopoly of one particular language on internet and technology can create hurdles to effectively use and get benefits from ICTs. Second, education significantly affects people's choices about language for learning ICTs, and for online communication, accessing and generating online content. Thus, localized ICTs are essential to uptake ICTs in Asian countries specifically where literacy level is low because mere access to ICTs cannot fulfill the needs of the people. Localized ICTs are and effectively can bridge the digital divide specifically in developing countries.

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6. Appendix

QUESTIONNAIRE – END USERS

SECTION A

I. GENERAL INFORMATION

1. Name: _____ ♣Male   ♣Female

2. Age: ♣Under 19 yrs   ♣20-29yrs   ♣30-49 yrs   ♣50 yrs+

3. Mother tongue: _____

4. Language (spoken at home) _____   (spoken at work) _____

5. Please specify your *education level*?

   a) Primary (1-5 grade)   d) University Level (13 grade onwards)
   b) Secondary (8-10grade)   e) Not Educated
   c) Higher Secondary (11-12grade)   f) Other: _____

6. Please specify your *social status*?

   a) Business/self employed *(if yes, of what type?)* _____

   b) Employed: ♣Government sector   ♣Private sector ♣Social sector
                               _____   _____   _____

   c) Student
   d) Housewife
   e) Any other (Please specify) _____

7. How would you rate your reading and writing skill in **ENGLISH vs. your Local Language**?

READING	In English	Local Lang.		WRITING	In English	Local Lang.
Excellent				Excellent		
Very Good				Very Good		
Good				Good		
Fair				Fair		
Poor				Poor		

SECTION B

(This section is <u>only</u> for those respondents who had prior knowledge of using computers)

II. COMPUTER BACKGROUND

For the following, please provide the relevant information according to the skill level mentioned below:

<u>SKILL LEVEL:</u>

1. I don't know what this is.
2. I know what this is but have never used it.
3. I have used this occasionally but need more training

4. I use this regularly and feel confident
5. I would be comfortable showing others how to use this.

Are you trained on the following?	Name of software learnt	Language of the software learnt (English or local language)	Skill level: **1 – 5**
♣ **General skills:** a. **Using Mouse, Keyboard, Printer, Scanner**	X		

♣ **General file management skills:**
  a. **Opening, saving, copying files**
  b. **Creating, deleting, re-naming folders**
	X		

♣ **Word processing**			
♣ **Spreadsheet**			
♣ **Presentation**			
♣ **Graphics**			
♣ **Email**			
♣ **Internet (Searching)**			
♣ **Chatting**			
♣ **Website Development**			
♣ **Content Management**			
♣ **Blogging**			
♣ **OTHER**			
♣ **OTHER**			
♣ **OTHER**			
♣ **OTHER**			

SECTION C

III.   GENERAL COMPUTER USAGE

For the following questions, please tick the most relevant:

1. How long have you been using the Internet?
♣ Less than 6 months   ♣ Almost 2 years   ♣ More than 2 years

2. Is the English language interface of the computer ever hampered your computer usage?
♣Yes   ♣No

3. How often do you use computer?

a) Daily   d) Less than once a month
b) At least once a week   e) Never
c) At least once month

4. **Where do you usually use a computer?** *(Mark as many as apply)*

a) At work   d) At the telecenter
b) At school   e) Other _____
c) At home

5. Do you use computer with English interface or computer in a local language interface?
_____

6. What purpose do you use a computer for?

Mark as many as apply	Give examples of the **Purpose,** e.g. songs, movies, doing assignments, check market rates, etc.
☐ Entertainment	
☐ Studies	
☐ Work	
☐ Household	
☐ Other	
☐ Other	
☐ Other	

SECTION D
*(This section is **only** for those respondents who have received training on office applications)*

IV.   USING OFFICE APPLICATIONS

1. Which office applications are you frequently using?

Name the software	Language of the interface
	  a. English
	  b. Local Language
		Frequency:
		  a. Daily
		  b. At least once a week
		  c. At least once month
		  d. Less than once a month
		  e. Never

2. **Which of the following tasks are you able to do in your word processor?** *(Mark as many as apply)*

☐ Open and close a document
☐ Create and save a document.
☐ Use formatting options, right left alignment, L-R directions for languages.
☐ Insert logos, pictures in a document

☐ Do spelling check
☐ Correct errors with backspace and delete keys.
☐ Print document.
☐ Draw a table

3. **In which language do you mostly develop the office documents?**

a) English
b) Local language (in Local script)
c) English and local language combined
d) Local language (in Roman script)

1. **For what purpose do you most often use word processor?**

_____

_____

SECTION E

(This section is __only__ for those respondents who have received training on localized email)

V.   USING EMAIL FOR COMMUNICATION

2. **Do you have your own email address?**   ♣Yes   ♣No

3. **If yes, what is your email address?**   _____

4. **Do you prefer to receive your emails in English or in any other language?**
   ♣   English
   ♣   Other: (please specify) _____

5. **To whom do you generally send an e-mail?**
   - ♣ Friends
   - ♣ Teacher/Trainers
   - ♣ Family
   - ♣ Other_____

6. **How often do you write an email?**
   - ♣ Daily
   - ♣ At least once a week
   - ♣ At least once month
   - ♣ Less than once a month
   - ♣ Never

7. **In which language do you mostly write your emails?**
   - ♣ English
   - ♣ Local Language (in local script)
   - ♣ English and local language combined
   - ♣ Local language (in Roman script)

8. **Indicate your skill level to do the following?**

   SKILL LEVELs:
   1. I don't know what this is.
   2. I know what this is but have never used it.
   3. I have used this occasionally but need more training
   4. I use this regularly and feel confident
   5. I would be comfortable showing others how to use this.

TASK	SKILL LEVEL (1 - 5)
♣ Create and send messages	
♣ Attach files to outgoing messages	
♣ Open files attached to incoming e-mail messages	
♣ Attach a signature to messages	
♣ Other	

SECTION F

*(This section is **only** for those respondents who have received training on using localized Web Browser)*

VI.   WORKING WITH WEBSITES

1. **Which web browser do you usually use to access websites?** (Mark as many as apply)
   a) Internet Explorer
   b) Mozilla
   c) Firefox
   d) Other (please specify) _____

2. **Which of the following are you able to do in your browser?** *(Mark as many as apply)*
   - ☐ Type a web site address
   - ☐ Set the home page
   - ☐ Open additional browser windows
   - ☐ Bookmark sites
   - ☐ Select copy and paste text into other applications
   - ☐ Print a web page
   - ☐ Upload a web page
   - ☐ Develop a relatively enhanced web page having links, buttons, formatted text & images
   - ☐ Save pages to disk

3. **What sorts of Web sites have you visited in the last month?** *(Mark as many as apply)*
- ☐ Educational
- ☐ Games
- ☐ Entertainment
- ☐ News
- ☐ Religion
- ☐ Sports
- ☐ Other (please specify)

a) **Are there any specific websites that you visit regularly?** ♣Yes ♣No

9. **If yes, please list a few:**

1. _____

2. _____

3. _____

4. _____

4. **Have you developed any website/websites?** ♣Yes ♣No

5. **If yes, please list a few:**

Website Address (www…)	Description of the website (Newspaper, My school, etc.)	Language a) English b) Local language in local script c) Local language in Roman script

6. **Please indicate which of the following search engines/services do you usually use?**
- ☐ Alta Vista
- ☐ Yahoo
- ☐ Google
- ☐ Other (please specify) _____

7. **What type of information do you mostly like to search through the Internet?**
- ☐ Work/business
- ☐ Learning/teaching
- ☐ Personal needs
- ☐ Other _____
- ☐ Other_____
- ☐ Other _____

8. **In which language do your mostly type your search query?**

a) English   b) Local Language   c) Both

9. **Which of the following are you able to do in your browser?** *(Mark as many as apply)*
- ☐ Access a search engine on the internet

☐ Enter appropriate key words into the search engine to locate the desired information

☐ Refine a search depending on outcomes of the original search

☐ Use advanced search features, provided in search engine

VII. CONTENT MANAGEMENT SYSTEMS

(This section is __only__ for those respondents who have received training on using localized content management systems)

1. Name any Content Management System that you have used?

   a. _____

   b. _____

   c. _____

2. Describe few actions/ tasks that you are able to perform using the CMS?

   a. _____   d. _____

   b. _____   e. _____

   c. _____   f. _____

3. What are the benefits of having a localized CMS?

   a. _____   c. _____

   b. _____   d. _____

VIII. CHATTING

1. Which chat software do you mostly use? _____

2. How often do you chat?
   ♣ Daily
   ♣ At least once a week
   ♣ At least once month
   ♣ Less than once a month
   ♣ Never

3. Have you ever used localized instant messaging software?   ♣ Yes   ♣ No

4. Which language interface would you now continue to use?   ♣ English   ♣ Local

5. Where did you use localized Instant messaging software? (Mark as many as apply)

   ☐ At work   ☐ At school

☐ At home
☐ At telecenter / community center

☐ Other (please specify)

6. Which of the following tasks are you able to perform in chatting software? (Mark as many as apply)

☐ Sign in and out to chat room
☐ Visit different chat rooms
☐ Add contacts to the account.
☐ Chat with the contacts

☐ Change your status during chatting
☐ Send and Receive files
☐ Block contacts
☐ Chat while being invisible

7. With whom do you generally chat?

a) Friends
b) Teacher/Trainers

c) Your community
d) Other (Please specify) _____

8. In which language are you more comfortable to chat?

a) English
b) Local Language (in local script)

c) English and local language combined
d) Local language (in Roman script)

IX. BLOGGING

9. Have you ever used a Blog? ♣Yes ♣No

(If Yes, then please answer the following questions in this section)

10. How often do you post new material on blogs?

a) Daily
b) At least once a week
c) At least once month

d) Less than once a month
e) Never

11. Have you created your own blog? ♣Yes ♣No

12. What is the website address of your blog? _____

13. What language do you generally use in blogging?

a) English
b) Local language
c) English and local language combined
d) Roman (Local language)

SECTION G

14. How would you rate your current skill level in using the software on which you have received training now?

SKILL LEVEL:
1. I don't know what this is.
2. I know what this is but have never used it.
3. I have used this occasionally but need more training
4. I use this regularly and feel confident
5. I would be comfortable showing others how to use this.

Check those software only that where covered in the training through this project	Name of software learnt	Language of the software learnt (English or local language)	Skill level: **1 – 5**
♣ **General skills:** b. **Using Mouse, Keyboard, Printer, Scanner**	X		

♣ **General file management skills:**
   c.   **Opening, saving, copying files**
   d.   **Creating, deleting, re-naming folders**
	X		

♣ **Word processing**			
♣ **Spreadsheet**			
♣ **Presentation**			
♣ **Graphics**			
♣ **Email**			
♣ **Internet (Searching)**			
♣ **Chatting**			
♣ **Website Development**			
♣ **Content Management**			
♣ **Blogging**			
♣ **OTHER**			
♣ **OTHER**			
♣ **OTHER**			
♣ **OTHER**			

15. Which software do you like the most?
   a) Basic computer skills
   b) Operating System
   c) E-mail
   d) Instant Messaging (Chat)
   e) Internet search
   f) Word Processor
   g) Graphics
   h) Web page development
   i) Content Management System

16. How confident are you that you could teach localized software to others?
a) Totally confident
b) Very confident
c) Fairly confident
d) Only a little confident
e) Not at all confident

17. How would you describe your overall experience with using localized software?
a) Excellent
b) Good
c) Average
d) Below Average
e) Poor

18. How do you think having local language software can benefit those who did not have computer training before?

_____

_____

19. Would you be interested in receiving further training on other localized software?

a) Yes
b) No

20. If yes, what type of computer training would you be interested in?

_____

_____

Thank you for taking the time to complete this questionnaire